

Plan approval

This plan has been prepared, publicised and circulated as per the requirements of the Physical Planning Act Cap 286. The plan has fulfilled all the requirements and is hereby approved.

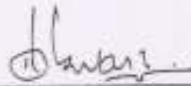
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Rosemary W. Wachira
Director of Physical Planning

Date: 4/05/06 2006

APPROVED



Minister for Lands

Date: 05/05/ 2006

Approved Development Plan No. 292

PREFACE

Physical planning services are an important component of development of any nation. It is in this respect that the demand for physical planning services in Kenya is increasing. It is clear that upon the enactment of the Physical Planning Act Chapter 286, the Department of Physical Planning is under more pressure to prepare different types of plans. It has been proved over time that a proper physical planning culture contributes positively to the economic growth of any country.

This Karengata Local Physical Development Plan (LPDP) is a product of a collaborative effort by my Ministry, the City Council of Nairobi, the Karen and Langata District Association, the Ministry of Water and Irrigation and the National Environment Management Authority. It is worth noting that the immense contribution by residents and stakeholders obtained from the stakeholders meetings and written views helped shape the plan.

This is a unique plan as it provides a framework to guide development in a section of Nairobi City. Coming at a time that the Nairobi Metropolitan Growth Strategy (1973) has expired, it is hoped that the experiences gained will be useful in the preparation of a new growth strategy for the City. As a ministry we will build on this partnership strategy to ensure that we plan Kenya.

The Karengata area was a suitable area to undertake a local planning exercise because there are large plots of undeveloped land which offer the possibility for intervention to demonstrate a more appropriate and environmentally friendly approach to land development and management. Most importantly, the area is an asset to the city that can be sensitively utilised to play a vital role in attracting investment and improving the city's economy and, by extension, the national economy. The availability of residential areas attractive to investors is essential to the economy of the city and action is urgently required to improve the management of areas, such as Karengata, that have not yet been destroyed by inappropriate development.

The main objective of this plan is to provide for **orderly, co-ordinated, harmonious and progressive development of the plan area to promote health, safety, order, amenity, convenience and general welfare of all the inhabitants as well as efficiency and economy in the process of development.** The plan covers all the area delimited as zone 12 by the City Council of Nairobi and referred to as Karen/ Langata. This plan will guide development for ten years with provision for reviews every three years.

This plan has made development proposals for the different zones and has identified specialized action plans that will boost this plan. These action plans are for; the Karen triangle, upgrading of Kuwinda, Environment Management Plan and Road improvement.

I am aware that the effectiveness of any plan is assessed on the results of implementation. This plan has incorporated an implementation strategy which defines the roles and responsibilities of all actors and commits them to joint action for effective implementation. The strategy defines a new approach to urban management that emphasizes co-operation between the public authorities and the community through its neighbourhood and resident associations. In this respect, I will urge all the partners involved in the preparation of the plan to move a step further and contribute to its implementation.

I wish to commend all those who participated in preparation of this plan.

MINISTER FOR LANDS

FOREWORD

Over the last few years, residents of Karengata have become increasingly alarmed at the accelerating and indiscriminate development that is taking place in the area, threatening its unique environment and natural resources. The Karen and Langata District Association (KLDA) attempted to respond by setting up a monitoring and advisory service to monitor development and provide advice to developers.

But we found that our efforts to manage and control development lacked a guiding legal framework. Residents were therefore delighted when the Physical Planning Department of the Ministry of Lands and Housing took up the challenge of co-ordinating the preparation of this Local Physical Development Plan (LPDP) to provide such a framework.

The LPDP was prepared with the full participation of residents and other stakeholders. Surveys were undertaken and public meetings held to obtain stakeholders' views on the various drafts of the LPDP. This final version reflects their opinions. However, as stakeholders have pointed out, all this effort will have been in vain unless the LPDP is implemented. The residents of Karengata, having taken part in its preparation, stand ready to work together with all other stakeholders to ensure its implementation.

We hope that the preparation of this LPDP will inspire other residents associations in Nairobi to do likewise and encourage the city planning authorities to work with them to achieve a better living environment for residents throughout the city.

GRAHAM ALDER
CHAIRMAN, KLDA

Acknowledgements

This plan would not have been accomplished without enormous contribution of the partners that participated in the exercise. My gratitude to the Minister for Lands, for the goodwill and personal support to the preparation of this plan. I am also grateful to my predecessor Mr. R.K Mbwagwa for his commitment towards this plan.

I want to commend the Karen and Langata District Association for the resilience they displayed in the whole exercise. I particularly single out their ability to initiate the Karen/ Langata District Association (KLDA) strategy which led to the preparation of this plan, which provides a good example to other neighbourhood associations.

I want to thank most sincerely the City Council of Nairobi for their participation throughout the plan making process and more so the goodwill accorded to the exercise.

I am grateful to the Nairobi City Water and sewerage company, the National Environment management Authority (NEMA) and the ministry of water and Irrigation for their valuable professional input.

My appreciation goes to all stakeholders who participated in one way or the other through meetings and written submissions in making this plan a success.

I want to thank all the professionals who took part in the preparation of this plan both individually and as members of the working and editorial teams.

Finally, I would like to record my gratitude to the staff of the Ministry of Lands and Housing under the guidance of the Permanent Secretary for their dedication, individually and collectively to the completion of this plan.

ROSEMARY W. WACHIRA
DIRECTOR OF PHYSICAL PLANNING

List of acronyms

LPDP	Local Physical Development Plan
CCN	City Council of Nairobi
CPD	City Planning Department
PPD	Physical Planning Department
MOL	Ministry of Lands
MLG	Ministry of Local Government
MWI	Ministry of Water and Irrigation
MRPW	Ministry of Roads and Public Works
NEMA	National Environment Management Authority
EIA	Environment Impact Assessment
EMP	Environment Management Plan
NCA	Nairobi Conservation Area
WRMA	Water Resource Management Agency
NWSB	Nairobi Water Services Board
NCWSC	Nairobi City Water and Sewerage Company
KCCT	Kenya College of Communications Technology
ADF	African Development Fund
KLDA	Karen, Langata District Association
RTA	Registration of Titles Act
RLA	Registration of Land Act
NMT	Non Motorised Transport
NPPLC	Nairobi Physical Planning Liaison Committee
OCS	Officer Commanding Police station
KPLC	Kenya Power and Lighting Company
MUSES	Moi University School of Environmental Studies
KDPC	Karengata Development Planning Committee
TPC	Town Planning Committee

AUTHORS

Chief coordinator:

R. K. Mbwagwa PPD

Coordinators:

Mr. T. G Ndorongo PPD

Mr.J.K Barreh/J.M Maina CCN

Editorial team

Ms. R. C. Kitur PPD

Ms. S. Wakeham KLDA

Ms. T.R Munyua PPD

Ms. L. I Simiyu PPD

Mr. M. Ondiek PPD

Ms. E. Nguah PPD

Mr. K. Oguya PPD

Mr. E. Agevi KLDA

Housing and Institutions

Ms. S.Wakeham KLDA

Ms. R. C. Kitur PPD

Mr. E. Agevi KLDA

Ms. A. Masese CCN

Mr. J.M Maina CCN

Commercial Development and roads

Mr. T. G. Ndorongo PPD

Mr. G. Alder KLDA

Mr. J. K. Barreh CCN

Mr. A. K. Rotich PPD

Mr. M. Ngaruthi LANDS

Eng. Mumo/ Muthama CCN

Water, Natural Resources and environment

Mr. M. Lane KLDA

Ms. T. R. Munyua PPD

Mr. T. Irungu MWI

Mr. P. M. Mwarania NCWSC

DR. F. Mwaura UON

Ms. R. Antipa NEMA

Ms. L. Simiyu PPD

Mr. H. Mukanga NEMA

Mapping

Mr. H. Ngomo SOK

Mr. K. Oguya PPD

Mr. E. Wamukaya PPD

KLDA strategy team

Mr. K. Karingi KLDA

Mr. M. Lane KLDA

Mr. K. Muigai KLDA

Dr. Uchakuwan MUSES

Mr. I. Bii MUSES

Mr. W. Barongo MUSES

Mr. M. Gone MUSES

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EXECUTIVE SUMMARY

The Karengata Local Physical Development Plan (LPDP) is a medium term plan lasting 10 years with a provision for evaluation after five years. Intermediate reviews will also take place at the end of years three, six and nine, when a new LPDP will be formulated if required. It has been prepared in accordance with Part IV of the Physical Planning Act, Cap 286, 1996. Once approved by the Minister for Lands and Housing, it will replace the 1988 Structure Plan by City Council of Nairobi and provide the legal framework for all planning and development decisions in the Karengata area.

The LPDP is the product of a new planning process based on wide consultation and participation of stakeholders that started in March 2004. It has been prepared by the Department of Physical Planning Ministry of Lands and Housing in conjunction with the City Planning Department, City Council of Nairobi using a participatory methodology in which stakeholders participated and were consulted at every stage of its preparation.

The Plan Area

The plan covers the area known as Zone 12 of the City of Nairobi, which is also the area covered by the Karen Langata District Association. The area is located to the south west of Nairobi city, adjacent to the rapidly urbanising peri-urban areas of Ngong, Kiserian and Ongata Rongai. It occupies an area of approximately 56 square kilometers and is bounded by the Motoine River to the North, the Mbagathi River to the south, the Magadi and Forest Edge roads to the east and the city boundary with Kiambu district to the west.

Justification for the Plan

Once the most prestigious residential area in Nairobi, Karengata is now under threat. The recent surge of unregulated and environmentally damaging development led residents to call for urgent action before the area's living environment suffered irreversible decline. At the same time, the planning authorities have initiated the preparation of the Nairobi metropolitan development strategy to provide an overall framework for improving the quality of development and reversing the deterioration of the city as a whole.

Karengata offers a number of opportunities that make it a good place to undertake a local planning exercise. The fact that there are still large plots of undeveloped land remaining offers the possibility for intervention to demonstrate a more appropriate and environmentally friendly approach to land subdivision and development. In addition, the area has many pro-active, able and organised residents willing to contribute their resources in support of appropriate and against environmentally damaging development. It will therefore be most likely to succeed and be an example that others will be willing to follow.

Most importantly, the area is an asset to the city that can be sensitively utilised to play a vital role in attracting investment and improving the city's economy and, by extension, the national economy. The availability of residential areas attractive to investors is essential to the economy of the city and action is urgently required to improve the management of areas, such as Karengata, that have not yet been destroyed by inappropriate development.

The metropolitan development strategy will provide a framework for the city as a whole in which the primary function of all areas of the city will be determined and development strategies prepared for them. The LPDP describes a role for Karengata in the city and the spatial framework and planning strategies to ensure that it will develop according to this role.

Stakeholders Vision for the Future of Karengata

Consultations with established residents and new developers revealed that they were all attracted to the area because of its peaceful character, pleasing natural environment and diverse but harmonious population. Their vision is that these characteristics should be sustained and that the area should remain predominantly residential and be a safe, peaceful and ecologically friendly place in which to live, to bring up children and to attract visitors.

However, in the last three years, stakeholders have witnessed with alarm the increasing indiscriminate, illegal and unsustainable residential, institutional and commercial development that is threatening the realisation of this vision.

They see this vision being realised through a community development approach that emphasises safety and security and the careful management of new development, public services, natural resources and local ecosystems.

This situation is reflected in all areas of the capital city. In realising their vision for the future of Karengata, stakeholders wish to make a positive contribution to achieving a new vision for Nairobi as a whole. This is a vision of a new urban order that will ensure the effective participation of citizens in urban planning and management, achieve a balance between individual and collective interests, and encourage a positive relationship between the public authorities and the private and community sectors.

Objectives

The overall objective is to prepare a development framework that will provide for: **orderly, co-ordinated, harmonious and progressive development of the plan area to promote health, safety, order, amenity, convenience and general welfare of all the inhabitants as well as efficiency and economy in the process of development.**

The specific objectives of the plan are to:

- Replace the 1988 Structure Plan and Rezoning Ordinance.
- Provide a basis for urgent action to stop inappropriate and illegal development.
- Encourage development that preserves and enhances the area's natural environment.
- Provide a basis for guiding investment and encouraging good quality development.
- Improve infrastructure for the growing population.
- Provide a framework for implementation, enforcement, monitoring and evaluation.
- Provide information and experience to inform the preparation of the metropolitan development strategy.

Plan Contents

The Plan is divided into four main parts:

Part 1 includes the justification, vision and objectives of the plan, the methodology, scope of the plan and the legal and institutional framework.

Part 2 contains a comprehensive analysis of the social, cultural, economic, environmental and physical aspects of the plan area, its development typology and public utilities, based on field surveys undertaken by the planning team during 2004. The main trends and issues arising from the analysis are identified and discussed.

Part 3 defines the spatial and strategic framework to guide all new development in the area based on the trends and issues identified through the analysis of the existing situation described in Part 2.

The spatial framework is based on major structuring elements including the main physical and natural features such as the river valleys and forests, the road network and the surrounding areas. It also includes five zones that have particular characteristics in terms of their natural resources, development typology and provision of services as defined in Part 2.

The strategic framework contains two types of strategies: universal strategies that apply to the whole of the plan area and strategies that are specific to each zone. Universal development strategies are outlined under three main headings:

- **The management of natural resources**, including the preparation of an Environmental Management Plan to ensure the better management of the area's terrestrial and wetland biological diversity and ecosystems, ground and surface water resources.
- **The management of public utility services**, including the public water supply, sanitation, solid waste, electricity, roads, footpaths and public transport.
- **The management of land use and development** for low and high-density housing, education, public purposes, recreation and commercial development.

Part 4 contains the implementation matrix setting out the actions that must be taken in order to implement the strategies described in Part 3, the actors that will be involved, the outputs expected, the time frame and the resources required for the production of these outputs.

The proposed approach to implementation that continues the participatory process initiated through the preparation of the plan is also described. As most stakeholders have pointed out, the LPDP will be worthless unless it is implemented.

An "Urban Pact" which defines the roles and responsibilities of all actors and commits them to joint action for effective implementation, is proposed. The Pact defines a new approach to urban management that emphasizes co-operation between the public authorities and the community through its neighbourhood and resident associations working in tandem with the relevant public authorities.

1.0 Introduction

1.1 Overview

The Local Physical Development Plan (LPDP) is a medium term plan covering the period 2005-2015. It has been prepared in accordance with Part IV of the Physical Planning Act, Cap 286. Once approved by the Minister for Lands and Housing, it will provide the legal framework for all planning decisions in the Karengata area.

This plan has been prepared by the Ministry of Lands and Housing (MLH), coordinated by Physical Planning Department (PPD) in conjunction with the City Planning Department (CPD), City Council of Nairobi (CCN) and the Karen and Langata District Association (KLDA) using a participatory methodology in which stakeholders were consulted at every stage of its preparation.

The Plan is divided into four parts:

- **Part 1** includes the justification, vision and objectives of the plan, the methodology, scope of the plan and the legal and institutional framework
- **Part 2** contains a comprehensive situation analysis and identifies trends and issues
- **Part 3** defines the proposed plan, the spatial framework for the area and the specific strategies that will be applied to address the issues identified in Part 2.
- **Part 4** proposes an institutional framework and outlines the roles and responsibilities of key actors in the implementation of the plan.

1.2 Justification for the Plan

The preparation of the Karengata LPDP was necessitated by several factors: First, the 1988 Structure Plan for the area is now outdated and does not provide an effective instrument to respond to dynamic development trends. It is intended that the LPDP will provide such a framework.

Secondly, the LPDP by providing a framework for involvement of residents in planning and development control offers an opportunity to test the benefits of working with residents associations in development management. The area has pro-active and organised residents willing to contribute their resources in support of appropriate planning initiatives and against environmentally damaging development.

Third, Karengata by virtue of its spatial nature offers a number of opportunities that make it a good place to undertake the local planning exercise. The large plots of undeveloped land offer the possibility for intervention to demonstrate a more appropriate and environmentally friendly approach to land development. The plan area also does not exhibit the negative development trends visible in other parts of the city and this presents a unique opportunity to demonstrate the beneficial effects of careful environmental planning and management and the adoption of eco-friendly approaches to the built environment.

Fourth, Karengata plays a significant role in the city of Nairobi as a choice residential location. The area is therefore an asset to the city that can be creatively and sensitively utilised to play a vital role in attracting investment and improving the city's economy and, by extension, the national economy.

Fifth, Karengata remains among the few low density residential areas in the city as other areas such as Kilimani, Westlands and Kileleshwa have slowly been transformed to commercial and office use. There is need therefore to preserve this inherent quality in the plan area.

Lastly, aware that urgent action is required to reverse the deterioration of the city, the planning authorities have initiated the preparation of the Nairobi Metropolitan Growth Strategy (NMGS) to provide an overall framework for the improvement of the quality of development in the metropolitan area as a whole. It is anticipated that the lessons learnt in the formulation of the LPDP will inform the preparation of the broader strategy.

1.3 The Vision for Karengata

The vision for the future of Karengata is the result of discussions between planners, stakeholders, including residents, aspiring residents and developers, on the future role of Karengata within the metropolitan area. Stakeholders, including neighbourhood associations, interest groups such as market traders, kiosk and shop owners, individual experts in the community and representatives of educational and religious institutions were all consulted on their concerns and aspirations for the area.

It was agreed that Karengata should be:

- **A high quality, low-density residential area** that will be a peaceful, secure and attractive place to live and bring up children. As such it will contribute to the city's ability to attract both national and international investment and thus to the economic growth of the city and the nation.
- **A place that will attract tourists.** Visitors are already drawn to the area because of its history and the appeal of its natural environment and various tourist attractions. These should be enhanced and new recreation, tourism and public facilities created to attract visitors to come to and stay in Nairobi.
- **An "eco-suburb".** The preservation and enhancement of the area's natural environment including the surrounding Nairobi National park, Ngong, Ololua forests and Mbagathi river.

Their vision is that these characteristics should be sustained and that the area should remain predominantly residential and be a safe, peaceful and eco-friendly place to live, bring up children and visit.

They see this vision being realised through a community development approach that emphasises safety and security and the careful management of new development, public services, natural resources and local ecosystems.

1.4 Objectives

The overall objective is to prepare a development framework that will provide for: **orderly, co-ordinated, harmonious and progressive development of the plan area to promote health, safety, order, amenity, convenience and general welfare of all the inhabitants as well as efficiency and economy in the process of development.**

The specific objectives of the plan are to:

- Replace the 1988 Structure Plan and Rezoning Ordinance.
- Provide a basis for urgent action to stop inappropriate and illegal development.
- Encourage development that preserves and enhances the area's natural environment.
- Provide a basis for guiding investment and encouraging good quality development.
- Improve infrastructure for the growing population.
- Provide a framework for implementation, enforcement, monitoring and evaluation.
- Provide information and experience to inform the preparation of the metropolitan development strategy.

1.5 Methodology

The preparation of the LPDP was initiated by the area residents through the Karen and Langata District Association (KLDA). They collected data with the help of students from Moi University School of Environmental Studies (MUSES) and prepared a development strategy for the area. The MLH responded to this initiative by proposing the preparation of an LPDP for the area and took up this task under the coordination of the Director of Physical Planning. The Ministry invited other collaborating partners including the CCN, the Ministry of Water and Irrigation (MWI), the National Environment Management Authority (NEMA) and KLDA to constitute a team to prepare the Plan.

Separate working teams were formed to examine the following themes:

- Housing and institutions
- Commercial development, traffic and road infrastructure
- Water, sanitation, natural resources and environment.
- Mapping

Stakeholders were involved throughout the entire planning process, which started on 18th March 2004, when the Notice of Intention to Plan was published in the Daily Nation. They took part in informal discussions and participated in the following stakeholder meetings:

- First stakeholders meeting, held on 25th May 2004
- Values/visioning meeting, on 1st July 2004
- Second Stakeholders meeting, on 8th December 2004.
- Map verification, on 26th and 27th January 2005.
- Third Stakeholders meeting on 24th February 2005
- Review of the third stakeholders meeting with the City Council of Nairobi technical team held on 8th March 2005.
- Plan advertised for comments from the public on 9th May 2005.

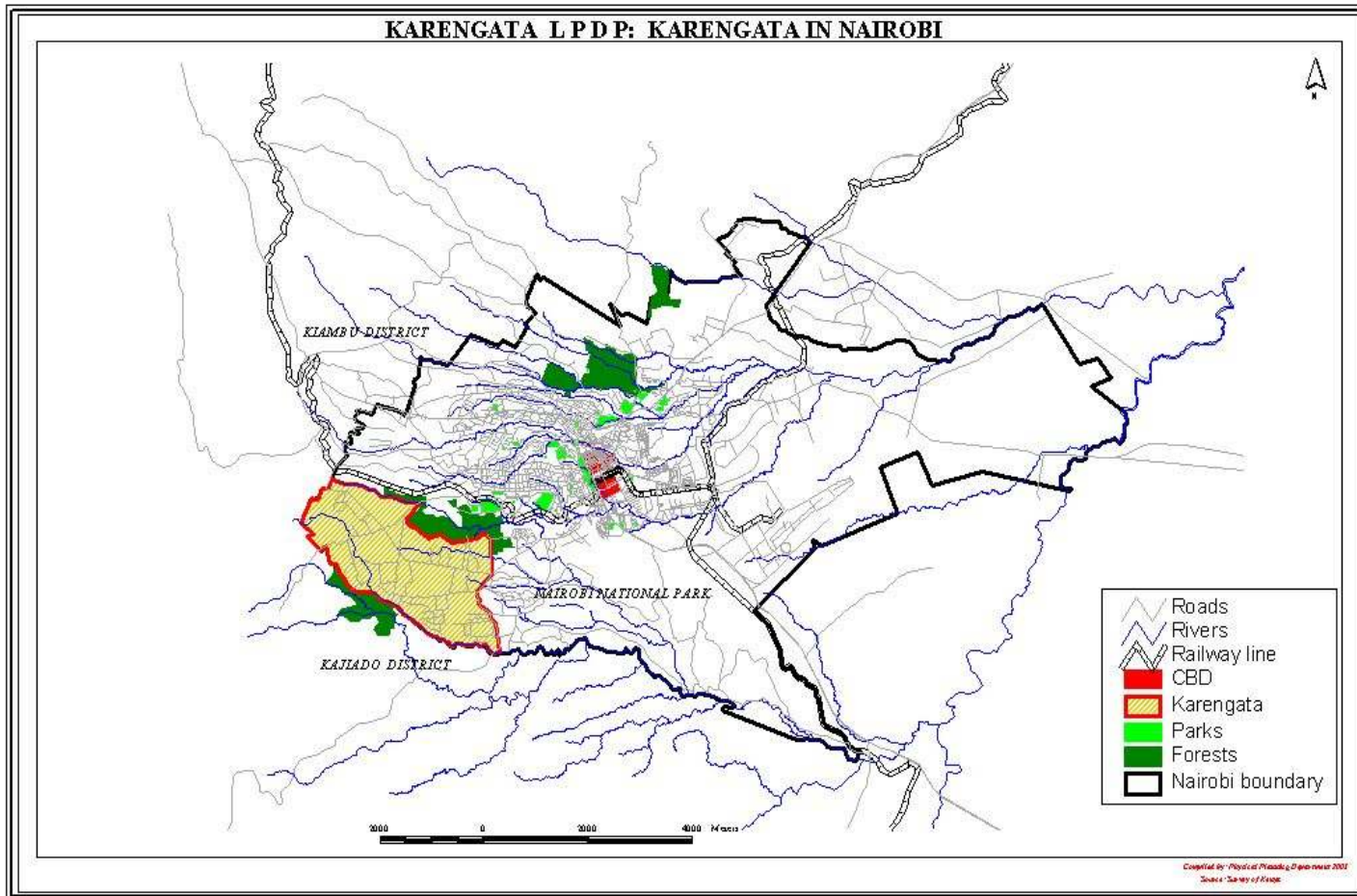
In addition, the plan was presented at a number of consultations and strategic meetings with leaders of neighbourhood associations in the area.

1.6 Scope of the Plan

The plan covers all the area known as CCN Zone 12. The area is located within Langata Constituency and Langata Division. It covers two locations, Karen which has two sub locations: Karen and Lenana, and Langata location which has two sub-locations: Langata and Hardy. It is also the area covered by the KLDA. In order to single it out as a separate planning area it has been given the name **Karengata**.

The Karengata area is located to the south west of Nairobi city between the city and the rapidly urbanising peri-urban areas of Ngong, Kiserian and Ongata Rongai. The boundary of the area is the Motoine River to the north, the Mbagathi River to the south, the Magadi and Forest Edge roads to the east and the city boundary with Kajiado district to the west. The area occupies approximately 56 square kilometres. [See map 1.1 and 1.2](#)

Map 1.1 Karengata in Nairobi



Map 1.2 Karengata and environs



1.7 The Legal and Institutional Framework

The legal framework:

The plan has been prepared under provisions of the Physical Planning Act, Cap 286 of the laws of Kenya. Section 24 of the Act states that *“the Director may prepare, with reference to any government land, trust land or private land within the area of authority of a city, municipal, or town council or with reference to any trading or marketing centre, a local physical development plan”*.

The implementation of the plan will be undertaken within the provisions of the Physical Planning Act and the Local Government Act, Cap 265. The latter governs the operations of local authorities and empowers them to formulate various regulations and by-laws relating to the use of land and control of development. Other laws that are applicable to the implementation of the LPDP include the Government Lands Act and the Land Control Act which govern the use and administration of land; the Water Act, 2002; the Environmental Management and Co-ordination Act, 1999 and the Forest Act among others.

The institutional framework

In Kenya there exists a multi level institutional structure for the physical planning function. The Director of Physical Planning is responsible for the preparation of all regional and local physical development plans. However, local authorities who have planning units have delegated powers from the Director to undertake the preparation of these plans. Local authorities are also mandated to carry out land use planning and development under section 166 of Local Government Act. Under the Physical Planning Act, different levels of liaison committees have been established these are:

- The National Physical Planning Liaison Committee
- The Nairobi Physical Planning Liaison Committee
- District Physical Planning Liaison Committee
- Municipal Physical Planning Liaison Committee

The National Physical Planning Liaison Committee advises the Minister on broad physical planning policies and planning standards among other functions. The rest of the committees perform several functions among them, hearing appeals lodged by persons aggrieved by decisions made by the Director or local authorities. Other government agencies directly involved in physical planning are: Urban Development Department, local authorities, NEMA and regional development authorities.

2.0 Situation Analysis

2.1 Overview

The following analysis of the social, cultural, economic, environmental and physical aspects of the plan area, its development typology and public utilities, is based on field surveys undertaken by the planning team during the year 2004.

The team analysed secondary data and information collected in the field. The main trends and issues arising from these analyses are presented below.

2.2 Historical Perspective

The Plan area has a long history dating back to the 1920's when Karen Blixen, from whom the name of the area is derived settled here on a 6,000 ha.. farm. The area was originally an agricultural farmland until after 1945 when it was subdivided into 5-40 acre parcels and sold to the colonial government officials and ex-British forces. In 1963, the City Council boundaries were extended to include the Karen/Langata area. While the area continued to remain largely rural in character, the main land use was beginning to change from agricultural to residential, yet there was no comprehensive plan to guide the transformation from agricultural to urban residential. A chronology of events since then maybe summarised as follows:

- **After 1963** other races came into the area resulting in further subdivision and more developments. Development control was the responsibility of the CCN but there was no comprehensive plan to guide the transformation from agricultural to urban residential use.
- **In 1973**, the Nairobi Metropolitan Growth Strategy recommended that the Karengata area should continue to be a high-income, low-density residential area.
- **1980** more subdivisions were witnessed; Ngong View Estate was subdivided into 5 acre plots out of the original 200 acres.
- **1987** The CCN took over the responsibility for supplying water to the area from the Ministry of Water.
- **1988**, the zoning guidelines reduced minimum plot sizes to 0.4 ha in the areas south of Langata and Dagoretti roads and 0.2 ha to the north of the same roads. CCN's intention was to make plots in the area more affordable to middle income Kenyans, to increase the population and the income from rates and water service charges.
- **1993** there was notable increase in land uses and more specifically smaller residential plots.
- **1999** The population and housing census estimated the population of the area to be approximately 26,000.

Today, Karengata is one of the most desirable residential locations in Nairobi. The main attractions are the large plots and the pleasant environment. The same attributes however are responsible for the development pressure the area is experiencing.

2.3 Physical Features and Natural resources

An in-depth analysis of physical features and natural resource base provides the foundation for plan formulation. The physical features to a large extent determine settlement patterns, transportation networks and other economic activities.

2.3.1 Climatic conditions

These are the same as for Nairobi as a whole with some small variations in terms of rainfall. An analysis of rainfall records from different locations within the plan area shows that rains are heavier and more consistent in the east. The less forested area to the west receives less rainfall and is generally drier.

2.3.2 Geology and relief

The topography is fairly subdued, with elevations falling to the east. The most prominent topographic feature is the valley of the Mbagathi River, which forms the southern boundary of the plan area. The area is characterised by extensive faulting, running in a north-south direction and conforming to the rift system. Faulting is of Pliocene age. However, some of these faults have been rejuvenated by neotectonic activity and in the western part of the plan area represent a seismic active zone. The volcanic rocks of the area thicken rapidly westwards towards the edge of the Rift Valley, where the maximum thickness is represented by the Ngong Hills.

2.3.3 Soil conditions

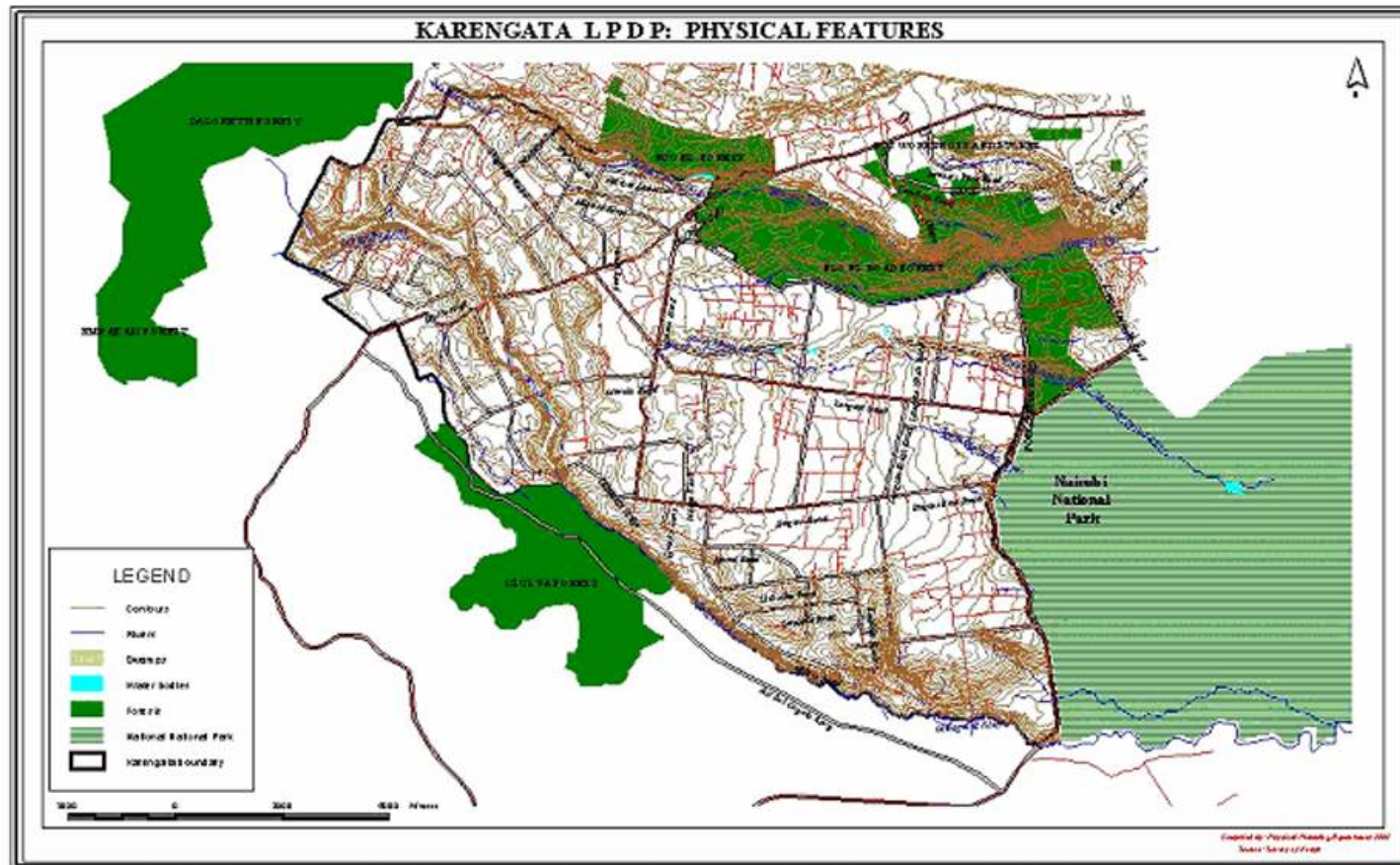
The soils in the plan area are varied ranging from deep well-formed red soils in the north west to relatively shallow sodic alkaline soils in the south east. Predominantly loamy and black cotton soils. The valley bottoms are characterised by fluvisols developed on layered alluvial deposits making them very variable for construction purposes. The area has scattered parts of almost bare soil especially in the open area next to Redbrick Road, south of Karen Plains. Such areas are vulnerable to soil erosion and are a source of dust in their neighbourhoods.

2.3.4 Vegetation, terrestrial biodiversity and ecosystems

The plan area is predominantly plains grassland with shrubland, woodland, relict riparian forest along the Mbagathi, Mokoyeti and Motoine rivers and forest patches around Tree Lane, Forest Road and Mwituu Estate. These forested areas together with the Ngong Road and Ololua Forest ecosystems are important genetic reservoirs in the area. The forest ecosystems are rich in wildlife, particularly primates, birds and invertebrates.

A comparison between aerial photography taken in the area in 1948 and 1998 shows that the area covered by grasslands has reduced by 21% and that covered by woodland has increased by 31% in the same period. The area occupied by indigenous forest has reduced but mainly been replaced by exotic species so that the total area occupied by forests has not reduced significantly. The plan area shows a trend towards increased tree cover over the past five decades mainly as a result of tree planting by private land owners. As in the rest of Nairobi, the plan area is currently dominated by a large number of exotic plant species.

Map 1.3 Physical feature



The accelerating and haphazard development activity currently taking place in the plan area is posing a considerable threat to terrestrial bio-diversity and ecosystems. The main issues arising from this are listed below.

- The Ololua Forest and parts of the Ngong Road Forest not included in the sanctuary, are being encroached by rapid development
- The remaining relict riparian forest along the alignment of the Mbagathi and Motoine rivers, most of which is on private plots, is under threat from increasing subdivision of riverside plots (private plots span the rivers in some places).
- Tree cover has increased in the plan area but indigenous species are being replaced by exotic species, which has an adverse impact on biodiversity and local ecosystems.
- High plot coverage of small plots leaves less room for tree planting and will result in reversing the trend towards increased tree cover in the long term.

2.3.5 Wetland biodiversity and ecosystems

There are two perennial water sources in the plan area: the Mbagathi and Motoine rivers. The Mbagathi rises in the Dagoretti forests, flows along the southern boundary of the plan area, the southern boundary of the Nairobi National Park and on to Athi River Township where it joins the Stony Athi River. The Motoine River rises in the Dagoretti Forest, Kiambu District; and flows along the northern boundary of the plan area through the Ngong Road Forest and into the Nairobi Dam.

There are a number of ephemeral water sources in the area. Prominent among them is the North Mokoyeti River, which arises as the discharge from the Karen oxidation ponds and flows eastwards, north of the Langata Road and into the Nairobi National Park north east of Bomas of Kenya.

The proliferation of development has led to significant exploitation of the Mbagathi and North Mokoyeti rivers. Although no up-to-date information is available, there are numerous accounts of illegal abstraction particularly from the Mbagathi River, but without regular monitoring it is not possible to establish how significant this is.

There is considerable empirical evidence to suggest that river flows are declining and rivers are drying up. There is also:

- Evidence of stream bank erosion along the Mbagathi and Mokoyeti rivers.
- Evidence of poor water quality in the Mokoyeti River, due particularly to source inflows from the Karen oxidation pond.
- Evidence of widespread encroachment of floodplain areas and riparian buffer zones along the Mbagathi and Mokoyeti Rivers, due to conflicting legislation regarding the utilization of such environments and poor enforcement of such controls as exist.
- Discharge of “grey water” by institutions and some private landowners into some waterways, such as the North Mokoyeti River.
- Evidence of deterioration of aquatic habitat quality in areas of agricultural land use, especially along the Mbagathi River.
- The sources of rivers and streams in the plan area are greatly threatened by development activity, especially the loss of indigenous forest cover in the upper catchments.

- There is evidence of few inland (palustrine) wetlands in the area, the sizes of which appear to have decreased significantly in the recent past.
- The series of upstream flood plain wetlands along the North Mokoyeti were found to be seriously threatened by cultivation and grazing, despite playing a vitally important hydrological role for the river in terms of recharge and water purification.
- The constructed wetland at the Karen Country Club has created a good habitat for avifauna, but there is a need to establish the efficiency of wetland macrophytes in waste stripping; and a need to explore opportunities for suitable utilization of “tired” macrophytes (particularly *Phragmites spp.*).

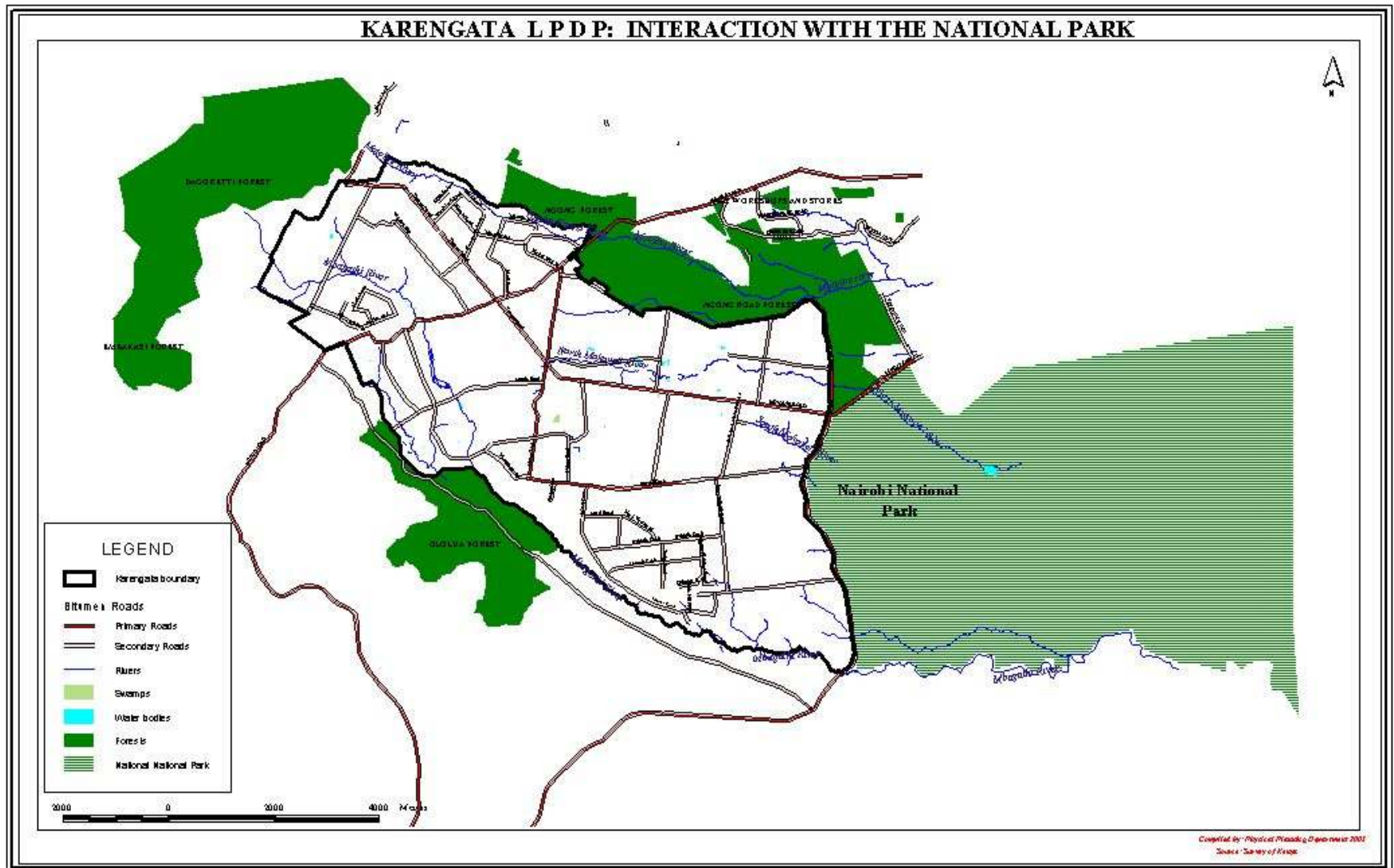
It is evident that the activities in the plan area have a bearing on the surrounding areas notably the National park which depend on the rivers (Mbagathi and Mokoyeti) flowing through the area. The activities on the upper parts of these two rivers directly impact on the sustainability of the flora and fauna in the National park. Map 2.2 shows the rivers that flow through the plan area into the park while plate 1 shows one of the rivers upstream.

Plate 1 one of the tributaries of Mbagathi River



Plate 1 shows one of the tributaries of Mbagathi River at the boundary of the plan area and Ngong. If the riverine vegetation is tampered with, the survival of the river will be jeopardized.

Map 2.2 Interaction with the National park



2.4 Socio-economic and Cultural Analysis

The socio-economic and cultural aspects of the plan area form the basis for the plan as they give an indication of the population characteristics, economic activities and the value systems of the residents.

2.4.1 Population Growth, Trends and Projections

The plan area has had low population growth as compared to the rest of the city. This is evidenced by the low densities in the area as compared to the rest of the city. What should not be missed however is the doubling in densities since 1969 rather than the generalized low densities as shown in the table below.

Table 1.0-Population Size, Growth and Structure over inter-censal years

Year	Male	Female	Sex ratio	Total Population	No. of Households	Area (km ²)	Density	% Change
1969	6312	4187	1.5:1	10,499	-	60	161	
1979	8347	4765	1.7:1	13,112	2081	74	176	29
1989	12,135	7,457	1.6:1	19,592	5,980	73	268	49
1999	15,236	10,646	1.4:1	25,882	8,432	71.8	360	32

Source: Population Census Reports, 1969,1979,1989,1999 CBS.

The growth trends show the highest percentage change in the inter-censal years of 1979 and 1989. The period 1989-99 shows a reduction in the percentage change yet evidence on the ground reveals that this is the period in which the greatest influx of migrants to the area occurred. This in essence questions the results of the 1999 census given that the sex ratios lean heavily towards dominance of males, implying that this growth is not a result of natural increase. This figure also does not take into account the day-time population for the plan area as well, since the census count is a nocturnal activity. The 1999 census results are thus considered conservative and would therefore be misleading for future projections unless they are rationalized with field analysis.

Field surveys conducted in the plan area show that there is a hidden population mainly drawn to the plan area by the educational, religious and commercial institutions. A breakdown of the results gives the following estimates that would most probably guide the future population estimates.

Table 2.0 Population generated by institutions in the plan area

Type of institution	Total no. in plan area	Average no. of pupils	Total no. of student popn ¹	Ave. no. accommodated in school	Total no. accommodated in sch.
Nursery, pre-primary and kindergarten	8	120	960	6	48
Nursery and Primary School	2	220	440	83	116
Primary school/Secondary School	20	540	10,800	376	7520
Tertiary/College	24	620	14,880	380	9120
Total	54	1500	27,080	845	16,804

Source: Field surveys, 2004

This in effect implies that such institutions generate an additional hidden population of around 16,000 persons. It is also estimated that there are some 30 high-density housing settlements in the area the largest of which is Kuwinda with approximately 800 units. The other settlements are estimated to contain approximately 1,500 units. Using an average of 3.5 people per unit, this gives an estimated population of approximately 8,000 living in high density housing in the area. The same applies for the 3 large flower farms and cottage industries in the plan area. Working on the assumption that the flower farms employ about 200 persons who do not reside in the plan area, while 2 cottage industries generate around 100 non-resident population, and then we have a working figure of 24,800 hidden population. This is 69% of the total estimated population for the plan area in 2005. This indicates that the figure of 35,691 is an underestimate.

Projections for Plan area

Based on the inter-censal growth rate for Nairobi City of 4.7% per annum, projections for the plan area show that by the year 2015, the population will have hit the 50,000 plus figure. However, estimates derived from field analysis show that this population will have reached 74,000 at the end of the plan period.

Table 3.0 Projected Population to the year 2015

	Base Year (1999)	Plan Year (2005)	2010	2015
Based on city rate of 4.7%	25,882	35,691	40,945	51,459
*Based on estimates	-	35,961 +24,800 (60,761)	68,077	76,246

Source: CBS, 1999 census figures, and Field surveys

*Estimates based on a hidden population of 24,800 growing at 2.3% (half rate of overall city growth rate)

Planning for the population in Karen will thus inevitably mean planning for a population higher than the census population.

The characteristics of the population have also changed over the years. Originally an area of large farms managed by Europeans, the area is now mainly residential with a majority Kenyan population. The expatriate population, once mainly owner occupiers, is increasingly composed of expatriates on contract, living in the area as tenants. The Kenyan majority mainly consists of retirees and high and middle-income owner occupiers. It also contains a substantial low-income population working as domestic staff, gardeners, other ancillary staff, security personnel and construction workers.

2.4.2 Economic Analysis

The economic activities of the area are influenced by the predominant land uses of residential, educational, public purpose (mainly religious) and agricultural.

Major employers include schools and other educational institutions, flower farms, cottage industries, commercial centres, Petrol filling stations, garages, construction sites, security firms and the residents. The latter typically employ at least two domestic staff, drivers and gardeners on a permanent basis, and a number of casual workers. In addition, informal trading activities along the major roads such as furniture displays and sales, curio shops, animal feed sales, building materials offer significant levels of

employment. It should be noted however that, the plan area’s most significant contribution to the economy of the city is that it provides calm and a desirable place to live in.

2.4.3 Security

Security is an issue of major concern in the plan area as it is in the wider city. In response to the increase in crime and concern about personal safety residents have formed neighbourhood watch structures under two security trusts, Hardy and Karen.

The concern for personal security and the cost of security measures to the individual residing on a separate plot is leading to an increasing trend for security barriers to protect housing estates. A number of neighbourhood groups have developed to provide barriers and security services to their neighbourhoods. It is also having an effect on the physical design of housing as the one house per plot is being replaced by an increasing demand for multi-dwelling units surrounded by walls and electric fences and protected by security companies.

The other aspects that have a bearing on security are the proliferation of kiosks and the many informal footpaths that have developed over the years and traverse much of Karengata. Kiosks can be a cover for criminals who may use them as places to hide or from which to observe potential targets for robbery. The footpaths, while facilitating the movement of people between their homes and places of work, also provide access and escape routes for criminals.

The resources available to the Provincial Administration and the Police are inadequate. The Police are also inadequately represented in the area. There is one police station with an OCS at Karen shopping centre and two police posts at Hardy shopping centre and Karen Plains. All are inadequately resourced in terms of manpower, vehicles and other facilities.

As a result of the factors above individual residents provide their own security measures the cost of which are quite prohibitive as shown in Box -1

Box 1: An analysis of the cost of security (in Kshs)

To provide security for themselves residents will:	
• Put up stone wall	200,000
• Install alarm system	200,000
• Burglar proof their homes	250,000
<i>The costs above are one off costs</i>	
<i>The costs below are recurrent costs</i>	
• Security lights	3,000(bill per month)
• security dogs (cost and upkeep)	80,000/ year (one dog)
• Hire security guards	240, 000/year
• Total cost	973,000

Source: Stakeholders meeting 2005

2.4.4 Institutional analysis

Information was collected on who is involved in development efforts in both the public and private sectors in the plan area.

Development, especially that related to land is a multi-sectoral activity and brings into play several institutions. In the plan area, key institutions such as CCN, MLH, NEMA, the Nairobi City Water and Sewerage Company (NCWSC) and the Provincial administration, in addition to the 14 residents associations play important roles as illustrated in the diagram below.

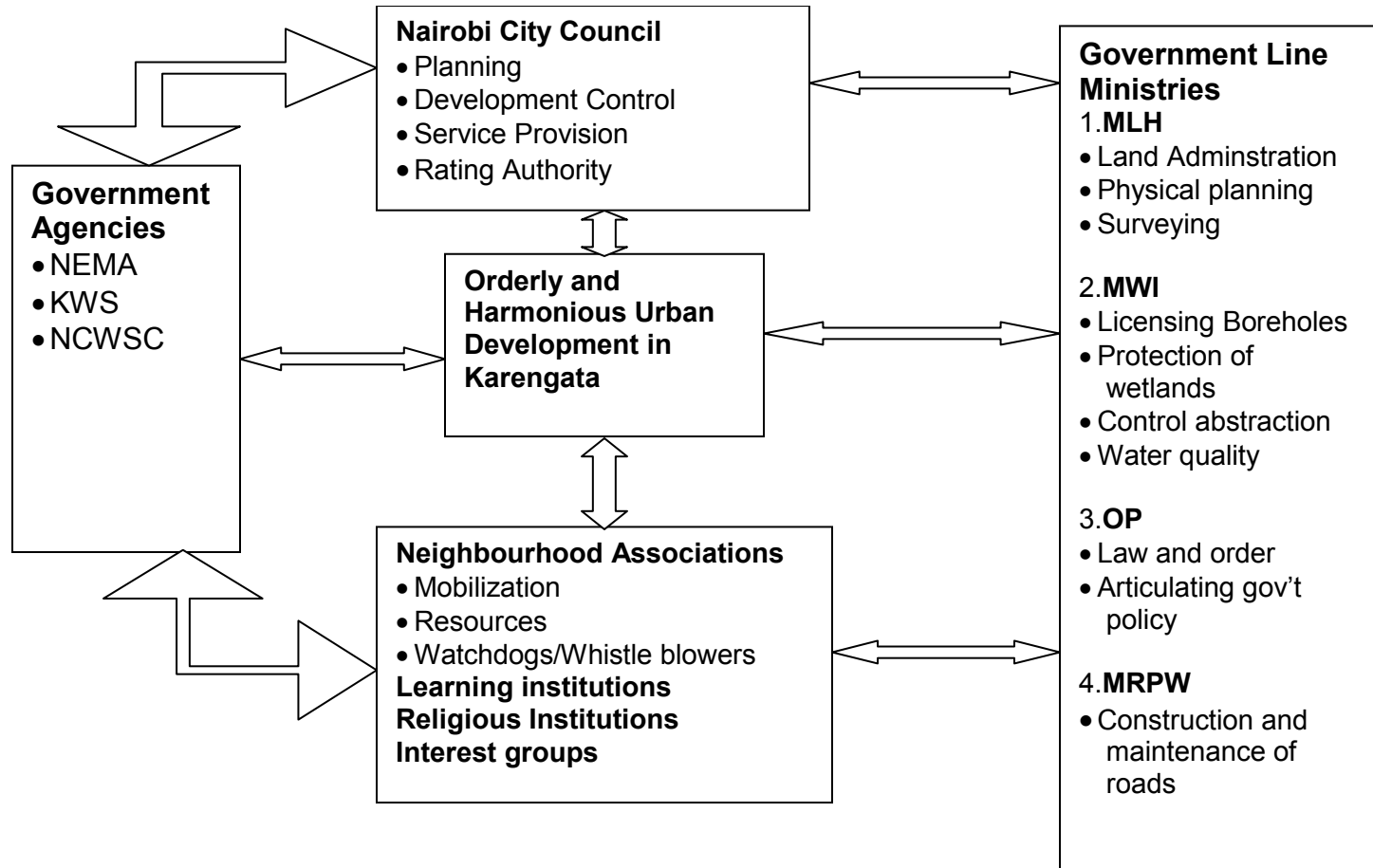
The local residents associations have been established for the purpose of providing themselves with services such as water, roads and security. These associations cover a limited area and tend to concentrate on the provision of one or more of these services. Some are also concerned with their overall living environment and have started to advocate for the conservation of the environment and building standards in their neighbourhoods.

However most of these associations, as currently organised, have a limited capacity to take on more obligations as they rely mainly on volunteers and have few other resources to expend on development issues. Map 2.3 shows areas covered by residents' associations.

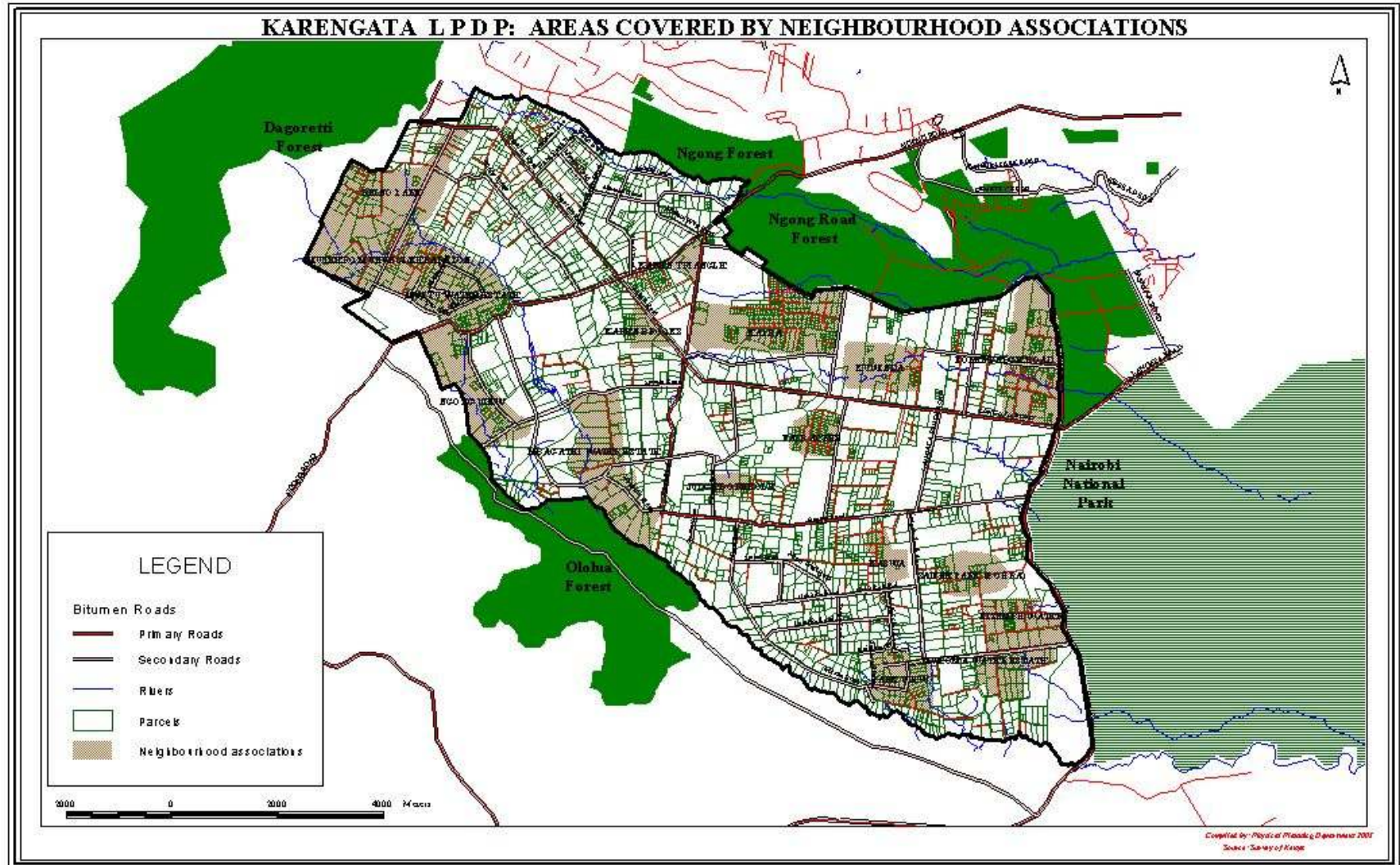
The private sector's efforts in support of local development initiatives have been minimal to date. Although most institutions based in the area have considerable resources, few appear to be prepared to contribute some of these to support community initiatives. There are obviously notable exceptions such as Don Bosco's efforts to help the community living in Kuwinda and to provide water to other low-income communities in the area. The Catholic University is also aware that its status as a big landowner in the area suggests that it should contribute to local development efforts.

The private enterprises in the area, particularly those involved in activities related to tourism, are very aware of the need to preserve and enhance the local environment and many have expressed a willingness to support environment related initiatives. All of these efforts require direction and a framework for action that can be provided by the LPDP. Chart 1 shows a schematic arrangement of the institutions that operate in the plan area.

Chart 1
Institutional Interactions in the Plan Area



Map 2.3 Areas covered by neighbourhood associations



2.5 Public Utilities Analysis

2.5.1 Water supply

An inadequate supply of water to residents is the most critical single impediment to development in the plan area. Despite the completion in the late 1980's of the NCC managed Karen and Langata Distribution Project, mismanagement, vested interests and theft from illegal connections has meant that supply has declined since the project was completed. As a consequence, residents have come to rely on alternative sources of water, including groundwater and surface water sources, and harvesting rainwater.

Using the population projections in the previous section, the projected water demand will be as shown in Table 4.0.

Table 4.0 Projected Domestic Water Demand

Year	2005	2010	2015
Projected population	60,761	68,077	76,246
Water Demand(M ³ /d)	7254	8309	9490

Source: Field Survey, 2004.

Assumptions

- 1. Average household size 5 persons*
- 2. Hidden population of 24,800*
- 3. Hidden Population constitute low income employees demanding 75lc/d*

The projected 1995 population used in the 1984 study was 44,503 and projected total water demand was 13,243 m³/d. This population increase specifically assumed better water availability.

The 1999 census figure of approximately 26,000 is equivalent to a demand of approximately 7,440 m³/d. Current actual demand is estimated to be approximately 9,430 m³/d; given the difference between projected 1995 and actual population this appears to be reasonable.

The NCWSC, which has now taken over from the CCN as the water undertaker for Nairobi, estimates that it is now supplying 1,880 to 2,350 m³/d or 20 to 25% of current demand. The installed capacity of public water supply infrastructure in Karen Langata has been designed to meet demand to the year 2010 (population 107,000). The actual volume of water that this represents is not known, but would be approximately 31,850 m³/d. However, improvement to the existing water supply is expected to be achieved by streamlining existing systems and improving institutional infrastructure.

Long-term improvements will depend on the completion of the Nairobi Phase III water system, including additional storage at Dagoretti and Karen, the completion of the Kenyatta Avenue pumping station and extension to distribution pipework as well as improved management and operation of the system. After 2010, the additional bulk water resources planned to be provided under the Nairobi Phase IV or Northern Collector Project will be required. It will be necessary to commence planning for this in the very near future if additional resources are to be made available in the post 2010 period.

2.5.2 Abstraction of groundwater

Due to the lack of an adequate piped water supply, groundwater resources remain an important, source of domestic, institutional and irrigation water supply in the plan area.

The source of groundwater in the plan area is the Upper Athi Series with an estimated thickness of approximately 260 m. Data for boreholes, their depths and test discharges has been collected from a variety of sources and show that between 400 and 440 boreholes have been drilled in the plan area giving a concentration of greater than seven boreholes per km². This is one of the highest densities in the country. However, only 60% of these are operational.

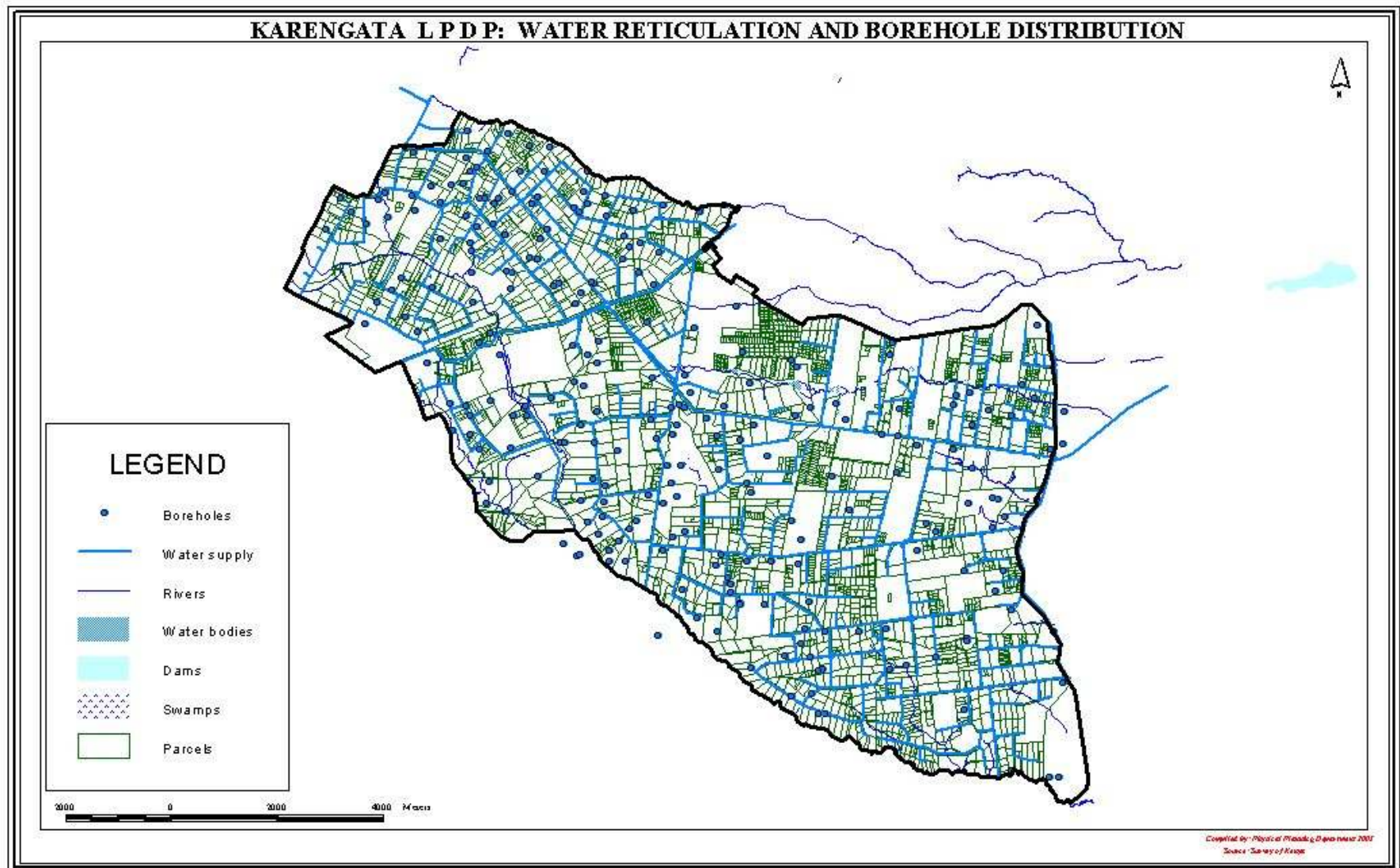
A number of older boreholes drilled to intermediate depths (< 120 m) have dried up with water levels falling below the base of the hole as the shallower aquifers have become depleted. One thing is clear, continued growth of groundwater abstraction will inevitably have a negative impact on older, shallower boreholes, and will impart economic costs on some borehole operators.

Despite the existence of the Nairobi Conservation Act (NCA), which was established in 1953 to regulate borehole construction and manage the ground water resource, there appears to be very limited regulation of new boreholes. In fact the rate of new borehole construction has accelerated in the last 15 years in the plan area.

There are a large number of “bowser boreholes”, boreholes drilled or used specifically for the commercial sale of water, located in the plan area. These not only serve the plan area but the city as a whole particularly in times of reduced supply. They therefore exploit a finite and declining resource that would be better devoted to direct supply of water for domestic purposes. In addition the water bowsers cause considerable damage to public and private roads and are a nuisance to traffic.

Map 2.4 shows the water reticulation and distribution of boreholes, note the large number of boreholes some of these however are not operational.

Map2.4 Water reticulation and borehole distribution



2.5.3 Sanitation

Sewage treatment works exist at the Defence Staff College, Westwood Park road, Karen oxidation ponds, Catholic University, Cooperative College, and the Kenya College of Communication and Telecommunication. There is also a medium-scale sewage treatment wetland at Karen Country Club, estimated to treat about 180 m³ of sewage per day. With the exception of the Karen ponds, all are privately operated. In the plan area the disposal of liquid waste and sewage is mostly done on-plot through soak pits and septic tanks. There is only one trunk sewer which serves the Karen shopping centre and the health centre and discharges into the Karen oxidation ponds on Langata road.

The efficiency of the CCN wastewater oxidation ponds in Karen is unknown. The ponds have accumulated huge quantities of unpleasant, non-biodegradable sewage-based solids, which are not removed periodically for incineration or burial. Environmental impact of untreated wastewater, particularly the risk of contamination of the North Mokoyeti River (including downstream utilities such as Mamba Village and the Jolly Roger), is unclear.

Formal sewerage systems have been planned but not constructed. The sewerage master plan is based on the assumption of a much higher and denser population in the plan area. It also assumes that the Karen oxidation ponds would be decommissioned before 2000. 14 km of trunk sewer was to have been laid by 2000, and an additional 16 km by 2005. The proposal was to sewer Dagoretti and Langata roads first and thereafter Bogani and Ndege roads. The existing Karen area gravity sewer was to join a trunk sewer along the Motoine River, and this and the Bogani road areas were to have been covered by the year 2010. It is further proposed to serve the Magadi Road/Park Place areas by sewers along the South Mokoyeti and Kisembe rivers.

2.5.4 Solid waste management

The CCN does not offer solid waste collection service to the plan area. Some residents with large enough plots dispose of their solid waste by burning and burying on plot and many residents have engaged commercial firms to collect and dispose of their solid waste. But there is evidence of poor solid waste management practice in some areas, including Karen and Hardy shopping centres.

Plate 2



Plate 2 Solid waste dumped on road sides

There is also indiscriminate dumping evidenced by huge mounds of garbage at the Karen and Hardy shopping centres, the Kuwinda settlement, Karen market, along roadsides and in other informal settlements in the plan area. Based on the population size of 1999, and a rate of waste generation of 0.6Kg/c/d for high income and 0.4 Kg for low income (Syagga,Malombe, 1992) the following projections were done;

Table 5.0
Solid waste generation- projections

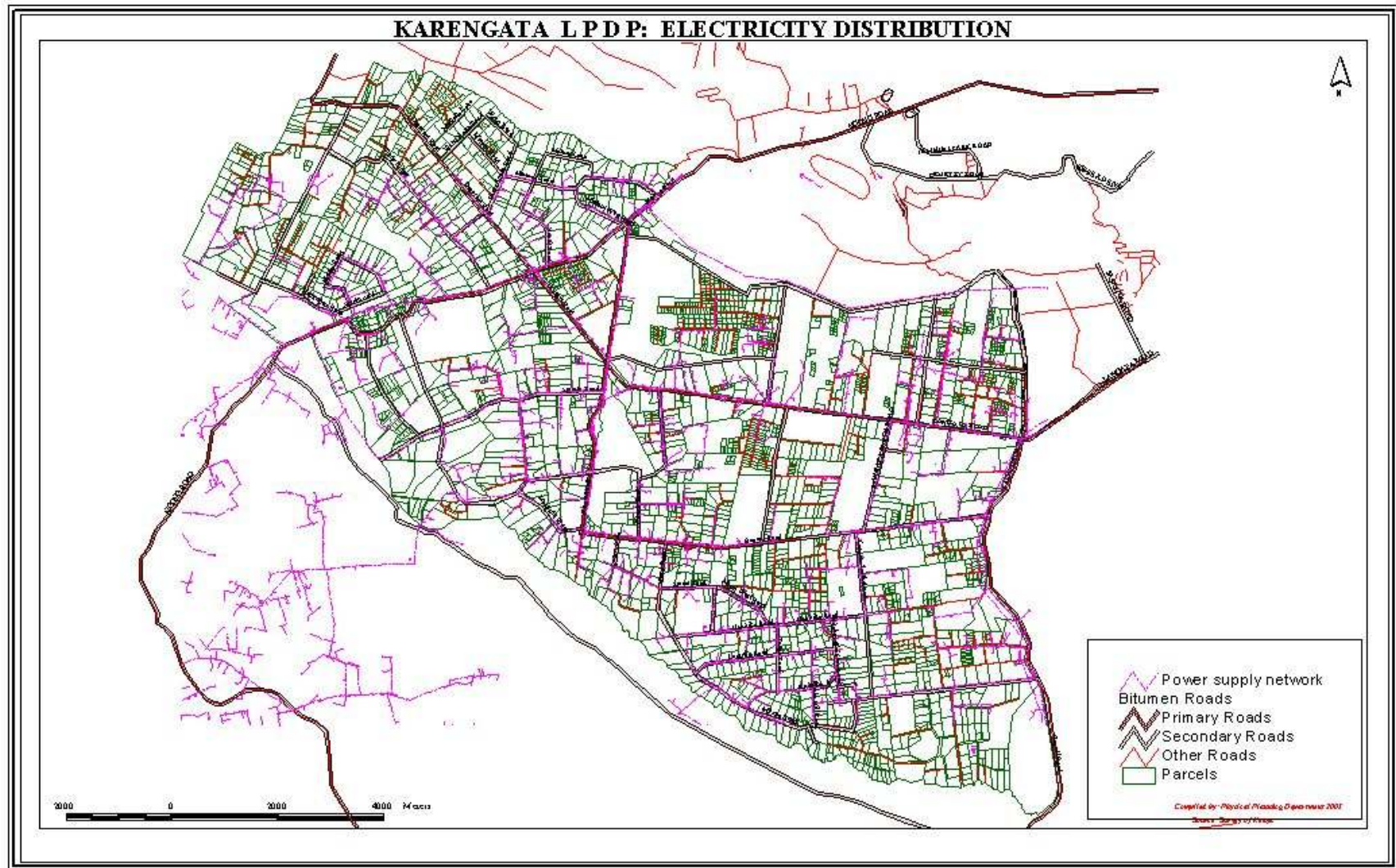
Year	2005	2010	2015
Population	60, 761	68077	76246
Solid waste generation (Tons/day	31.4	35.7	40.5

This shows that about 31.4 tons of solid waste is being generated in the plan area per day. This translates into 220 and 880 tons per week and month respectively if uncollected. The council therefore needs to provide about 11 bulk containers of 3 ton capacity distributed conveniently in the plan area. Currently none exists.

2.5.5 Electricity

The Kenya Power and Lighting Company Ltd. (KPLC) supplies power at levels that reflect low development densities and a number of areas face unreliable power (interruptions or low voltage). Development regulations currently do not take into account implications of an already stressed power supply network. KPLC proposals to increase bulk power provision to the area are unclear. The proliferation of boreholes, each requiring a 3-phase pump, and typically 5 to 12KVA, will continue to have a significant impact on power reliability, which the recently completed Kiserian sub-station has done little to ameliorate. The electricity distribution network is shown on Map2.5

Map 2.5 Electricity Distribution in Karengata



2.5.6 Transport networks

The plan area is traversed by the Ngong, Langata, Magadi, Dagoretti, Langata South roads and Karen roads which are maintained by the Ministry of Roads and Public Works. The carriageways of these roads are inadequate for the significant volumes of traffic using them.

The CCN is responsible for most of the internal circulation roads, many of which are not tarmacked and generate a lot of dust in the dry season and become impassable during the rainy season. These roads feature a grid system and intersect with the main roads creating dangerous junctions. Some, such as the Langata/Dagoretti/Ngong and Langata/Magadi road junctions have become major transport interchanges and have attracted a lot of activities such as street trading, kiosks and other commercial developments. Other junctions that require intervention include;

- Langata Road/Magadi Road (highly congested owing to increased flows from Kiserian and Ongata Rongai and to traffic generated by schools on Magadi Road).
- Langata/Langata South (dangerous ‘T’ junction)
- Karen Road/Langata Road (dangerous cross roads)
- Karen Roundabout, Langata Road/Ngong Road/Dagoretti Road Karen Road/Ngong Road (dangerous ‘T’ junction).

The area is also served by plot access roads that are generated upon subdivision. The City Council requires developers to develop these roads to adoptive standards. This requirement has not been met by many developers.

Public transport: The area is served by bus routes 24 and 111, the Metro Shuttle and a number of *matatu* routes. These routes do not serve the entire area adequately, and in particular the area between the Langata Road and the Ngong Road Forest.

Foot paths: There exist numerous footpaths that traverse the area.

Stormwater drainage: public drainage of stormwater, *via* drains along public highways, is inadequate and badly maintained. Public roads routinely flood during wet seasons (notably the Langata and Magadi roads). This situation is worsening as development intensifies.

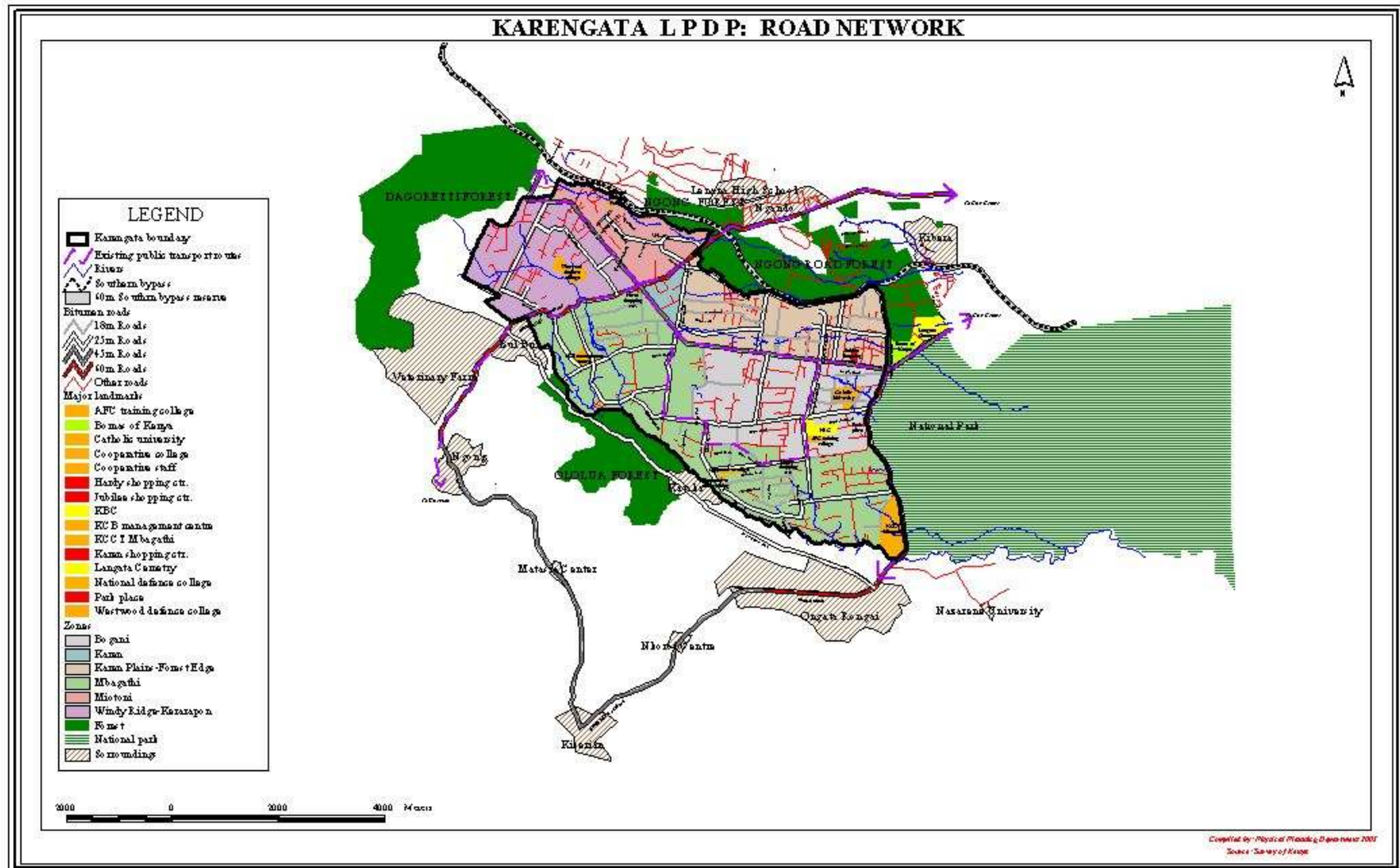
The major planning issues include:

- Narrow carriageways
- Encroachment on the road reserves
- Inadequate maintenance of the roads
- Poor storm water drainage
- No provision for the Non- motorised transport (pedestrians, Bicycles, Horses)
- Hazardous junctions

There are plans for:

- extending the dual carriageway on Langata Road to the Magadi Road junction
- widening Langata Road to Karen roundabout
- widening the Ngong Road from the CBD to Karen
- Constructing the proposed Southern Bypass

Map 2.6 Road network



2.6 Land Use Analysis

A land use analysis is crucial in planning as it determines the spatial character of the plan area. The analysis will feature land tenure and existing land uses.

2.6.1 Land tenure

Refers to the right to hold and use land which also influences the ownership and management of the same. In the plan area there are two broad categories of tenure systems; public and private. Most of the land however is privately owned and this is a draw back to planning for public utilities.

Most of Karengata falls under the Registration of Titles Act (RTA) and therefore sub-divisions are rarely recorded as is the case under the Registration of Land Act system. As a result, the cadastral maps of the area do not reflect the actual situation on the ground. This situation has a negative impact on planning as it is difficult to obtain up-to-date subdivision/landuse maps.

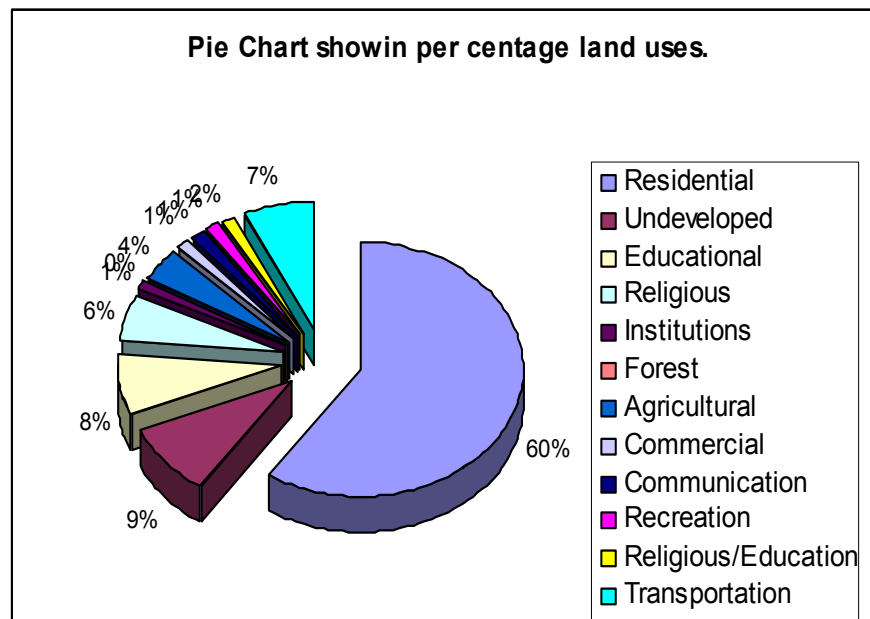
2.6.2 Land use

As already noted elsewhere in the text, the predominant land uses in the plan area include;

- Residential
- Educational
- Public purpose (religious, recreation)
- Commercial
- Agricultural
- Transport

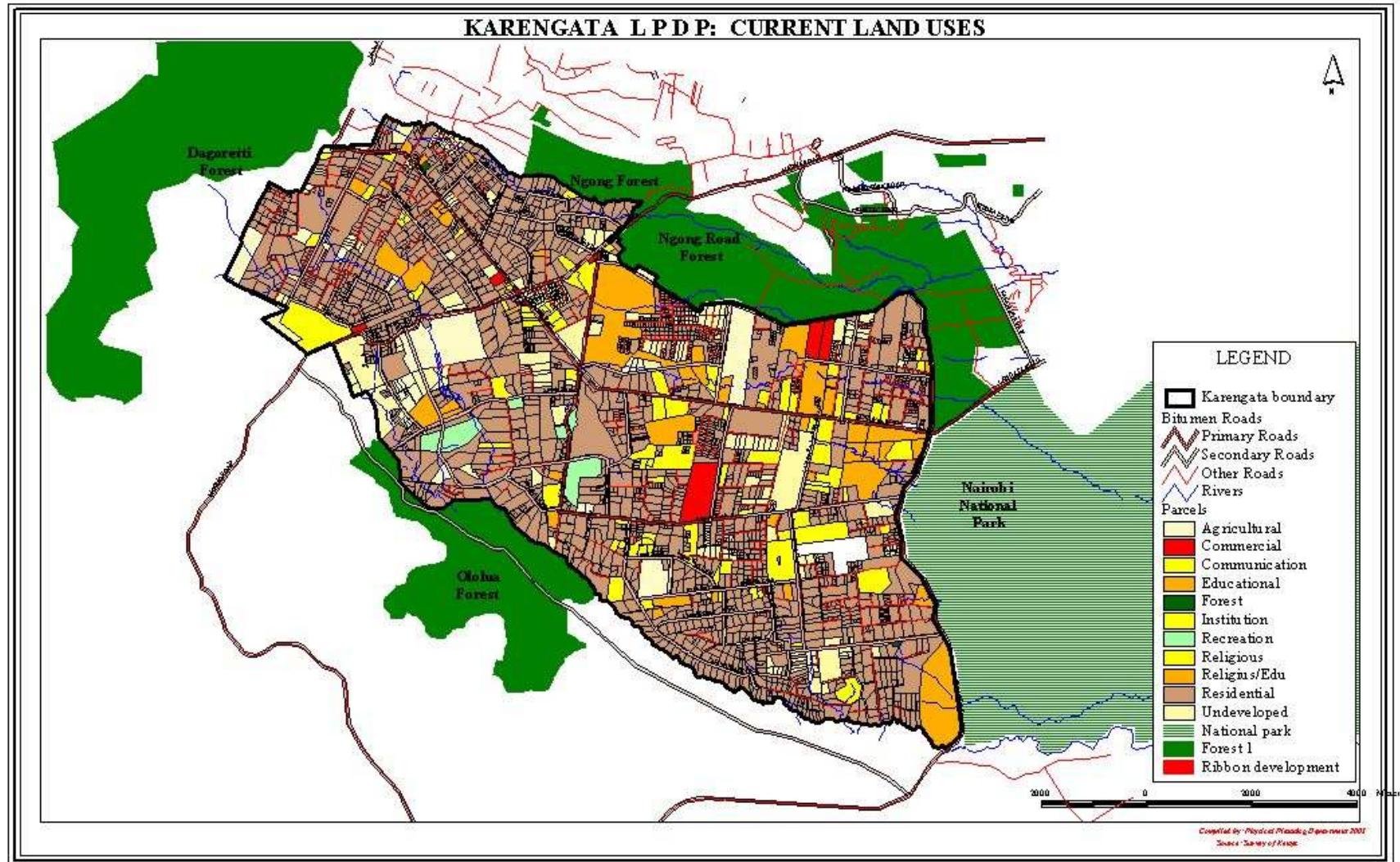
The proportions of the users above are illustrated in the pie chart below.

Figure 2.1 Distribution of land uses



Source: Physical Planning Department, 2005.

Map 2.7 Current land uses



The current situation, trends and issues relating to the main land uses in the plan area are discussed below.

1. Residential

There are two categories of residential land use; Low density and high density.

(a) Low-density residential

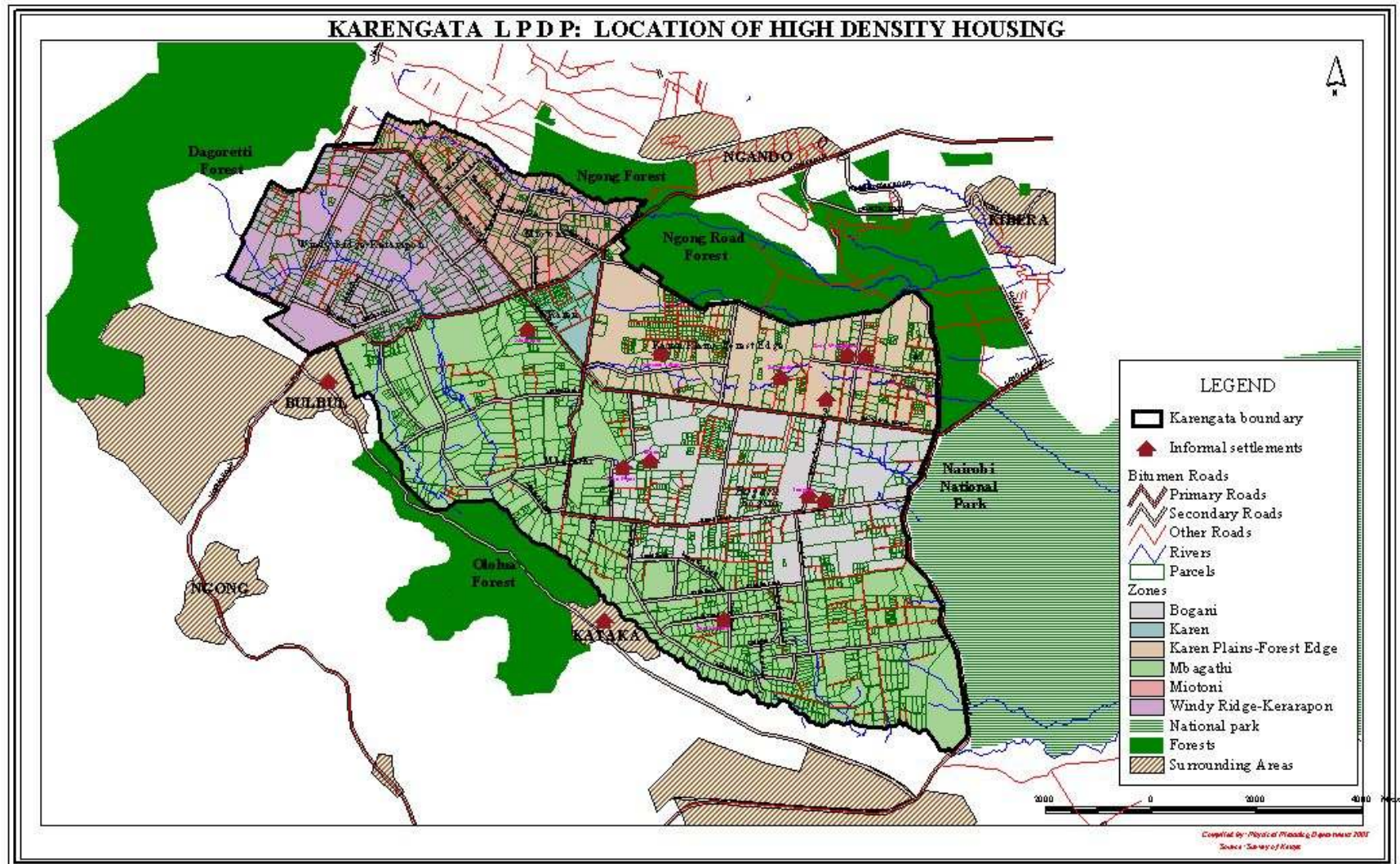
Residential use is predominantly low-density in the plan area characterised by large mansions, maisonettes and bungalows. There is an increasing demand for low density, high quality housing from:

- Private sector organisations for their higher income employees. Their priorities are security, a pleasant environment, guaranteed services, space for children, an attractive house with guest accommodation, shared facilities and support systems (security, gardening etc.).
- Middle-high income Kenyans who wish to build their own house or to rent accommodation in a decent environment. Their priorities are similar to those above.
- There is also an increasing demand for housing for special interest groups such as the elderly or infirm. Many wish to move from a large house with its own grounds to a smaller property where they can share support systems such as security, care services, garden maintenance etc. while retaining a pleasant living environment.

Plate 3 Low density housing



Map 2.8 Location of high density housing in Karenkata



(b) High-density residential development

A rapid assessment was undertaken to establish the extent of high density housing for low-income people. Using aerial photography and ground verification it is estimated that there are some 30 high-density housing settlements in the area the largest of which is Kuwinda with approximately 800 units. Seventeen (17) settlements were visited on the basis of which the following broad categories of accommodation types were established: *See annex 1*

- Staff quarters on private plots provide accommodation for domestic workers and to a lesser extent, gardeners and security guards.
- Low-income people and their families not accommodated by employers, such as construction workers, small-scale traders, house helps, gardeners, security guards and employees of the many institutions in the area, are accommodated in a variety of types of accommodation. These include converted agricultural buildings and cheap *mabati* and timber constructions on private plots throughout the area. The old and, in most cases, very dilapidated structures have developed over the years to house extended family members and tenants. In some cases these structures are on large agricultural plots that have been in the same family for generations e.g. Kampi Kisii, Kwa Karanja, or on land without formal title e.g. Matopeni and Kuwinda.
- There are numerous rental units constructed on private subdivisions specifically to provide accommodation for medium-income workers and students. These vary considerably in terms of age, number, type and condition of structures and services provided. Many structures are very basic consisting of timber off cuts or *mabati*. In most of these locations, water is in very short supply with tenants relying on handouts from neighbours, buying water by the *debe* or using polluted rivers and ponds. Sanitation is mainly through pit latrines, many of which are poorly maintained and in some cases pose a serious health hazard.
- Accommodation is also provided in rooms constructed behind kiosks and other commercial developments along main roads particularly Langata Road, Langata South Road and Bogani East and West roads.

Most of these settlements are hidden behind hedges but known to the low-income population, flout planning and health regulations but represent a lucrative income for the landlords, many of whom live on the same plot.

In addition to these settlements, the Maasai Village, at Karen plains near the Mokoyeti River, represents a special case. The 25 families came to the area in the drought of 1984 seeking pasture for their cattle and decided to settle on what they were told was government land. Most of the land in the area, including the area on which the Maasai have settled, has been subdivided and titles have been issued. Efforts by title holders to build in the area are challenged by the Maasai who have taken to demolishing walls and fences. The surrounding development and the fencing of the Ngong Road Forest also threatens their traditional lifestyle and, although they still graze their cattle on empty plots on the plains and in the forest, they are being forced to adapt to a more urban existence.

The demand for accommodation for low-income people is increasing. More development creates more employment bringing more workers into the area, while residential plots are getting smaller with less space available for staff accommodation on the plot. In general, institutions and commercial enterprises

do not provide accommodation for their staff and accommodation for students is inadequate. To meet these demands, the following trends can be observed:

- Rental rooms are continuing to be constructed by plot owners on plots designated for single dwelling use and there is an increasing trend for these to be provided to higher standards for higher rents. A particular trend is the construction of hostels aimed at the student market as discussed below.
- New *mabati* structures are developing on newly subdivided plots initially occupied by “watchmen”, they rapidly develop into lines of rental units on plots that remain undeveloped for some time.
- Most old settlements have not changed for many years but are getting denser (more people per room, some new structures), rents are increasing but landlords are not maintaining structures or making improvements to water supply and sanitation.

Plate 4 High density housing



Plate 4

2 Educational, public purpose and recreation

Educational and religious: the second largest category of land use is religious and educational purposes. There are approximately 80 religious and 60 educational institutions in the plan area, although many of the religious institutions are also educational and it is therefore difficult to categorise them specifically. The largest of these is the Catholic University. Most of these institutions serve the city as a whole or a wider area and do not play a part in the local community.

The availability of land in the area also attracted private secondary schools and other educational establishments serving the city as a whole. Few of these numerous private schools cater for the local population and in particular, the local low-income population. There are only two public schools: Karen C Primary School at Karen Shopping Centre and St. Mary's Primary School on the Langata Road. Both cater for a population from outside as well as inside the plan area. Map 2.9 shows distribution of educational and religious institutions.

Many of the private institutions operate under religious foundations and are therefore exempt from paying rates. Key planning issues are:

- Educational institutions in particular add considerably to traffic flows and congestion both within and outside the plan areas particularly in the early morning and late afternoon.
- They have added considerably to the demand for accommodation from low-income workers in the area. Few of these institutions provide accommodation for ancillary workers and this had led to the development of numerous low-income rental units.
Some of the largest new institutions currently under construction in the plan area including the Heart and General Hospital being built on Langata Road and the Benedictine Monastery and College, to be constructed on a plot off the Magadi Road, do not plan to provide accommodation for ancillary staff.
- There is demand for student accommodation, which is being met by individual developers who are constructing "hostels" on plots designated for one dwelling unit (often without change of user approval). This is proving to be a lucrative business and if allowed to continue unchecked, can be expected to increase rapidly. This is evidenced by the row-housing developments around Catholic University. In the long run, this will definitely alter and compromise the aesthetic value of the plan area.
- There is an increase in applications for change of user from residential to education or religious implying a further change in the predominant residential user. This is likely to cause a conflict of interests and a corresponding increase in service demand.
- A positive attribute in these institutions is that some of them hold large pieces of land not open to subdivisions and therefore act as "silent land banks".

Health facilities: The plan area is served by a health centre at Karen shopping centre. It serves not only the plan area but also a very wide catchment area that includes Ngong and Dagoretti but its facilities are badly in need of upgrading and its capacity is greatly over stretched. There are a number of private health facilities including Karen Surgery and a number run by religious organisations. These include St Odila's dispensary, St Maria Dominica dispensary and Nyumbani diagnostic laboratories. The Karen Heart and General Hospital coming up along Langata road looks like it will be the largest in the area.

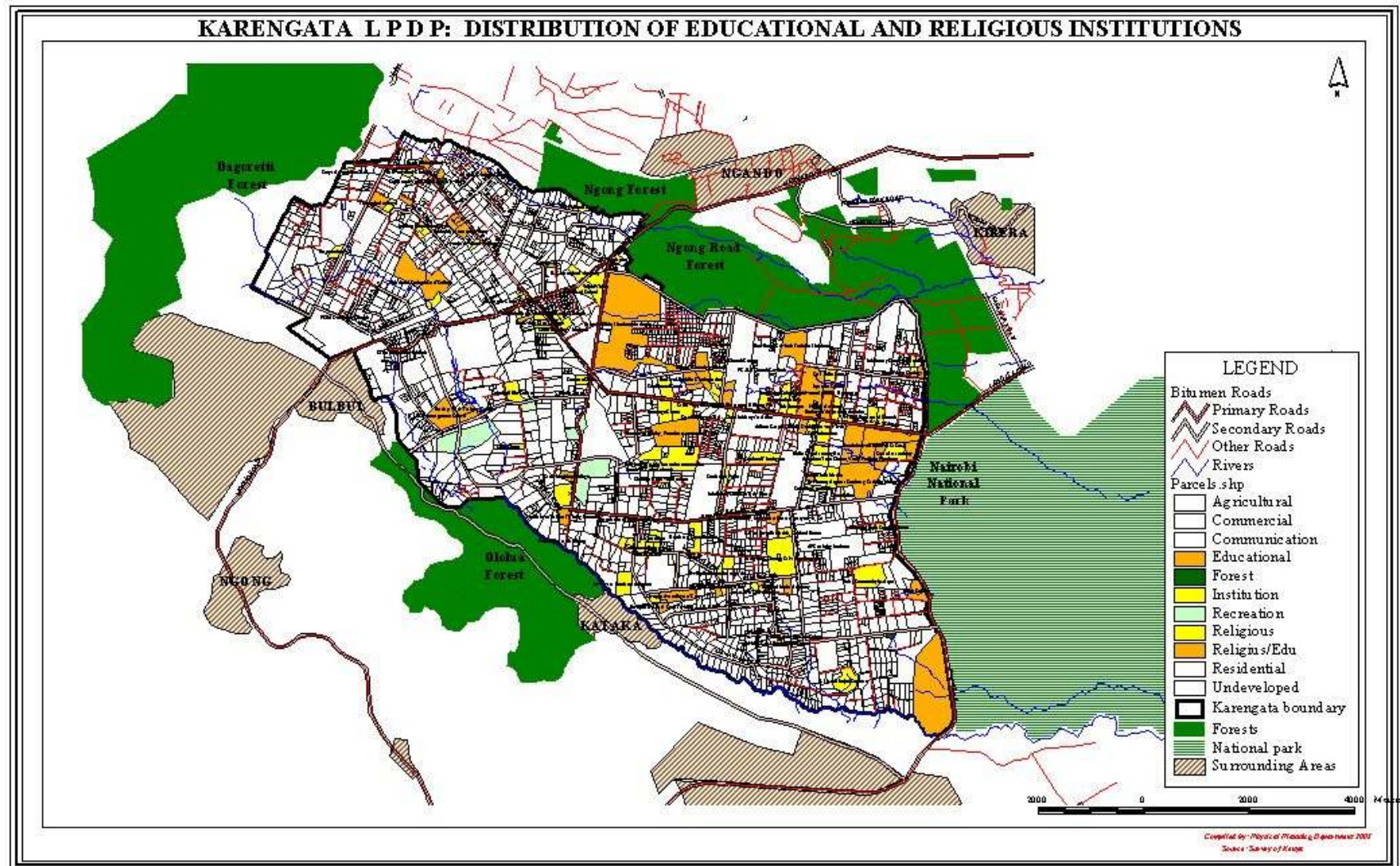
Administrative centres: Karengata is within Langata Division administered by a District Officer based in Kibera. The plan area consists of two locations, namely, Karen and Langata, further divided into four sublocations: Karen, Langata, Hardy and Lenana.

Law and order centres: The plan area is served by one police station within Karen shopping centre and two police posts at Hardy shopping centre and Karen Plains. There is an indication that their services are inadequate as most residents rely on private security companies.

Recreational facilities: this is a broad category of land use that has significant impact on the protection and enhancement of natural and cultural amenities in the area. It also has a strong bearing on the vision for the plan area as an eco-suburb and a tourist destination. This is further strengthened by its strategic proximity to the Bomas of Kenya and the Nairobi National Park. Within the plan area, recreational facilities include Mamba Village, the Giraffe Centre, the Butterfly Centre and the Karen Blixen Museum. Sports facilities are attached to private establishments such as the Karen Country Club or to institutions and are for the exclusive use of members, students and staff of these establishments. Notably missing is a public recreation facility such as a public park

A major issue is the lack of public land that can be used for public purposes to serve the local community, in particular for primary schools, health facilities and public open space. As discussed above, the land in the area is mainly in private hands and what little public land there was has been irregularly allocated to private individuals, leading to a shortage of land for public purposes

Map 2.9 Distribution of educational and religious institutions



3. Commercial development

Commercial developments in Karengata are mainly located within the neighbourhood shopping centres of Karen, Hardy, Park Place and Jubilee Plaza. The prevailing types include; retail shops, office complexes, markets and hotels. The previous plan did not make adequate provision for commercial development, limiting it to Karen and Hardy centres only. With the increase of population there has been a corresponding increase in demand for more commercial outlets as is evidenced by places such as the Jubilee Plaza and numerous roadside trading activities.

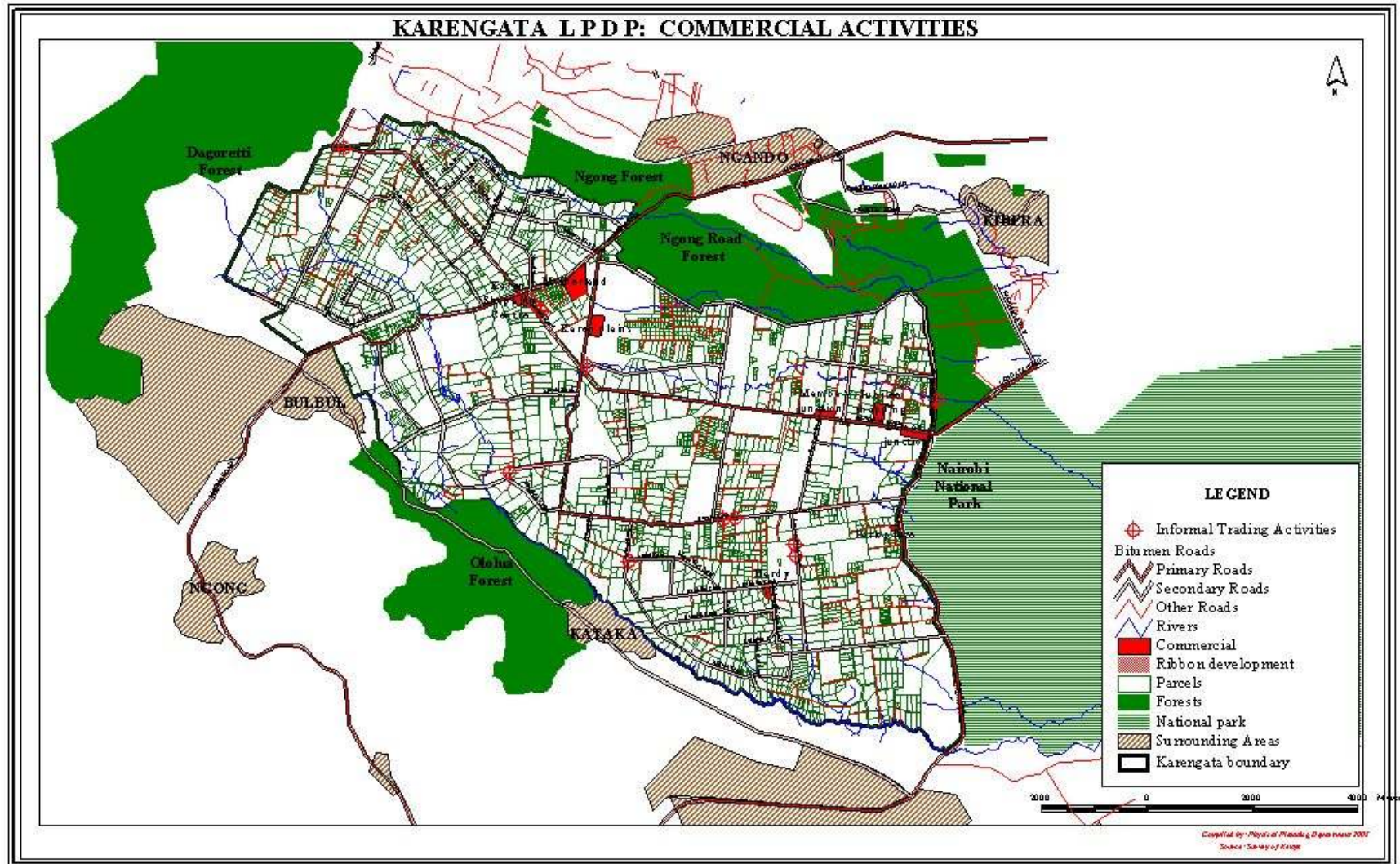
Key trends are:

- Proliferation of informal trading activities such as kiosks, building materials outlets, hawker's stalls on road reserves and at road junctions. In Karengata, as in every other part of the city, this type of development compromises road safety, smooth traffic flow, causes aesthetic pollution and pose a security risk.
- An increasing demand from developers who wish to exploit the large plots of land still available in the plan area to construct multi-user commercial complexes to serve a wider area. This is becoming a common trend in the plan area and sometimes it bears no relation to good planning practice, market needs and environmental considerations. The developments also cause a major strain on the available infrastructure such as roads, water and electricity.
- The increasing changes of user from residential to commercial, on an *ad hoc* basis, leading to a proliferation of commercial premises in unsuitable areas, many with negative environmental impacts.
- Many small-scale commercial enterprises such (vehicle repair, building materials outlets) being established in residential areas alter the character of these areas and lead to conflicts in land use (noise, pollution, security, resource use etc.) and increased pressure on infrastructure - roads, water and electricity.
- The unplanned growth of Karen Shopping Centre, the major focal point and traffic interchange in the area. This is leading to unsightly development, hazardous traffic conditions, congestion, inadequate parking and a proliferation of street trading activities.



Plate 4 Trading Activities

Map 2.10 Commercial activities



There is no doubt that a reversal of these trends will not be achieved unless the illegal and irregular commercial development throughout the plan area, most especially along main roads and roads reserves, is dealt with immediately as a deterrent to others.

4. Light industrial: There are few light industries in the plan area such as Sigma Feeds which manufactures animal feeds, Winn Feeds (chicken feeds) and the Gilgil Telecom Industries (GTI) at KCCT. Under this category, we also have Petrol filling stations and auto garages located along the major roads. Others include craft industries making furniture and artefacts (Kazuri Beads and Ceramics, and Utamaduni Craft Centre). Though generally compatible with the residential land use, some of these industries can generate noise, offensive smells, dust and oil spillages.

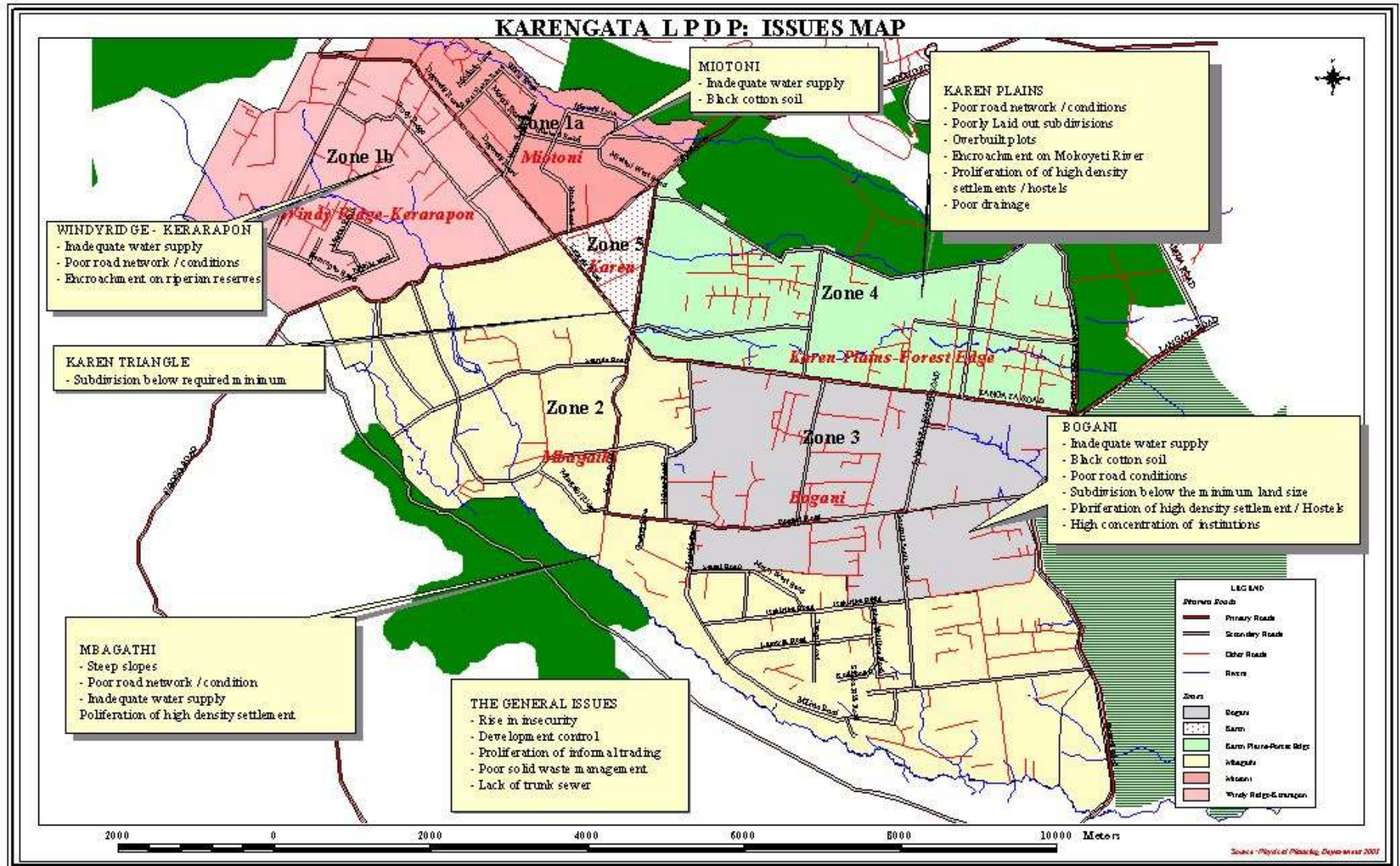
5. Agriculture: The area was originally mainly agricultural and has retained this user over the years. The common agricultural practices include horticulture, dairy farming, horse rearing, poultry farming, and kitchen gardening. There are three large flower farms in the area namely, Karen Roses, Kordes Roses and Sian Roses. The flower farms are a major source of employment.

2.7 Summary of planning issues

The situation analysis shows that the following are key planning and development issues in the plan area.

- The road networks are poorly maintained, have narrow carriageways, have been encroached by roadside traders and feature dangerous junctions.
- The area is poorly served by public transport systems.
- Inadequate public water supply and the consequent high density of boreholes per square kilometre threatening the ground water sources.
- The existing waste water and sewage disposal system (soak pits and septic tanks) is not sustainable in the long run due to diminishing plot sizes and soil conditions.
- Development control strategies have not been strictly enforced giving rise to numerous developments that contravene planning standards, city by-laws and regulations.
- Emergence of high density residential neighbourhoods such as; Kuwinda, Matopeni, Kwa Wa Gathoni, San Marino among others.
- Rising levels of crime.
- Increased level of development is posing a threat to the rivers through, increased abstraction, encroachment on the riparian reserves and emission of effluents.
- Private, public partnership in planning and development control has been weak.
- Lack of complete, reliable and sufficient planning data in the area.
- Inadequate land for public use.
- The lack of a comprehensive growth strategy for the city and its environs has impacted negatively on the area.

2. 11 Issues Map



3.0 The Spatial Framework and Development Strategies

3.1 Overview

The first and second parts of this plan have addressed the planning area, methodology, vision, situation analysis and issues. This section will offer planning proposals to address the issues. It will be guided by the overall objective and vision of the plan addressed in part one. The overall objective is;

“To provide for orderly, co-ordinated, harmonious and progressive development of the plan area to promote health, safety, order, amenity, convenience and general welfare of all the inhabitants as well as efficiency and economy in the process of development”.

The vision for the area is that it should be

- **A high quality, low-density residential area** that will be a peaceful, secure and attractive place to live and bring up children. As such it will contribute to the city’s ability to attract both national and international investment and thus to the economic growth of the city and the nation.
- **A place that will attract tourists.** Visitors are already drawn to the area because of its history and the appeal of its natural environment and various tourist attractions. These should be enhanced and new recreation, tourism and public facilities created to attract visitors to come to and stay in Nairobi.
- **An “eco-suburb”.** The area has not yet been destroyed by the development challenges that are threatening the natural environment in other parts of the city. It has a community that on the whole is dedicated to the conservation of its environment. This presents a unique opportunity to demonstrate the beneficial effects of careful environmental management by the local community and the adoption of eco-friendly approaches to the design of layouts and buildings, and to the provision of water and sanitation.

3.2 The Spatial Framework/ Plan Proposals

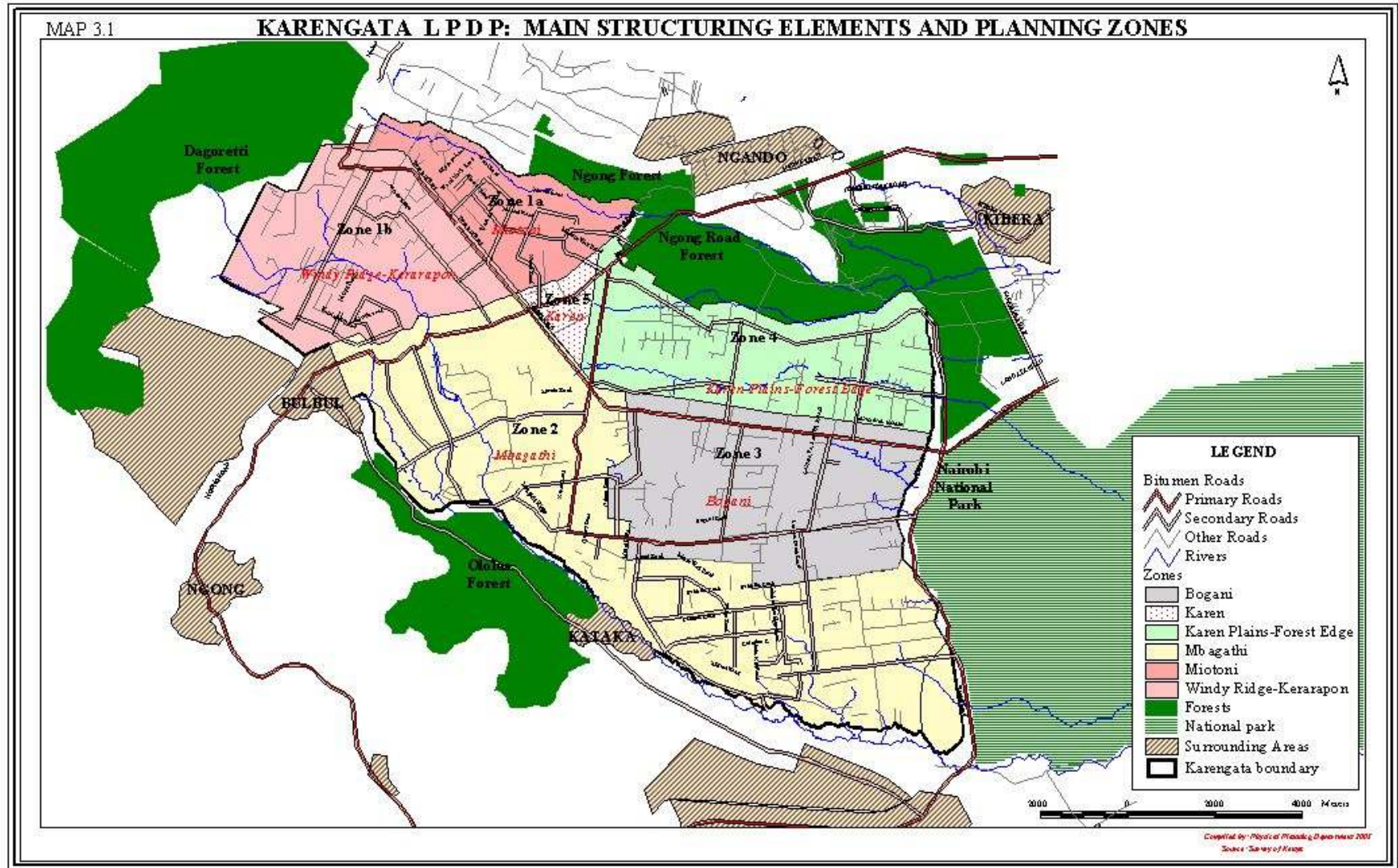
The LPDP provides a spatial framework to guide all new development in the area. It is based on the trends and issues identified through the situation analysis contained in Part 2, and is guided by the vision described above.

3.2.1 Main structuring elements

The spatial framework is based on the following structuring elements, both natural and man-made, that have influenced the character of the area. These include:

- The Nairobi National Park
- The Ngong Road forest and Ngong Road forest sanctuary
- The Ololua forest
- The Mbagathi, Mokoyeti, Kandis and Motoine rivers
- The existing and proposed road network including the Langata, Ngong, and Magadi roads and their possible upgrading to dual carriageways
- The footpaths and “panya” routes
- The surrounding development such as Ngong, Ongata Rongai, Kataka, Bulbul and Kerarapon.
- The proposed Nairobi Southern By-pass expected to be routed along the southern boundary of the Ngong forest.

Map 3.1 Main structuring elements and planning zones



3.2.2 Planning Zones

Based on the analysis in section two, key development typologies and the main structuring elements, the plan area was divided into the following five zones. See map 3.1

Zone 1A Miotoni and 1B Windy Ridge-Kerarapon

Physical features and environment

- Valley of the Motoine River and Ngong Road Forest to the north
- Steep valleys towards Mbagathi River and its tributary the Kandis River to the south
- The areas around the headwaters of the Mbagathi and Kandis rivers are environmentally sensitive
- Informal horticulture along these rivers
- An area of indigenous forest around Mwitw Estate and a remnant of the Ngong Road Forest in Miotoni adjoining St. Christopher's School on Ngong Road
- Well treed, pleasant and serene environment
- Largely red soils, but black cotton soils in some areas.
- Conservation areas in the zone includes the Butterfly Centre

Development typology

- One of the oldest residential areas in Karengata
- Area features bigger plot sizes - evidence that land owners did not embrace the 1988 zoning provision.
- Small sub-divisions beginning to appear on the city boundary with Kiambu District (the boundary does not follow a physical feature – road or river – at this point and is therefore unclear)
- Some informal trading activities exist
- Emergence of new multi-dwelling developments at odds with the general appearance and character of the area
- Stone walls are replacing hedges on the boundary of a number of plots

Public utilities

- Public water supply is inadequate in the Miotoni area and in the area adjacent to Kerarapon leading to a dense concentration of private boreholes particularly in the Miotoni area
- Mwitw Estate has a private water company that supplies approx. 95,000 litres per day.
- Poorly maintained murrum roads except for Mwitw Estate
- Public transport on Ngong and Dagoretti roads but none within the area.

Trends and issues

- The new multi-dwelling development on Warai South Road and flats on Miotoni Lane are at odds with the general appearance and character of the area
- Stone walls are replacing hedges on the boundary of a number of plots
- Inappropriate institutional development is increasing in the zone particularly in the Windy Ridge and Miotoni areas.
- The negative effects of uncontrolled development along the Ngong Road, include increasing insecurity and violent crime, pollution from noise, dust and burning and increasing litter on road reserves.

Zone 2 Mbagathi

Physical features and environment

- Well treed, pleasant and serene environment
- The valley of the Mbagathi River and its tributary the Kandis River, with its relict riverine forest runs the length of the zone and forms the southern boundary of Karengata. The opposite bank is in Kajiado District outside Karengata and the jurisdiction of the CCN.
- There are a number of original forested areas around Tree Lane, Forest Lane and IUCN headquarters.
- The forest around Tree Lane is being threatened by creeping commercial and institutional development
- Karen sewage ponds are polluted and located near the source of the Mokoyeti River
- The Ololua Forest across the Mbagathi River has a major influence on the micro-climate of the area and its biodiversity
- Conservation areas inside Zone 2 include the Giraffe Centre, the Karen Blixen Museum and the gardens at IUCN. The Institute for Primate Research lies across the Mbagathi River in the Ololua Forest
- Features black cotton soils in some parts

Development typology

- The character of the area is similar to Zone 1 with many large, mostly residential, plots
- In the area around Ololua Ridge and Ngong Dairy, the density of development is very low and plots are used for horticulture, dairy farming, horse breeding and training
- There are a large number of institutions in the zone including the Co-operative College, Barclays Bank Staff-training Centre, KBC Management Centre, Saifee Park (Bohra Community) and IUCN as well as a number of smaller religious institutions and the Karen Country Club.
- Commercial activity is mainly confined to the Karen shopping centre where old buildings are being renovated but spoiled by congested access and parking, unsurfaced and poorly drained roads, tipping of refuse on adjacent plots and rampant hawking
- Informal trading activities along Ushirika Road and Hardy shopping centre
- Three flower farms and a number of cottage industry-type enterprises are located in the zone.
- A number of small residential hotels are located in the zone.

Public utilities

- Public water supply is inadequate throughout the zone
- The demand is mainly met by private boreholes or tankers
- There is a relatively high density of boreholes in the area
- The aquifer in the area is deep (Upper Athi Series) and is under threat from over-abstraction (depletion of three metres per year in recently-measured boreholes)
- Tarmac roads mainly in good condition in the west, newer roads in the east are mainly murrum.
- Public transport provided by the Metro Shuttle and *matatus* run through part of the zone.

Trends and issues

- Piecemeal high-density residential development is occurring in areas off Bogani, Ndege and Mukoma roads and some subdivisions are below the legal minimum plot size.

- Subdivisions to the currently permitted minimum plot size are occurring in the riparian reserve. This leaves little space for development and if allowed to continue will pose a threat to the local biodiversity and eco-systems.

Zone 3 Bogani

Physical features and environment

- Predominantly flat area of plains grassland
- Predominantly black cotton soil

Development typology

- Rapid sub-division below the current legal minimum of 0.4 hectares is occurring to the north of Bogani Road
- Higher than permitted plot coverage is occurring in the zone
- There are many large educational and religious institutions in the zone serving the city and the region including the Catholic University, Tangaza College, Makini Academy, and Brookhouse schools
- More institutions have received approval to develop along the Magadi Road
- Increased commercial development particularly on Langata, Bogani and Pofu roads
- Pockets of high density, low cost rental units occur throughout the zone particularly along the Bogani Road, most without planning approval.
- Sigma Feeds, a manufacturer of animal feeds, is located in this zone.

Public utilities

- The public water supply is generally inadequate in this zone both in terms of supply and extent of reticulation.
- New subdivisions are not provided with water and access roads
- High reliance on borehole and tanker services
- Abstraction from institutional boreholes is often high
- Road network poor throughout but especially Bogani East and Red Brick roads which are prone to flooding in the wet season
- Public transport limited to Langata South Road

Trends and issues:

- Rapid sub-division below the legal minimum of 0.4 hectares with no infrastructure to support it, will lead to increased demand for boreholes and tanker services.
- Rapid residential development much of which does not have development approval and has a higher than permitted plot coverage
- Rapid increase of high density rental housing for low and medium income workers and students
- Development is haphazard and uncontrolled
- Mixed land uses are increasing

Zone 4 Karen Plains-Forest Edge

Physical features and environment

- The Ngong Road Forest Sanctuary effectively forms the northern boundary and is currently being fenced
- The North Mokoyeti River, a polluted water course originating at Karen sewage ponds, runs through the zone from west to east
- There are a number of man-made dams and a few patches of palustrine wetland remaining but these are under threat from illegal sub-divisions and pollution
- Extensive areas of black cotton soil and a very high water table in the Karen Plains area

Development typology

- Very mixed land use including:
- Old farms and the oldest farm houses in the plan area
- The Karen Plains Estate which is growing rapidly and in an ad hoc manner
- New subdivisions, some smaller than the legal minimum plot size and rapid residential development much of which does not have development approval and has a higher than permitted plot coverage
- Institutions including Don Bosco, Hillcrest Secondary and Primary schools, a new Department of Defence establishment and a Heart and General hospital currently under construction.
- The Kuwinda slum, the Maasai village and many clusters of very low quality, low income rental units (some in converted old farm buildings)
- Tourist facilities in the zone include the Mamba Village and the Jolly Rodger Resort
- Commercial development includes timber yards, hostels for students and various low quality retail outlets along the Langata Road
- Extensive subdivision to the currently permitted minimum plot size (0.2 hectares) and below is occurring throughout the area, including in the riparian reserve along the Mokoyeti River).

Public utilities

- Public water supply very poor
- No water reticulation serving the main growth area of Karen Plains and no storm water drainage and surfaced access roads
- Lowest borehole density in the plan area
- High reliance on tanker services
- Mokoyeti River being polluted by sewage from illegal high density developments and used for laundry, car washing etc.
- Roads all murrum often inaccessible in the wet season especially where they cross the Mokoyeti River as drifts
- Most access roads from Langata Road are cul de sacs ending at the edge of the forest
- The southern by pass road, which is likely to be constructed during the plan period, will form the northern boundary of this area and should be taken into account in the future plan for the area.

Trends and issues

- Increasing mixed development occurring in a haphazard and uncontrolled manner posing a severe burden on already inadequate piped water and electricity services and preventing the introduction of an adequate road network and public transport system.
- Sub-divisions of less than the permitted minimum plot size are common throughout the area
- Development is posing a severe threat to the natural resources in the area including the water quality in the Mokoyeti River, the palustrine wetlands and the edge of the Ngong Road Forest

Zone 5 Karen Triangle

Physical features and environment

- This zone lies within the triangle bordered by the Ngong, Langata and Karen roads
- A largely flat area with no particular physical features
- The Motoine River runs through the southern part of the triangle

Development typology

- Mixed commercial, residential and institutional land use
- Rampant informal trading activities on Ngong and Langata roads and at Karen roundabout
- Formal commercial development is of low quality construction: car sales rooms, furniture sales points, Motherland Motors etc. are all below standard for a high quality residential neighbourhood.

Public utilities

- Public water supply relatively good
- The area lies adjacent to the sewer that runs from Karen shopping centre to the treatment ponds.
- Public transport services along Ngong and Langata roads

Trends and Issues:

- Kiosks and hawkers stands are entirely uncontrolled, have massively increased in the last three months and pose a threat to health, security and traffic safety
- Pressure for change of user from residential to commercial in the triangle is increasing rapidly, on both sides of the Ngong, Karen and Langata roads and the immediate environs in Zones 1, 2 and 4.

3.3 Proposed Development Strategies

Development proposals for the plan area have been divided into two namely;

1. Universal development strategies which apply to the entire planning area.
2. Specific development strategies which apply to the zones as delineated above.

3.3.1 The universal development strategies

These strategies fall under four main headings: (1) the management of natural resources and eco-systems, (2) the management of public utility services, (3) the management of land use and development and (4) the improvement of safety and security.

1) The management of natural resources and eco-systems

As described in Section 2, although the area has not yet been destroyed by inappropriate development, current trends are already posing a considerable threat to the sustainability of the area's natural resources. There has been encroachment of the Ololua and Ngong forests and of the riparian reserves particularly along the Mokoyeti River. Relict riparian forests along the Mbagathi and Motoine rivers are being threatened by development as are the palustrine wetlands and indigenous tree species throughout the area. There has also been considerable exploitation of both surface and groundwater sources.

To achieve the vision stated earlier, it will be essential to preserve the unique character of the area, its fragile ecosystems and natural resources. The following strategies and measures have therefore been drawn up.

(a) Improving the management of terrestrial and wetland biological diversity and ecosystems

- All major developments will be required to have an Environmental Impact Assessment (EIA) under the provisions of the EMCA (1999).
- Environmental action plans will be prepared for the Mbagathi, Kandis, Motoine and Mokoyeti rivers. It is anticipated that the following requirements will be included in these action plans:
 - I. To prevent further encroachment of flood plain areas, riparian buffer zones will be clearly defined along these rivers under the action plans. Due to the importance of the Mbagathi River to the Nairobi National Park, and the need to conserve and enhance the biological diversity along its length, consideration will be given to this area being proposed for declaration as an “environmentally significant area” under the Environmental Management and Co-ordination Act, 1999. It will be necessary to involve the Ol Kejuado County Council, which is responsible for the southern side of the Mbagathi River, and the Kenya Wildlife Services in the development of the environmental action plan for this river.
 - II. Along the Mbagathi, Motoine and Mokoyeti rivers, low-density development only will be allowed in the fragile transition zone between the riparian reserve and the higher ground. Minimum plot sizes of 0.4 ha will be applied in these areas and CCN regulations regarding minimum plots size will be enforced. All development adjacent to these rivers will be required to have an EIA.
 - III. Perennial and ephemeral wetlands that have significant ecological or economic value, particularly those along the Mokoyeti River, will be classified and become subject to legal protection.
 - IV. All relict riparian forest along the Motoine and Mbagathi rivers and other forested areas that have significant ecological or economic value e.g. those in the vicinity of Tree Lane, Mwituu Estate and Forest Lane will be protected by providing incentives to private owners not only to conserve but also to enhance the ecosystems on their properties. These might include inducements such as rate or tax rebates/reductions and/or the encouragement of co-operative ownership and joint ventures to combine parts of plots with river frontage into conservation areas.
 - V. Initiatives taken by plot owners in tree cultivation will need to be supported by other relevant stakeholders such as the Forest Department and through the establishment of tree nurseries and the greater supply of seedlings.

(b) Improving the management of water resources

It has been noted that public water supply is inadequate this has resulted in the over-exploitation of the ground water resources through both private and commercial boreholes. It is estimated that 6,960m³ is pumped from these boreholes every day. The consequences of uncontrolled borehole drilling and groundwater abstraction are serious and will require to be closely monitored.

The LPDP therefore makes provision for the improved management and more equitable use of ground and surface water resources, and the promotion of rainwater harvesting.

(c) Improving the management and more equitable use of ground water

Improved regulation of borehole drilling and abstraction in the plan area and throughout the Nairobi Conservation Area (NCA). Measures that will be taken to achieve this will include:

- Approval of all new boreholes to be conditional on an EIA, which must include an assessment of the effect of new boreholes on groundwater resources in the area in general and on neighbouring boreholes in particular.
- Condition of approval must explicitly include regular abstraction and water level monitoring.
- Approval of new boreholes will be limited to domestic uses and public water supply.
- Existing irrigators and commercial tanker operators will be regulated
- Renewal of permits will be subject to constant monitoring and reviews of the ground water levels.
- Existing borehole owners will be encouraged to share water with their neighbours at a fee

In line with the Water Act, estate water supply boreholes will be encouraged to supply water for domestic use in areas not reached by adequate mains supply, subject to regulation and agreement with the NCWSC and the Nairobi Water Services Board (NWSB).

In addition the following measures will be undertaken to provide more accurate information on the reliability of the ground water resource and the risk of resource depletion and aquifer damage. This will be essential baseline data for the Environmental Management Plan:

- A physical ground survey of all boreholes in the plan area. This will both update geographical data for Zone 12 boreholes and provide information on the uses to which water is put in the area. To be undertaken by the Ministry of Water and Irrigation (MWI) under the *aegis* of the NWSB.
- A programme of hydrological monitoring at former and new gauging stations. To be undertaken by the MWI under the *aegis* of the NWSB, until the WRMA is established and operational.
- A programme to monitor static water levels, water quality and abstraction throughout the Nairobi Conservation Area. This would be undertaken/overseen by the NWSB until the WRMA is established and operational.

(d) Improving the management and more equitable use of surface water

Surface water resources are limited to abstractions from the Mbagathi and Motoine rivers. To protect this resource and safeguard the surface water resources in the Nairobi Basin, the following measures are proposed:

- Define the Mbagathi and Motoine river catchment areas and draw up regulations and controls on catchment use and abuse in order to conserve this important surface water resource and optimise its use.
- Reassess surface water permits, update those that continue to apply and revoke those that have been abused or exceeded. Ensure that each new application for a surface water permit, or renewal of an

existing permit, is evaluated in the light of known residual flows in the watercourse in question and that permits are not issued where these would adversely affect downstream users.

- Implement a surface water resources monitoring strategy.
- Implement a water quality survey to establish the significance (if any) of agro-industrial pollution in watercourses in and upstream of the plan area.

(e) Encouraging rainwater harvesting

Rainwater harvesting is to be encouraged in line with Sessional Paper No.1 of 1999 on water policy.

- All new construction in the plan area will be required to include a component of roof rainwater capture and storage, provisionally set at 2,000 litres of storage per proposed plot. In line with this, revise CCN regulations that prohibit rainwater collection and storage and develop guidelines and regulations for the collection, storage and use of rainwater.
- Standards will be drawn up for water collection and storage by the Ministry of Water and Irrigation; in this regard a formal approach to the Kenya Bureau of Standards should be undertaken. Advice and guidance may also be obtained from the Kenya Rainwater Association or the Regional Land Management Unit.
- Developers will be explicitly encouraged to invest in substantial rainwater harvesting and mains water storage facilities, instead of spending money on sinking boreholes.

2) The management of public utility services

There is minimal provision of public utility services in the plan area. The public water supply is inadequate to meet demand the only public sewer serves a small area within the Karen shopping centre. There is no public solid waste disposal service. This means that most residents have to employ their own resources not only to provide themselves with water, as described above, but also to dispose of solid and liquid waste.

The following measures will be undertaken by the local community and the public authorities for the improvement of public utility services in the plan area.

(a) Improving the public water supply

In tandem with the above measures to improve the management of ground and surface water resources, the NCWSC programme to improve the piped water supply to the plan area is as follows:

Table 3.1 Programme to improve the piped water supply

Immediate plans

Strategy	Status
i. Putting in place an effective water rationing programme	This has been achieved despite the following interruptions: a. In pumping hours b. Manipulation of control valves

Mid-term/intermediate plans

Strategy	Status
ii. Installation of non-return valves on the distribution system between Kabete and the Dagoretti Reservoir	–Tenders have been awarded.
iii. Identification and repair of all non-functioning control valves	–Work on identification has started and should be complete by 4/3/05
iv. Replacement of vandalized / non-functional fire hydrants	– Most of them are missing – Problems of airlocks in high areas
v. Completion of Kenyatta Avenue pumping station	– Tenders awarded and work started – Ground preparation on-going
vi. Swabbing of Ruiru Dam pipeline	– Tenders awarded (Centurion Engineers, 7/2/05)
vii. Installation of standby pump at Kabete water works	– Already in place
viii. Re-routing of Kikuyu Springs No. 1 Pipeline (which leaks heavily and passes through farmland)	– Documentation on-going
ix. Development of 5 Boreholes (Miotoni Lane, Gitiba 2, Leake's, Denkin Dura and Bangua's)	– Currently under consideration by NWC, NWSB and the Ministry of Water and Irrigation

Long-term plans

Strategy	Status
x. Reinstatement of Sasumua Dam following its collapse	– Currently being considered by NWSB – Funds made available from ADF
xi. Laying of parallel water lines: – a. Between Gigiri and Kabete b. Between Kabete and Dagoretti Reservoirs.	– Possibility being looked at based on viability – Feasibility studies in progress

The NCWSC is currently preparing a detailed plan based on the above, but including estimated costs and a time frame for implementation.

In addition to the measures proposed above, the NCWSC will be encouraged to plan for the extension of reticulation to cover areas not already covered. Priority will be given to areas where sub-division to 0.2 ha is planned or has already taken place.

(b) Improving sanitation

There is a sewer line that discharges into the oxidation ponds near Karen shopping centre. In addition there are sewage treatment facilities at KCCT, the Karen Country Club, Defence Staff College and similar institutions. The vast majority of plots are served by septic tank/drainage field systems, or vaulted tanks requiring exhauster truck services. The utility of septic tank systems is sensitive to soil conditions: black cotton soils drain poorly, while red soils drain well. Septic tank systems are only environmentally sustainable at low densities.

A sewerage plan covering the area exists but there is no clear implementation and resource mobilisation strategy so the time horizon for this development remains extremely uncertain. However, it is anticipated that areas of zones 3,4 and 5 will require mains sewerage first and that priority should therefore be given to the construction of a collector sewer and treatment ponds to serve these areas first.

In the absence of sewerage reticulation, the following measures will therefore be adopted to ensure adequate and hygienic sanitation in all parts of the plan area.

- Approval of septic tanks for all new developments will be subject to criteria relating to soil conditions, plot size, disposal facilities for exhausters etc. As a general rule, plots underlain by near-surface Nairobi Trachyte and black cotton (sodic alkali soils) should be restricted to lower density due to the restricted ability of such environments to sustainably handle the effluent.
- Immediate improvements to the management of the Karen oxidation ponds in order to maximise the treatment capacity of this facility. Improvements to include:
 1. Active management to ensure periodic cleaning of floating and precipitated solids, and discharge measurement;
 2. Fencing of facility to eliminate the health hazard it poses at present;
 3. Regular monitoring of effluent quality to ensure that this is not a hazard to environmental health;
 4. Updating of register of approved dischargers to this facility
 5. CCN to provide their exhauster tankers to empty the septic tanks.
- The recycling of waste water will be promoted, including :
 1. On-plot separation of grey and black water for alternative uses
 2. Constructed wetlands, such as that developed at the Karen Country Club for waste water recycling particularly for multi-unit housing developments, institutions, and other facilities where relatively large volumes of liquid waste are likely to be generated on a regular basis.
 3. Review and revise in the light of the current and proposed development, the sewerage master plan for the area.
 4. Implement the first phase collector sewer and treatment ponds

(c) Improving solid waste management

The strategy to be adopted is based on the assumption that the CCN is unlikely to initiate a new solid waste disposal facility in the near future, although discussions will be held to review this. The residents of the plan area will therefore be expected to continue to dispose of their own refuse either by on-plot disposal or by employing private waste disposal companies at least in the near future.

- Residents will be encouraged to reduce, recycle and reuse (RRR) their refuse. Information on how to do so will be prepared and an awareness-raising programme will be undertaken under the EMP.
- Private initiative will be supported through the setting up of a recycling facility in the area for the receipt, segregation and processing of recyclable material. It is intended that this facility will not only encourage the recycling of waste products in the plan area but also serve as a pilot from which lessons can be applied to urban areas throughout the country.
- Concrete measures will be initiated to tackle existing and prevent new health hazards and eyesores caused by random dumping of solid waste. The exercise will involve the public and private sectors and will initially tackle the dumping site at Kuwinda, the dumping on a private plot at the Karen Shopping Centre and dumping at the Karen sewage treatment ponds.
- Neighbourhood associations will be encouraged to set up local initiatives to collect and dispose of litter in their areas.

(d) Improving electricity supply

The KPLC currently supplies power at levels that reflect low development densities and a number of areas face unreliable power (interruptions or low voltage). KPLC proposals to increase bulk power provision to the area are unclear. Development management must therefore take into account the implications of an already stressed power supply network. The proliferation of boreholes, each requiring a 3-phase pump, and typically 5 to 12KVA, will continue to have a significant impact on power reliability. The following measures are proposed:

- As with water supply, it will be necessary to take the power supply situation into account when approving new developments particularly those that would create a heavy demand such as commercial centres and large institutions. It will also be necessary to liaise with the KPLC on a phased improvement programme that takes account of areas of highest demand as specified in the implementation matrix.
- Residents will be sensitised on the use of solar energy, particularly for water heating, and information packages and awareness raising exercises will be undertaken under the EMP.

(e) Improving roads and public transport

The majority of roads are undersized for the traffic they are currently required to carry. This compromises traffic safety, as carriageways of what have become main through roads are too narrow to

accommodate increased traffic flows. The increase in development and particularly of institutions, is leading to traffic congestion and hazardous driving conditions particularly at the following junctions: Langata/Magadi/Forest Edge, Karen/Langata, Ngong/Karen, Langata/Langata South roads.

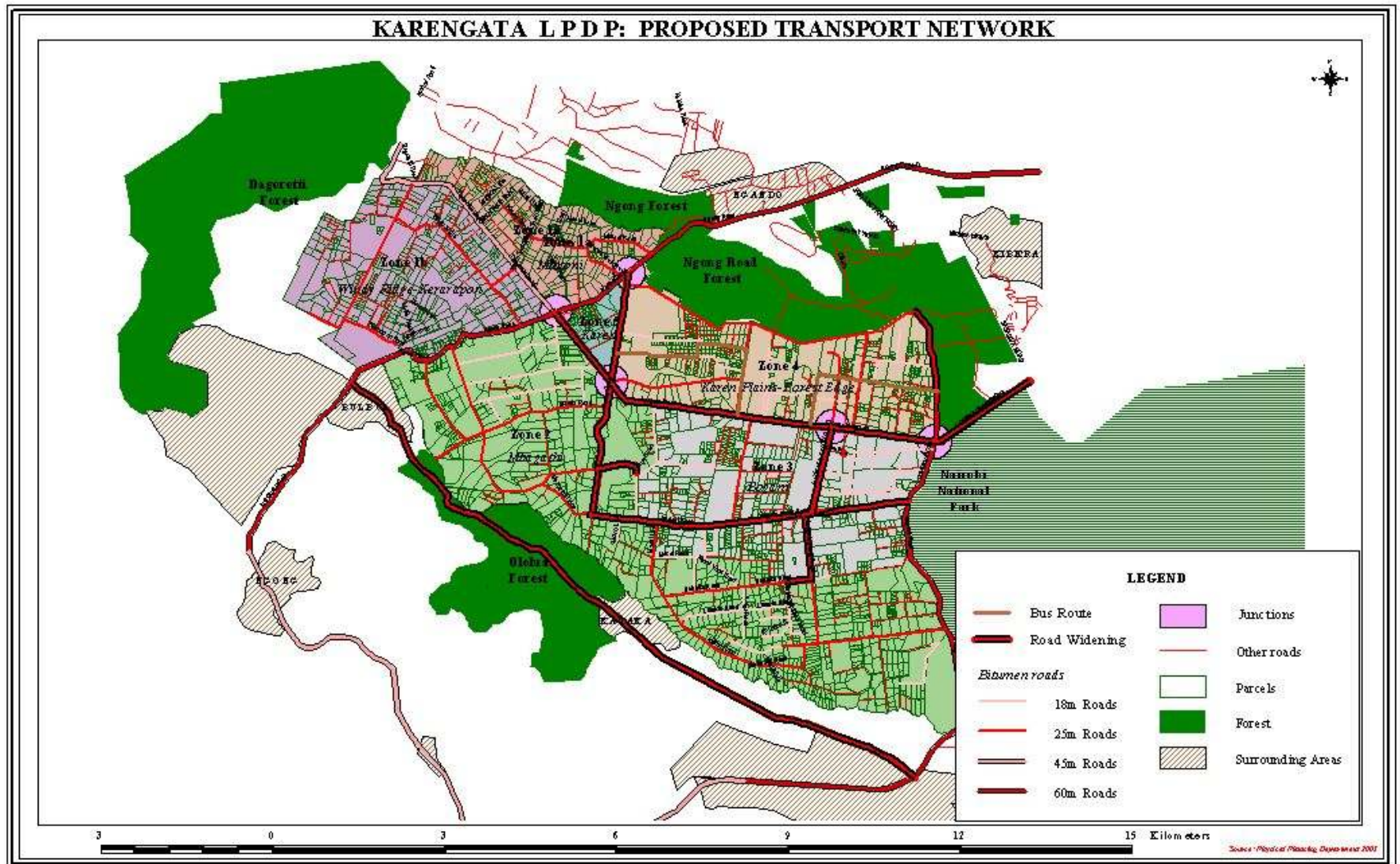
The carriageways of MRPW roads (Ngong, Langata/Dagoretti and Magadi roads) serve significant volumes of through traffic and in a regional context are inadequate. Plans for future road development are uncertain, though the southern by-pass is expected to be constructed during the plan period. Irrespective of plans, a substantial increase in traffic handling capacity must be put in train if the area is to be served optimally as it stands at present, maintenance must be improved.

- The road plan for the area is being revised following a detailed assessment of the situation on the ground. The main objective of the revision is to create a road network that will service the area effectively, provide for adequate floodwater drainage, rationalize plot access requirements and make provision for an efficient public transport system.
- Under the plan, MRPW and CCN roads that require rehabilitation will be identified and roads to receive the following improvements will be prioritised: wider carriageways, addition of hard shoulders, cycle paths and bus pull offs. All dangerous junctions to be improved and the major junctions at Karen shopping centre and Bomas will be a priority and will include transport interchanges.
- Guidelines for access roads appropriate to different development types and locations will be provided to developers. The construction of these roads according to the guidelines by the land owner/developer, as a condition of the issuance of title deeds for each sub-division will be enforced.

In addition, the following will receive priority attention:

- A plan for improved road access to Zone 4, Karen Plains-Forest Edge will be prepared to enable a bus route to be introduced in this area.
- Bogani East Road will be upgraded to tarmac and a junction constructed to Magadi Road.

Map 3.2 Proposed road networks



Improving footpaths

There are many footpaths through the area which have developed as convenience routes for people moving on foot between their homes and places of work. These tracks often go through unused or little used land that is unfenced, or the fences are broken, and over time become accepted access ways. While these routes benefit the movement of labour, they also provide convenient routes for criminals, who may attack people using them, usually after dark, or provide access and escape routes after crimes. These footpaths will be included in a comprehensive Non Motorised Transport Plan (NMT) that will also cater for horse and bicycle tracks.

The following measures are to be undertaken to prepare the NMT:

- The informal routes will be identified, recorded and mapped and their use and value as routes for legitimate access determined. Those that are genuine should be acknowledged, mapped and monitored as necessary, especially in the case of crime. Access routes that save extreme distances between work places and homes have legitimacy but there is no justification for a web of routes through little used land or property.
- The responsibility for control of the use of these routes will be identified. Public and private responsibility must be married to ensure that access is restricted to legitimate use and the risk of attacks on legitimate users is minimised.

3) The management of land use and development

Most land in the plan area is in private hands and there is very little public land available for the development of public institutions and recreation.

The continuing increase in land rates is having a considerable effect on the type and nature of development in the area. It is forcing some owners to sub-divide and sell their land and is a major reason for the increase in applications for change of user from residential to commercial or institutional, as owners look for more lucrative development options. The number of applications for change of user to religious based institutions, which are exempted from paying rates, is particularly notable.

Under the plan:

- Measures will be introduced to improve the management of development according to good planning practice within the framework provided by the LPDP. All new development will be expected to conform to standards that will ensure that it is in accordance with the vision for the area and not only respects but enhances the area's natural environment.
- Development will be permitted only when adequate services, particularly water and sanitation, are available.
- Plots of 4.0 ha. and over will be required to be comprehensively planned and developed and will include the provision of water and sewage disposal in an environmentally sustainable manner

The approach to be taken in the management of various types of development is given below. It is based on the premise that the dominant land use in the plan area is low-density residential. Therefore

other land uses, including high-density residential, public purpose, educational or commercial, will be permitted as required to support the dominant user.

(a) Managing low-density residential development

One house per plot will continue to be the dominant form of development in the area. However, there is an increasing demand for approval of change of user from individual to multi-dwelling units. The developments put forward for approval consist of several large housing units located around communal facilities such as gyms, swimming pools etc. surrounded by high security walls and/or electric fences. This development model is a relatively new phenomenon to Nairobi and is a result of security becoming a major priority particularly for would-be renters. Tenants and owner occupiers are increasingly appreciating the benefits of sharing security and other services, and are looking beyond the one house per plot model.

In some places in the plan area, notably in zones 1 and 2, recently constructed multi-dwelling developments are at odds with the general character and appearance of the area. This is mainly due to the density and/or height of the buildings, the high plot coverage and the boundary walls. In addition they utilise a disproportionate amount of scarce resources, particularly ground water and electricity.

Given this situation, it is proposed that all new residential development will be required to meet the following standards to ensure that it will enhance rather than compromise the character and natural resources of the area.

- Minimum plot sizes for residential development, based on the conditions pertaining in the different zones (including physical features, natural resources and eco-systems, soil types and availability of services) will be strictly enforced.
- One single dwelling unit plus staff quarters will be allowed per plot whether it is part of a multi-dwelling unit development or on an individual plot. The plot coverage will be a maximum of 25% of the area of the plot and the maximum number of storeys will be two (ground plus one). Development approval will be conditional on the availability of services, in particular water supply. Standards relating to rainwater harvesting, grey water recycling and the use of alternative energy sources will be recommended and information and advice provided on these.
- Multi-dwelling ¹unit developments will be permitted on plots of 4.0 ha. and over, subject to the requirement that each dwelling unit occupies an area of land no smaller than the minimum plot size for the zone. (All standards relating to the one house per plot model, described above, will apply). Land for access roads, communal facilities etc. will be in addition. All multi-unit developments will be subject to an EIA and will be expected to meet standards related to services, water use and environmental impact. Shared services, particularly the establishment of private water companies to ensure the equitable use and efficient management of borehole water, will be encouraged. The use of hedges and creepers to cover boundary walls and fences, to reduce their adverse visual impact, will be required.

¹ This refers to more than one housing unit on a parcel of land. It should meet conditions for low density housing. Excludes flats

Detailed standards for residential development are being developed based on the CCN's current standards and the Physical Planning Handbook. These standards will include requirements that will ensure that development conforms to the vision of Karengata as an "eco-suburb".

(b) Managing high-density residential development

The demand for low and medium income rental housing is increasing. This is due to a number of factors including the increasing number of commercial activities in the area and the fact that many residents and institutions do not provide sufficient accommodation for their domestic and ancillary staff. Educational institutions also do not provide sufficient accommodation for staff and students.

In order to address this, all existing high-density housing will be reviewed by a committee set up for the purpose under the Urban Pact. The review will address the following:

- The right of families without title to stay on land they have occupied for many years will be investigated with a view to formalising their right to do so and enforcing the upgrading of structures and services.
- The upgrading of Kuwinda, the largest high density settlement in the plan area.
- All other high density housing settlements will be required to obtain approval from the CCN. Approvals will be subject to their meeting the standards required in relation to the provision of services and construction.
- The improvements required in each of these settlements will be the subject of negotiation with individual landlords on a case by case basis.
- All hostels will be required to obtain approval from the CCN subject to meeting the standards relating to the number of rooms (maximum of eight), plot coverage (not more than 40%), height (one storey), the provision of services and other standards relating to building materials used and the provision of services. In addition proposals for development of hostels should receive comments from neighbours.

High-density residential development is incompatible with the main function of the area as a low-density residential area. Demand for affordable accommodation from low and medium-income workers in the plan area will grow as development increases. This demand cannot be met entirely within the plan area. However the strategy will be to meet as much of the demand as possible in the plan area in the following ways:

- Employers will be expected to house all permanently employed domestic and ancillary staff. This will be a condition of planning approval for all new development.
- All existing institutions will be required to meet the accommodation requirements of their ancillary staff.
- Small numbers of staff accommodation constructed on private plots to agreed standards will be acceptable as these have a low environmental impact and would be subject to the owner occupier's supervision. Owners of plots of one acre and above will therefore be permitted to provide a maximum of eight units for staff quarters. Permission for extension of user will be conditional on the total plot coverage of the main house, staff quarters and the rental units not exceeding 35% of the total area of the plot. Other conditions will relate to the location of the structure, the height

(single storey), the availability of water and sanitation, and the type of materials to be used. All such applications for extension of user will be required to get comments from neighbours.

(c) Managing land use for education, public purposes and recreation

The analysis has shown that there are numerous education and religious institutions in the plan area. Some institutions have not yet developed to full capacity and more pressure can therefore be expected. Many of these institutions serve a wider catchment area. In this respect, decisions regarding the suitable location of institutions that serve the city, the country or have an international status should be made on a city-wide basis. It is hoped that once the Nairobi Metropolitan Growth Strategy is prepared, it will address these issues.

The following measures are proposed for the development of educational facilities and public purposes in the plan area to support the local population. (*All the facilities should take into consideration the fact that this is a residential neighbourhood and therefore not compromise the quiet enjoyment of the residents.*)

Primary schools: there are two public primary schools in the plan area, the population of which is estimated at approximately 36,000. Planning standards require a total of nine primary schools for this size of population. There is therefore a shortfall of seven public primary schools. It is recognised that private schools are already bridging part of this shortfall, and that an additional two public primary schools are required. A minimum size of 4.7 ha. for one day primary school is recommended to include space for staff housing. All primary schools should have nursery units.

Secondary schools: The current planning standards require five public secondary schools for a population of 36,000. Private secondary schools are already bridging part of this shortfall in the plan area, but for equity purposes, two public secondary schools should be provided. A minimum plot size of 6.9 ha is required for one secondary boarding school including staff housing.

Colleges and universities: in view of the fact that these categories require large amounts of land, and that the plan area contains a large number of tertiary educational institutions already, including: the Catholic University, Tangaza College and the recently relocated Kenya School of Law. Further development of such institutions will be subject to meeting a minimum requirement of 20 ha. of land.

Religious Institutions: It is noted that many religious institutions in the plan area have other users besides the worship function. Such institutions will be required to apply for extension of user to accommodate this land use which will be subject to taxation (rates and land rent) accordingly. All religious institutions will be required to meet the standards relating to plot size and coverage, road access, parking etc. The religious institutions offering worship function only will be required to have a minimum plot size of 1.0 ha. while those offering other services like education and health should meet the minimum requirements for those users.

Special homes this group includes children's and old people's homes. In the plan area, it is recommended that a minimum of 1.2 ha. is required for a children's home while 0.8 ha. is required for an old people's home.

Health institutions: The plan area is only served by one public health centre and is inadequate since it not only serves the plan area but also the surrounding areas and the wider city and its capacity is greatly over stretched. It is proposed that it should be upgraded to a sub-district hospital. Private medical

practitioners will be encouraged to open clinics in the plan area to help fill the current gap. Such clinics will be required either operate from the existing designated commercial areas or in residential premises that meet the requirements of a professional office by CCN standards.

Administrative centres: the District Officer for the area is currently based in Kibera. Due to its size, the area should be upgraded to division level and a District administrative centre located in the Karen triangle.

Law and order centres: the spatial nature of the area bounded by forests and river valleys leads to numerous security problems and the current capacity of both the Provincial Administration and police is inadequate to deal with them. In response to this situation, improving the resources of both is essential. At the very least this should include:

- Upgrading of the Karen Police station to a divisional headquarters in line with administrative functions as well as the anticipated city decentralization efforts. Adequate housing for police officers is essential, as is effective communication equipment and sufficient vehicles to cover the area.
- The construction of a Chief's Camp and provision of vehicles and communication equipment and accommodation for Administrative Police.

Community centres: there is one small community hall next to the Karen Chief's office, which is both small and old. A modern community centre, able to function variously as a periodic curio market, a training centre, a social hall and a meeting place for the various neighbourhood associations will be located in the Karen triangle together with other administrative functions.

Recreation and open space: this is a broad category of land use that has significant impact on the protection and enhancement of natural and cultural amenities in the plan area. It also has a strong bearing on the "vision" for the plan area as an eco-suburb and a tourist destination. This is further strengthened by its strategic proximity to the Bomas of Kenya and the Nairobi National Park.

In the plan area the river valleys and forested areas are particularly in need of conservation as important wildlife habitats and areas of biological diversity.

To guide decisions regarding the location and type of new recreational facilities, the following principles will be applied:

- The **conservation principle:** that proposed facilities will be guided by the need to protect, manage and conserve natural resources and environmental processes.
- The **compatibility principle:** that proposed facilities must be suited to the physical characteristics of the area and be compatible with adjacent land uses and features.
- The **accessibility principle:** depending on the facility, public access or prevention of access (such as denial of access to protect wetlands, streams and forests) should be applied. In this regard, a multi-modal transportation system that is safe, energy-efficient and convenient is encouraged. This system should be designed to serve but not disrupt existing and future neighbourhoods and should come complete with ample parking.
- The **nuisance principle:** all facilities should not interfere with the quiet enjoyment of residential properties close to them. This applies to the other

A major problem in achieving the development of public facilities is the lack of public land in the plan area. The current requirement for the surrender of a percentage of land on sub-division does not lead to the accumulation of areas of land of the required size and location for most public purposes. Measures

will be introduced to use the current requirements for surrender of a portion of subdivided plots more effectively to assemble land for public and recreational purposes. Measures to secure land for public use through “land swaps” will also be examined. The provision of incentives to private landowners to contribute portions of their plots or to bequeath their plots to a land trust to be set up for the purpose will also be considered.

(d) Managing land use for commercial development

Commercial development, incompatible with a high quality residential area, is occurring throughout the plan area. Most of this development is on private land fronting main roads or on road reserves as noted at main road junctions such as on Forest Edge, Langata and Ngong roads and at Karen and Hardy shopping centres. These types of development needs to be discouraged

Some recent commercial developments in the plan area are indicative of trends that are more appropriate to the plan area. These include: small-scale office complexes in which separate office units share common facilities in a garden setting, small-scale “boutique” hotels and bistro-type restaurants.

The strategy for managing commercial development in line with the vision for the plan area is to ensure that all commercial developments conform to a high quality, low-density residential area and has a low negative environmental impact. Existing developments that do not meet these requirements will be subject to review and appropriate action taken.

All new commercial development will be required to meet planning standards relating to the availability of public utility services (water, sanitation, electricity), access, parking, plot coverage, height etc., which will be based on the requirements in the Physical Planning Handbook. Due to servicing limitations commercial developments will only be permitted in the following areas:

- **A district service centre** incorporating high quality office accommodation, high quality shopping outlets and a transport interchange will be located in Zone 5, the Karen triangle, which will be comprehensively planned and serviced for the purpose.
- **The neighbourhood centres** at Karen, Hardy, Park Place and Jubilee Plaza will be enhanced and developed within strictly proscribed boundaries, to provide for the daily shopping needs of local residents. An additional neighbourhood centre will be considered as part of a comprehensive development along Langata road adjacent to the Catholic University.
- **Kiosk relocation:** the feasibility of moving kiosks, particularly from main road junctions to planned locations at the neighbourhood centres will be explored. The aim would be to provide for and support legitimate kiosk businesses, ensure public health management and eliminate traffic hazards. In addition a better-managed area, in which the occupation of kiosks is controlled, will deter their misuse by criminals.

The following enterprises may be located in any zone, provided they comply with planning standards.

- **Domestic-scale office complexes:** subject to their meeting conditions relating to the availability of public utility services, plot coverage, access and parking. They will require an EIA and a comment from neighbourhood associations.

- **Home based enterprises and cottage industries** will be permitted in all zones on condition that they meet planning standards (including an EIA if applicable), are guided by the “nuisance principle” and have received a comment from neighbours.
- **Small retail outlets.** Local neighbourhood associations will identify suitable locations and will ensure conformity with agreed standards.
- **Conservation and eco-tourist facilities,** including restaurants and small-scale “boutique” hotels will be permitted in all zones on condition that they meet planning standards, are guided by the “nuisance principle” and have received a no objection from neighbours. Bars and health clubs will only be allowed if they are part of the facilities offered by hotels or recreational clubs and receive a comment from neighbours. They will not be allowed as separate entities.

All existing commercial development will be treated as follows:

- All unauthorised kiosks and similar development on road reserves will be given notice and removed. Legitimate kiosks will be relocated as described above.
- All commercial developments on plots that do not have approval for change user will be issued with enforcement notices.
- All commercial developments that have approval for change of user will be reviewed in terms of the type and quality of the development, their compatibility with the zone in which they are located, conformity to planning standards and the conditions attached to their approval.

e) Managing land use for light industries

All light industries should be subject to an environmental audit. In this regard, the existing light industries such as Sigma Feeds off Bogani road and petrol service stations should be subject to annual environmental audits. Minimum land size should conform to those in the planning zones.

f) Managing land use for agriculture

- The three flower farms in the area, Karen Roses, Sian Roses and Kordes Roses occupy plots designated for agricultural use but can basically be categorised as commercial activities that are incompatible with residential use. These farms will be allowed to remain in the area as long as they continue to supply themselves with water and subject to regular and satisfactory environmental audits.
- All agricultural based enterprises on private plots, such as dairy farming, horticulture, poultry farming, horse rearing and training etc. will be expected to conform to by laws related to such activities and to the nuisance principle described above.

(e) Improving safety and security

Security and safety is the concern of every resident not only in the plan area but also in the entire city as evidenced by elaborate security measures by individual plot owners. It is proposed that;

- Individual investment in private security be replaced by a community-based approach that emphasises collaborative effort between individual residents, neighbourhood associations, the police and the Provincial administration in line with current community policing strategy.
- At city level, the Nairobi Crime Prevention and Urban Safety Strategy and two year action plan, and the Nairobi Residents Urban Act have been produced, debated and endorsed. These provide a solid foundation and framework for addressing safety and security issues. In Karengata, efforts will be made to do just that and to encourage all residents to be active participants in the improvement of safety and security in the area. These efforts will be documented and shared with the city as a whole.
- The existing Karen police station to be upgraded to a police Division. This will increase the level of resource allocation to the office and thereby the levels of patrols.

3.4 Development Strategies for Specific Planning Zones

The development strategies listed above will apply to all five zones but will be modified as required to accommodate the particular physical and environmental characteristics of each zone including the availability of infrastructure. These modifications and specific development strategies are described below.

3.4.1 Zone 1A Miotoni and 1B Windy Ridge-Kerarapon

The strategy for **Zone 1A Miotoni**, is to retain the residential character and preserve and enhance the green environment. The Motoine River will be preserved and enhanced as an environmentally significant area of biological diversity. Therefore:

- The minimum plot size will remain 0.2 ha.
- Multi-dwelling¹ unit developments with shared services (including private water companies to share borehole water) will be allowed in this zone provided they comply with the conditions set out under Section 3.3.1 (3a), including the “greening” of boundary walls and fences.
- All development will be a maximum of ground plus one storey and will comply with the conditions set out under Section 3.3.1 (3a).
- Existing educational or religious institutions will be required to provide accommodation for existing students and staff and meet the plot coverage regulations. Proposals for nursery schools will be referred to neighbourhood associations for a comment.
- Proposals for new cottage industries, tourist related developments and small retail outlets will be referred to neighbourhood associations for comments.

¹ This refers to more than one housing unit on a parcel of land. It should meet conditions for low density housing. Excludes flats.

- An environmental action plan will be prepared for the Motoine River under the EMP. This may well increase the riparian reserve, which is currently 10 meters minimum or three meters from the highest watermark, whichever is higher. To accommodate this and the steep slopes adjacent to the river, the minimum plot size for plots immediately fronting the river will be 0.4 ha. All developments will be required to conform to the environmental action plan.

Zone 1B Windy Ridge-Kerarapon has a largely rural character and a number of large plots that are still used for agriculture. The strategy is to ensure change of user to high quality, low density residential while preserving and enhancing the environmentally fragile environment of the area around the headwaters of the Mbagathi and Kandis rivers. Therefore:

- The minimum plot size will remain 0.4 ha up to and including the area bordered by the Mbagathi River. Consideration will be given to reducing this to 0.2 ha. in the area adjacent to Kerarapon, only when improved water supply and sewage disposal has been implemented.
- Multi-dwelling unit complexes with shared services (including private water companies to share borehole water) will be allowed in this zone provided they comply with the conditions set out under Section 3.3.1 (3a), including the “greening” of boundary walls and fences.
- All development will be a maximum of ground plus one storey and will comply with the conditions set out under Section 3.3.1 (3a).
- Existing educational or religious institutions will be required to provide accommodation for existing students and staff subject to plot coverage regulations. Proposals for nursery schools will be referred to neighbourhood associations for comments.
- Proposals for new cottage industries, tourist related developments, small scale office complexes and small retail outlets will be referred to neighbourhood associations for comments.
- The environmentally sensitive areas around the headwaters of the Mbagathi and the Kandis rivers will receive special attention under the EMP. This may well increase the riparian reserve, which is currently not less than 10 meters in width on either side (PPA, regulations sec 15, c). To accommodate this and the steep slopes adjacent to the rivers, the minimum plot size for plots immediately fronting the river will be 0.4 ha.

3.4.2 Zone 2 Mbagathi

The zone is large but mainly residential with some large plots that are still used for agriculture in the Ololua Ridge area. The Mbagathi River and its relict riverine forest is an ecosystem of significant biological diversity. The strategy is to preserve and enhance the area around the river and the existing character and environmental quality of the zone. Therefore:

- The minimum plot size will remain 0.4 ha.
- An environmental action plan will be prepared for the Mbagathi river under the EMP. This may well increase the riparian reserve, which is currently not less than 10 meters in width on either side (PPA, regulations sec 15, c). To accommodate this and the steep slopes adjacent to the river, all development will conform to the requirements of the environmental management plan.

- Multi-dwelling unit complexes with shared services (including private water companies to share borehole water) will be allowed in this zone provided they comply with the conditions set out under Section 3.3.1 (3a), including the “greening” of boundary walls and fences.
- All development will be a maximum of ground plus one storey and will comply with the conditions set out under Section 3.3.1(3a).
- Existing educational or religious institutions will be required to provide accommodation for existing students and staff subject to plot coverage regulations. Proposals for nursery schools will be referred to neighbourhood associations for comments.
- Proposals for new cottage industries, tourist related developments, small scale office complexes and small retail outlets will be referred to neighbourhood associations for a no objection.
- The existing Karen Shopping Centre will remain confined to the plots that are presently occupied by shops. No extension of this centre through change of user on adjacent plots will be permitted.

3.4.3 Zone 3 Bogani

It is proposed that a comprehensive plan for water supply and sewage disposal be prepared for this area. Therefore:

- The minimum plot size of 0.4 ha will be retained but consideration will be given to reducing this to 0.2 ha when water supply has improved and adequate sewage disposal facilities have been implemented.
- Multi-dwelling unit complexes with shared services (including private water companies to share borehole water) will be allowed in this zone provided they comply with the conditions set out under Section 3.3.1(3a), including the “greening” of boundary walls and fences.
- All development will be a maximum of ground plus one storey and will comply with the conditions set out under Section 3.3.1 (3a).
- Existing educational or religious institutions will be required to provide accommodation for existing students and staff subject to conformity with plot coverage regulations. Proposals for nursery schools will be referred to neighbourhood associations for comment.
- Proposals for new cottage industries, tourist related developments and small retail outlets will be referred to neighbourhood associations for comment.

3.4.4 Zone 4 Karen Plains-Forest Edge

This zone has many different land uses and the highest number of sub-divisions below the legal minimum in the Karengata area. It is continuing to develop in a completely ad hoc manner and lacks a proper road network and water reticulation. It is proposed that comprehensive action plan is prepared

for the area that will include water supply and sewage disposal, road and storm water drainage. In addition, an environmental action plan for the Mokoyeti River should be prepared urgently.

Under the plan:

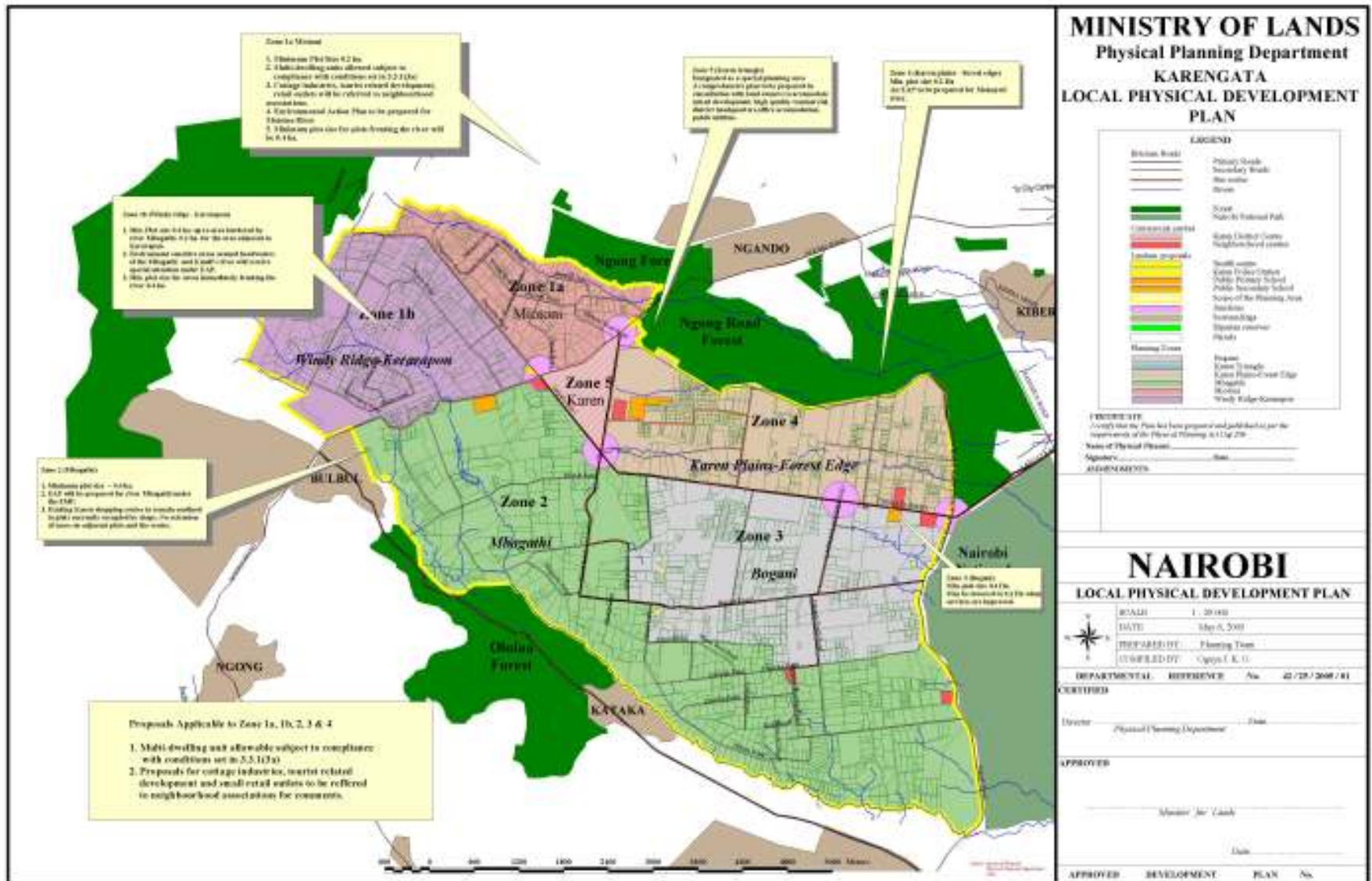
- The current minimum plot size of 0.2 ha will be retained. Permission for all new development will be subject to availability of public water supply and suitable sewage disposal facilities.
- An environmental action plan will be prepared for the Mokoyeti River, This may well increase the riparian reserve, which is currently not less than 10 meters in width on either side (PPA, regulations sec 15, c). To accommodate this and the palustrine wetlands adjacent to the river, plots adjacent to the river will be a minimum of 0.4 ha.
- Multi-dwelling unit complexes with shared services (including private water companies to share borehole water) will be allowed in this zone provided they comply with the conditions set out under Section 3.3.1 (3a), including the “greening” of boundary walls and fences.
- All development will be a maximum of ground plus one storey and will comply with the conditions set out under Section 3.3.1 (3a).
- Existing educational or religious institutions will be required to provide accommodation for existing students and staff subject to plot coverage regulations. Proposals for nursery schools will be referred to neighbourhood associations for comments.
- Proposals for new cottage industries, tourist related developments, small scale office developments and small retail outlets will be referred to neighbourhood associations for comments.

3.4.5 Zone 5 Karen Triangle

- The area within the Karen triangle will be designated a special planning area for the development of mixed, high quality commercial, middle income residential and office accommodation, including accommodation for a District headquarters. A comprehensive plan will be prepared for the area in consultation with landowners to accommodate and provide public utilities to these users. Approval of all development in the area will be conditional on its conformity with the plan. The plan will include a road network and traffic management proposal for the triangle itself and the surrounding roads, with a transport interchange and landscaped parking. Improved market facilities, landscaped public open space and community facilities will also be included in the plan.

The proposed spatial framework is shown on map 3.4.

Map 3.3 Proposed spatial framework



4.0 The Implementation Strategy

4.1 Introduction

This is a new approach to physical planning that has been used in Karengata. This approach fully involved residents and other key stakeholders in preparing this LPDP. The methodology adopted in preparing the LPDP was participatory where area residents worked in partnership with the local authority.

However, the LPDP will only be successful if it is implemented. To do this it is essential that all key stakeholders are involved in the implementation and are committed to do so. It is recommended that the partnerships created through the drafting of the LPDP will continue into its implementation, monitoring and evaluation.

4.2 A Pilot to Demonstrate Community Involvement

The engagement framework to implement the Karengata LPDP, described below, will provide a pilot to demonstrate collaborative local development planning and management in the city. It will test the effectiveness of the procedures and organisational arrangements agreed upon. Valuable experience will thus be obtained that can be used to inform the evolution of a system of local planning and development for Nairobi as a whole.

4.3 Mandates and Precedents

This engagement framework accords with international and national resolutions and agreements concerned with sustainable environmental management and with community empowerment. They include:

- Agenda 21 (United Nations)
- The Habitat Agenda
- The Economic Recovery Strategy
- The Physical Planning Act, 1996
- The Environmental Management and Co-ordination Act, 1999
- The stated policy of the GoK to involve local communities in decisions which directly affect their development.

4.4 Objectives

The engagement framework will:

- continue the collaborative approach initiated through the preparation of the plan,
- ensure that the community is fully involved in development planning decisions,
- ensure that development management is undertaken transparently, objectively and efficiently,
- ensure that all development is carried out in conformity with the LPDP
- Ensure that all activities in the implementation matrix are implemented.

4.5 Activities to be undertaken

The implementation matrix, shown in Figure 4.1, sets out the activities to be undertaken in order to implement the strategies described in Part 3 of this report, the time-frame and the actors that will be involved. The activities include:

- **The management and control of new development** including:
 - Providing guidance to prospective developers and residents on acceptable forms of development that meet the requirements of the LPDP.
 - Technical appraisal of proposed developments
 - Approval of proposed developments
 - Ensuring development complies with approved plans and conditions.
- **The preparation of proposals for ‘special planning areas’** identified under the LPDP, including:
 - Liaison with potential developers
 - Preparation of area plans
 - Approval of area plans
 - Implementation of area plans
- **The completion of the Environmental Management Plan** for the area and related action plans.
- **Special task forces** set up e.g. to review existing irregular developments including low-income housing and commercial developments that contravene planning regulations.

These activities will be undertaken within an agreed organisational and procedural framework, which is set out below.

4.6 Organisational Framework

The principal collaborating organisations are:

The Ministry of Lands, whose mandatory functions include responsibility for co-ordinating physical planning initiatives throughout the country. In addition the MOL’s responsibility includes ensuring that all land matters are addressed in accordance with current policies and approaches. As a partner in the implementation of the LPDP, the PPD will ensure that it is linked into the proposed Nairobi Metropolitan Growth Strategy and initiatives to encourage more community participation in development planning and management.

The City Council of Nairobi is the planning authority for the city. As such its main mandate is to provide strategic direction to city growth and to co-ordinate the management of the city’s development with a particular focus on low-income areas. It operates within a broad legal and regulatory framework based on both the Physical Planning and Local Government Acts. Within this framework, the CCN will be responsible for ensuring that all development within the plan area is in accordance with the LPDP

and CCN by-laws, and for co-ordinating implementation of the LPDP for Zone 12 with city-wide planning issues including trunk infrastructure.

The National Environment Management Authority, will ensure that all developments in the plan area conform to the requirements of the Environmental Management and Co-ordination Act. NEMA will also provide advice and assistance in the completion of the Environmental Management Plan and on the setting up of a system to monitor the implementation of the EMP.

The Ministry of Water and Irrigation, will advise and assist in all matters related to its role as stated in the Water Act in relation to ground and surface water resources in the area. It will also contribute to the ground survey of all boreholes in the area and advise on the monitoring of aquifer depletion.

The Provincial Administration, the District Officer and Karen and Langata Chiefs will continue to work closely with the local community to improve safety and security in the area and to control illegal trading activities, noise and environmental pollution and the felling of trees.

The Nairobi Water and Sewerage Company will continue to develop and implement its programme to improve the water supply in the area. It will also monitor the use of septic tanks, regulate exhausters and prepare a programme for the phased development of a piped sewerage system for the area.

The Kenya Power and Lighting Company, whose main function will be the continued development and implementation of its programme of improving the electricity supply.

The Karengata Development Planning Committee (KDPC) whose main function will be to liaise between the community and the statutory bodies in all development planning and management matters related to the implementation of the LPDP.

The KDPC will be representative of the residents of the area covered by the LPDP, who are organised in the form of neighbourhood associations under the umbrella of KLDA.

The KDPC will therefore have the following members:

- Two representatives from each of the five planning zones. These representatives will be selected by neighbourhood associations in each zone.
- The councillor for the area

A Chairperson will be elected by the members. The terms of the Chairperson and neighbourhood representatives will be three years. At the end of the term, each planning zone will nominate their representative for the following three years. At least 50% of the members should be new and no member will be allowed to serve for more than two continuous terms. At least one third of the representatives should be women.

The KDPC's mandate and legal status will arise from its gazettelement by the Minister in charge of physical planning as an integral part of the implementation framework for the LPDP,

The CCN's recognition of the role of the KDPC in the processing of applications for planning permission for development in the area covered by the LPDP will be by way of a relevant council resolution endorsing its establishment and acknowledging its role in the implementation of the LPDP.

Additionally, the CCN together with other stakeholders will sign a Pact of commitment to implement the LPDP with the participation of community members.

The KDPC will be served by a secretariat, with a permanent office in Karengata. A physical planning officer from the CPD will be a member of the secretariat. The main function of the secretariat will be to ensure that the agreed procedures, described under 4.7 below, are adhered to and to co-ordinate with all concerned organisations.

Neighbourhood associations in the area will be responsible for monitoring development in the planning zones in which they are located. They will be represented on the KDPC and provide the link between the KDPC and the situation on the ground. All developments in the area that require comments from neighbourhood associations under the LPDP will be referred to them.

All these organisations will contribute to the activities set out in the Implementation Matrix, Figure 4.1, and collaborate with one another to ensure transparent, objective and efficient implementation within the following procedural framework.

4.7 Procedural Framework

The Management and control of new development

Awareness raising in the community:

This will involve educating residents, prospective developers; estate agents etc. on the requirements of the LPDP and providing guidance on acceptable forms of development that meet these requirements. The KDPC secretariat in liaison with the CPD, PPD and NEMA will provide such guidance locally, through the publication of guidelines, information sheets and specific advice.

Development approval:

- All applications for sub-division of land, change or extension of user and building approval will be referred to the KDPC by the CPD. The KDPC will review the applications according to their conformity with the LPDP. The KDPC may invite any applicant, stakeholder or other interested party to its meetings to discuss planning applications.
- The KDPC secretariat will:
 - Liaise with NEMA on all matters relating to environmental aspects (EIAs will be approved by NEMA in liaison with the KDPC).
 - liaise with MWI, NCWSC and KPL, as required, on matters relating to water, sewerage and electricity
 - liaise with neighbourhood associations to elicit their views and
 - Liaise with any other relevant body as the need arises.
- The Technical Committee of the CCN, will take into consideration the recommendations of the KDPC while vetting the development applications.
- Where the TPC reaches a decision on the application that is not in accordance with the recommendations of the KDPC, the TPC will provide written reasons for the decision.

- **Major developments:** all developments that will have a major impact on the surrounding environment and the demand for water, sanitation and electricity (e.g. developments of 4ha and over or multi-user developments), will be reviewed and discussed jointly by representatives of the KDPC, the CCN, the PPD, NEMA and other relevant authorities, at an early stage in the planning process.

Development monitoring and control

- The KDPC through its constituent neighbourhood associations will monitor all approved developments to ensure that their construction complies with the approved plans.
- The KDPC, through its constituent neighbourhood associations, will also monitor any development that appears to contravene the LPDP and other pertinent legislation.. All contravention of relevant Acts, by-laws and regulations will be reported to the relevant authority. In the case of contravention of the LPDP, CCN by-laws or the Physical Planning Act, the CCN will take immediate action.

4.6 Resources

The statutory organisations dealing with development have been faced with several challenges in performing their duties. The lack of sufficient personnel is a particular problem as is the lack of logistical backup such as transport and communications. These are major reasons for sharing some activities with resident associations that have the advantage of proximity to local communities and can more easily liaise with residents and developers, and monitor development.

However, these associations also suffer from a lack of resources including technically skilled personnel able to volunteer their time and energy to a long-term effort. They also have minimum funds to provide for efficient management and logistical backup.

As it is a pilot initiative, the implementation of the Karengata LPDP may attract donor funding to lay the basis for effective operation of both the community and the public authorities. In this case, a fundamental aspect of the pilot exercise will be to identify and set up funding mechanisms that are sustainable in the long term and applicable to poorer communities.

Funding will be required not only for personnel and logistical support but also for consultancy services to fill the personnel gaps in the preparation of the EMP, action plans and special area improvement plans required under the LPDP. In addition, the important monitoring and evaluation function will necessitate the employment of an independent research organisation.

A Karengata Development Management Fund will be set up for the purpose of attracting funding sufficient to meet the needs of all parties to this pilot initiative and to monitor and evaluate the results. Potential sources of funding include:

- Charges for the processing of development applications
- Quarterly contributions from neighbourhood associations
- Contributions from private sector organisations
- Contributions from national and international donor organisations wishing to fund a pilot initiative to demonstrate collaboration between the public and community sectors to improve urban governance.

Table 4.1 Implementation Matrix

ACTIVITIES	Dec	2006			2007	2008	2009	2010	2011	2012	2013	2014	2015	ACTORS
PLAN IMPLEMENTATION														
Set up structures under the urban pact and capacity building														MOL, MLG, CCN, KLDA,
Actin plans														
- Prepare action plans for Zones 3, 4 and 5														CCN, MOL, KLDA
Management of Natural Resources														
- Finalise and implement EMP														NEMA,MLH, CCN KLDA, KWS, Provincial. Administration
- Ground survey of all boreholes in the plan area														MWI, KLDA, NCWSC
- Programme to encourage rain water harvesting														NEMA, CCN Residents
Management of Public Utility Services														
- Expand public water supply programme														NCWSC
- Rehabilitation of Karen oxidation ponds														NEMA, KLDA, NCWSC,
- Review and revise sewerage plan														NCWSC
Solid Waste														
Improve solid waste management														CCN, KLDA NEMA, Residents
Electricity														
- Improve power supply														KPLC, KLDA
- Programme to encourage use of solar energy														NEMA, KLDA, residents
Roads, public transport and footpaths														
- Prepare designs for road + junction improvements														CCN, MRPW
- Implement road + junction improvements														CCN, MRPW

ACTIVITIES	2006			2007	2008	2009	2010	2011	2012	2013	2014	2015	ACTORS
- Identify footpaths and implement a system of controlling their use													MOL, CCN, KLDA, Residents
Management of land use and development													
Development control													MOL, CCN, KLDA
Residential Development													
- Prepare guidelines and monitor development.													MOL, CCN, KLDA, residents
Education, Public Purpose, Recreation													
- Increase No. of schools													MLH, CCN, MOE
- Upgrade area to division													MRPW, KLDA, Provincial administration
- Upgrade Karen Police Station													OP, MRPW
- Upgrade Karen Health Centre													CCN, MoH, MOL KLDA
- Develop playing fields and parks													CCN, NEMA, residents, KLDA
Commercial Development													
- Prepare guidelines for commercial developments													MOL, CCN, KLDA
- Develop District Service Centre Zone 5													MLG, CCN, MOL
Progress Review													
- Progress review of LPDP implementation													MOL CCN, all stakeholders
- Preparation of new LPDP													MOL, CCN, all stakeholders

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ANNEX 1

Map Ref.	Name & Location	No. of Rooms	Rent per Month Kshs	Type and Condition of Structures	Ownership Location of Owner Land Status	Water Source	Sanitation	Date Established	Remarks
	San Marino, Twiga Hill	50	1,800	Reasonable, most stone or block, some under construction	Private plot, landlady lives off site	NCC twice a week	Pit latrines	1960s	Invisible from road, behind hedge
	Kwa Wa Githoni, 150m off Kuwinda road	53	800 – 1,200	Very poor, old staff quarters + converted pig sties	Private plot, landlord lives off site	From river + nearby religious institutions	None, use the area around		Lack of sanitation constitutes a health hazard + polluting river
	Kuwinda , Kufuga road	c. 800	800 – 1,000	Most very poor, some stone, most timber + recycled tin	13 families have claim on land, all live there with descendants and tenants	Water sold at Kshs 10 per debe	13 pit latrines now full	(check Njenga notes)	Exact status of land ownership not known
	Maasai village, Karen Plains	43 units	n/a	Typical Maasai manyattas	In dispute – families say it was gov. land + claim right to be there. Land since ‘grabbed’ subdivided + title deeds issued	Don Bosco provide water via pipe to the village	Pit latrines + the area around	25 families settled in 1984	Encroaching development a threat to Maasai traditional life-style.
	Site of Turkana village, now demolished, Karen Plains	n/a	n/a	n/a	In dispute – Turkana were employees of Faulkner who gave them the land, evicted by ‘grabbers’ who have title deeds	n/a	n/a	1971 demolished	Where do the Turkana stay now? ‘Grabbed’ plots are being developed
	Matopeni, off Karen Brooks estate below Tree	80 (60 rented 20)	500 – 1,000	Very old structures of mud and wattle and recycled tin	Old lady claims she was given 5 acres by late	From adjacent borehole	Pit latrines	1931	Old lady has no title deed

	Lane	family)		precariously built on hill side	President Kenyatta lives on site with 4 generations of family and tenants	burst pipe			
	Behind kiosk, next to Tangaza college, Langata South Road	30	700	Timber structures, tin roofs, reasonable condition				6 pit latrines	
	Kwa Njeri, off Ndege road	130	875	Old structures of recycled material poor construction and condition, some more recent	Private plot, landlady lives in good house adjacent	Large pond possibly polluted	Pit latrines		Tenants reluctant to talk to us, owner stayed in house and watched us
	Kwa Muteso adjacent to Kwa Njeri			Converted ag. buildings, very dilapidated	Private plot recently subdivided into half acre plots				Planning permission for subdivision?
	Stone, Ndege road	29		Recycled timber timber and tin, reasonable condition		NCC to storage tanks	2 pit latrines		
	Kwa Gitonga	32 units	4,800 for 2 roomed unit	Good condition, well built and maintained, clean and orderly	Private plot owner lives adjacent	Piped NCC some units have own bathrooms	Well maintained flush toilets		Courtyard development not visible from road, open space inside
	Corner Langata + Langata South roads	20	300 (?)	Tin roof and metal panel walls	Private plot, owner not known			Under construction	Planning permission?
	Kwa Meja, off Mokoyeti road west	38	800 - 900	Old tin and timber, very dilapidated, no new structures	Private plot, owner lives in old stone house on site	Bought from neighbours	8 pit latrines - dilapidated	1969	Owner Grace Kamau 890746
	Kampi Kisii, Forest Edge, off Mokoyeti road	46	Less than 500	Old tin and timber, very dilapidated, no new structures	Established as a farm, subdivided among children, one extended family plus tenants	Bought from neighbors' boreholes	Pit latrines poor condition	Early 1960s	Family have title deed to plot, not formally subdivided
	Next to Kampi	16		Timber and tin,	Private plot –		1 good		

	Kisii			reasonable condition a few 'hostel' rooms in stone	landlady lives off site		condition VIP built recently		
	Kwa Kigori, next to Kampi Kisii	25	1,000 for rooms in old house	13 tin rooms in tin structures rest in old farmhouse	Private plot – landlord stays near Wilson Airport		2 pit latrines poor condition	1960s	
	Mokoyeti road East Student hostel		12,000 per room 2 student sharing	Cement block plastered, tin roof	Private plot	NCC to storage tanks	Septic tank	Under construction almost complete	Change of User approved? Building approval?
	Kwa Karanja, near Karen Country Club staff quarters	44	700 – 1,000	Timber and tin, poor condition, all old structures	Private plot, landlord (Martin Karanja) lives on site	Browsers shared payment	Pit latrines poor condition	1970s	On large, agricultural plot? Contact Njoki 0722 750756