



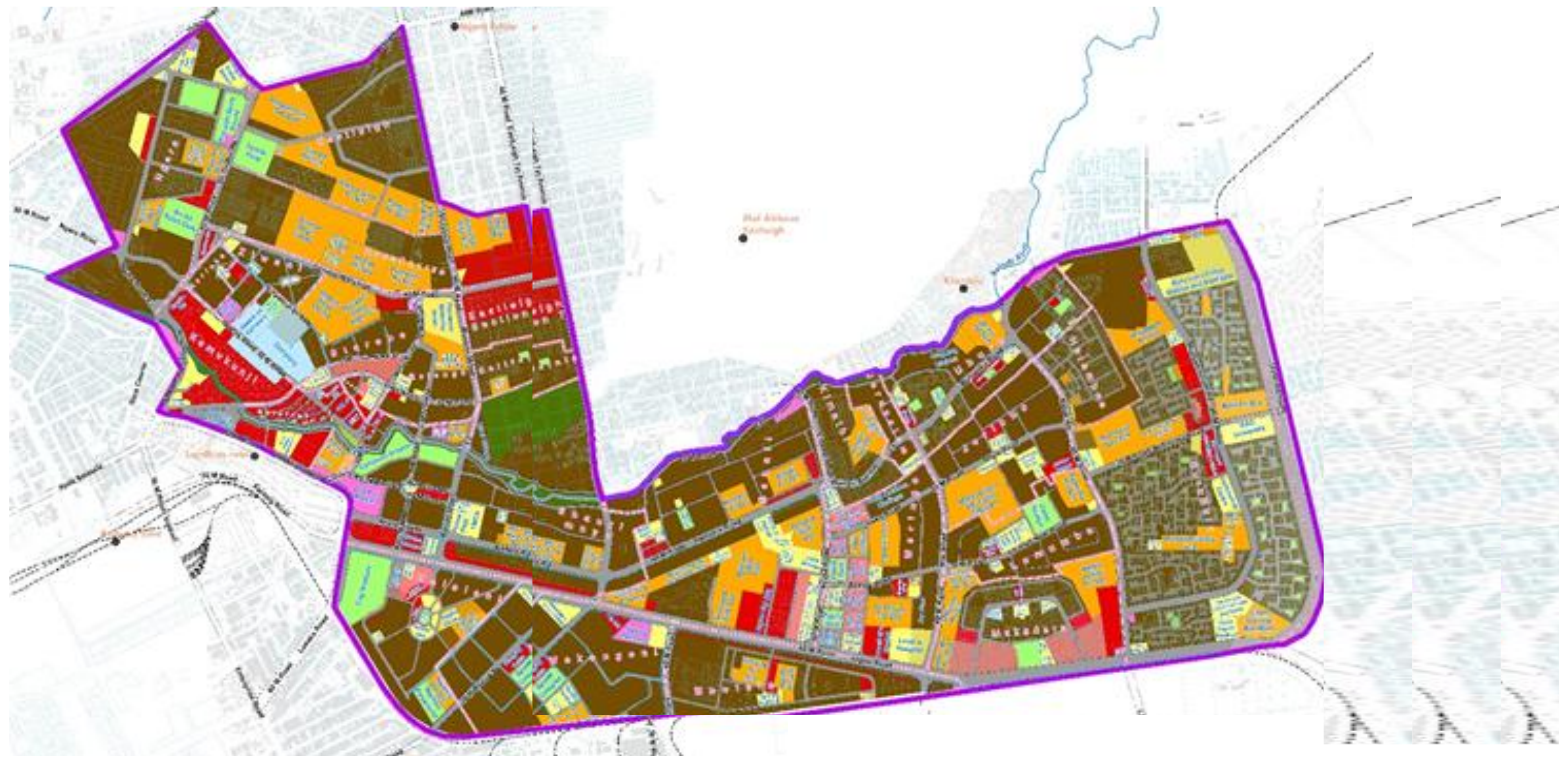
Ministry of Transport,  
Infrastructure, Housing &  
Urban Development

# NAIROBI METROPOLITAN SERVICES IMPROVEMENT PROJECT

## URBAN RENEWAL OF EASTLANDS, NAIROBI



Nairobi City County  
Government



### FINAL PLAN REPORT

### VOLUME 2

### URBAN RENEWAL PLAN

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## **EXECUTIVE SUMMARY**

The Urban Renewal Plan Project for Eastlands, Nairobi (2016 -2036) is one of the Nairobi Metropolitan Service Improvement Projects, which are being undertaken by the Government of Kenya, with support from the World Bank under the Country Partnership Strategy (CPS). It focuses on the old public housing estates and adjacent areas in Eastlands. The project is under the Ministry of Transport, Infrastructure, Housing and Urban Development and the Nairobi City County Government. It is also one of the Local Area Plans, given priority by Nairobi Integrated Urban Development Master Plan (2014-2030) and Nairobi 2030 Metropolitan Spatial Plan.

The plan preparation process has been participatory and all-inclusive throughout the project processes. There were numerous public consultation activities including series of stakeholder workshops, technical consultations, focused group discussions and key sector consultative meetings. Over 45 public participation fora have been conducted to-date. The stakeholders are generally supportive of the project and are keen for its implementation. Their concerns have also been well documented and addressed in the various proposals.

The plan provides a framework for the transformation of Eastlands through provision of decent housing and therefore develop a functional urban system as well as deliver a responsive & sustainable model for the redevelopment of the entire project area. The project area covers an area of 1264 Ha and an estimated population of about 150,000 people expected to rise to over 500,000 by 2036.

Eastlands currently experiences a number of development challenges, some of which include dilapidated housing, uncontrolled/illegal housing extensions, environmental degradation, urban poverty, dilapidated infrastructure and services, inadequate public transport, overcrowding/congestion, inadequate inter-linkages, lack of updated development plans and sitting tenants.

The renewal strategy emphasizes on densification of use of land through high-rise developments, expansion of trunk infrastructure and services and creation of sustainable neighborhoods developed within the existing estates. The project proposals include a new Land Use Plan, Action Area Plans and various Sector Strategies. The key sectors are Housing, Infrastructure, Environmental Management, Disaster Management and Heritage Preservation, Economic Strategy, Revenue Enhancement Strategy and a Financing Framework. A Strategic Environmental Assessment Report was undertaken to mainstream social and environmental concerns that would arise from the implementation of the plan.

The proposed land use structure re-organizes the current land use primarily to optimize the use of land. Broadly, this looks at an appropriate mix of housing, work and public spaces. The area under housing is proposed to reduce from 45% to 42% while work places increase from 8% to 9%. Land assigned for public spaces increases from 47% to 49%. Through densification, the formal housing stock is proposed to increase from about 16,569 units to over 125,508 units. This is a significant contribution to the government's Big Four agenda with regard to affordable housing. Given the additional estimated 33,893 extensions, the proposed housing stock is considered adequate to not only serve the existing tenants but also help in alleviating the housing shortage within Nairobi and the country at large. The units fall within zones of varying building heights ranging from 5, 8, 12 and 16 level zones depending on the proximity to the flight path serving Moi Airbase in Eastleigh.

Taking into account the socio-economic characteristics of the resident population, four types of dwelling units have been proposed with emphasize on low cost housing given the area is dominated by low-income earners. They include studios/bedsitters, 1, 2 and 3 bedroom units. These have been mixed in proportions that will promote inclusivity and integration of all socio-economic groups. House

rental and sale options have been proposed. For sitting tenants is proposed that house access should be through rentals given the low-income levels.

In order to enhance implementation and access to affordable housing, economic and the revenue enhancement proposals have been made. Also suggested are strategies for delivering affordable housing, cost implications, means of funding the urban renewal projects and the strategies for distributing the houses between the sitting and the new tenants, indicating the proportions which can be sold and that which can be rented out.

On work places, areas of employment have been expanded to create more employment opportunities. Special consideration has been given to the informal sector, which has been the primary employer within the project area. Opportunities to transform the informal sector into vibrant businesses have been proposed while also providing spaces for further formal activities. Key employment nodes are Gikomba, Kamukunji, Burma, Mwariro, Uhuru market, Makadara, Jericho, Buruburu and other minor shopping centres. High-rise developments on the nodes are proposed.

The additional work area provided is 8.7 ha, which translates to a total Gross Leasable Area of 353 Ha. The number of employment opportunities have also been increased from about 67692 to about 407,352. This is equivalent to 600% job increment. The Gross monthly incomes and annual government revenue are also expected to increase significantly. It is estimated that the former will increase from Ksh. 875 million to 5.3 billion while the latter will shoot to Ksh. 8.3 billion from the current Ksh. 4.4 million.

Given the scarcity of public facilities coupled with the significant public investments already undertaken at the institutions, it is proposed that all existing social facilities including schools and health facilities be retained. Additional land has been earmarked for establishment of new facilities while land has also been added to some of the existing institutions. Sites for establishment of a TVET college and a Level 4 Hospital in Makadara have been proposed as flagship projects in the education and health sectors respectively.

In order to address the challenges at lower levels, action area plans have been proposed for each estate. At estate level the plans outline proposals including delineating areas for various land use, layouts and numbers of housing units vis a vis the existing estimated sitting tenants. The plans also show the infrastructure network services including road, water and sewer trunk systems. These plans provide an integration of strategies in each of the estate. Among the issues addressed are housing deficits, dilapidation of housing and infrastructural networks, inadequacies of transport networks, social facilities and utility services, environmental pollution, informal structures and encroachments into public spaces. These plans are intended to regenerate the quality of living environment in each estate, promote economic rejuvenation in the markets and enhance the restoration of the quality of the natural environment around Nairobi River.

The sector strategies on the other hand harmonize proposals within the various sectors such housing, transportation, water and sewerage, storm water management, education, health, community facilities, energy, environmental management, heritage preservation, economic development and revenue enhancement. The housing sector proposals provide strategies for increasing the housing stock to sitting and new tenants, improving quality of housing and service areas, enhancing access to affordable housing and improving government revenue accruing from the public housing.

On the transport sector, proposals include foremost the expansion of the major corridors to support the various infrastructure and service improvements. This will support the proposed introduction of LRT and BRT corridors, provision of NMT infrastructure, provision of new passenger and freight

termini, provision of parking facilities, road expansion and development of missing links. The water and sewerage system has been reorganized to upgrade the currently obsolete network. Sewerage pre-treatment sites have also been recommended within the project area to improve the current sewer management system before offloading into the main city trunk sewer.

On environment, a Nairobi riverfront development strategy is proposed to protect the ecologically sensitive area. The riparian area has clearly been delineated and road buffer created along the entire corridor to protect the river from encroachments.

Given the rich history of the project area to the nation, a heritage preservation strategy has also been proposed. It identifies various sites that should be preserved as the rest of the developments are transformed. This will help to augment various efforts undertaken by the National Museums of Kenya in the recent past.

New development control guidelines have been proposed for the privately owned estates and shopping centres located within the project area. The purpose of the review was to enhance optimization of the use of land. Of significant note is the fact that some of the private estates have witnessed significant transformation towards renewal while some other estates have continued to retain their original character. The guidelines indicate the permissible ground coverage, plot ratio and building approval requirements among others.

In conclusion, plan addressed the various planning and developmental challenges experienced in the project area. The current state is not acceptable and there is need for urgent attention. Given the magnitude of the project area, it is recommended that the implementation of the urban renewal program must be phased. Initially, it should start with pilot projects before the roll out of the rest of the project. It is also recommended that the implementation of any housing project should be preceded by an enumeration and identification of beneficiaries from the siting sitting tenants. This will help enhance the success for the renewal project.

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## **ACRONYMS**

ASAL	Arid and Semi-Arid Lands
AWSB	Athi Water Services Board
BCR	Business cum Commercial
BRT	Bus Rapid Transit
CAD	Computer Aided Design
CBD	Central Business District
CEC	County Executive Committee
CIDP	County Integrated Development Plan
CIP	Capital Investment Plan
CO	Chief Officer
COTU	Central Organization of Trade Unions
DWD	Department of Water
ECDE	Early Childhood Development Education
EIA	Environmental Impact Assessment
EMCA	Environment Management and Co-ordination Act
Ft.	Feet
FY	Financial Year
G.C.	Ground Coverage
GIS	Geographic Information System
G.o.K	Government of Kenya
GPS	Geodetic Positioning System
HQs	Head Quarters
ICT	Information and Communication Technology
IEBC	Independent Elections and Boundaries Commission
INTP	Integrated National Transport Policy
ISUDP	Integrated Spatial Urban Development Plan
JICA	Japan International Cooperation Agency
KNBS	Kenya National Bureau of Statistics
KNHPC	Kenya National Housing and Population Census
KRRBS	Kenya Railways Retirement Benefit Scheme
KWS	Kenya Wildlife Service
MoTIH&UD:	Ministry of Transport, Infrastructure, Housing and Urban Development
NCCG	Nairobi City County Government
NCWSCL	Nairobi City Water and Sewerage Company Limited
NIUPLAN	Nairobi Integrated Urban Master Plan
NEMA	National Environment Management Authority
NLC	National Land Commission:
NMR	Nairobi Metropolitan Region
NRW	Non-Revenue Water
NWCPC	National Water Conservation and Pipeline Corporation
P.R.	Plot Ratio
PSVs	Public Service Vehicles
RIMs	Registry Index Maps
SEA	Strategic Environmental Assessment
SNE	Special Needs Education
SOK	Survey of Kenya
SPA	Service Provision Agreement
SWOT	Strengths, Weaknesses, Opportunities and Threats
TORs	Terms of Reference
TSC	Teachers Service Commission
WHO	World Health Organization

WSB Water Service Board  
WSP Water Service Provider  
WRA Water Resources Authority

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# CHAPTER ONE INTRODUCTION

## 1.1 PROJECT BACKGROUND

The Urban Renewal Plan is one of the projects forming part of the Nairobi Metropolitan Service Improvement Project (NaMSIP). It is a development framework which is envisaged to guide the redevelopment process in 18 government estates and their surrounding private neighbourhoods.

The project area is marked by Eastleigh 1<sup>st</sup> Avenue and Nairobi River to the North, Outer Ring Road to the East, the CBD and Embakasi railway line to the South and Ring Road Ngara-Murang'a Roads to the West (see the map below).



Figure 1: Project Area Extent

It covers an area of 12.64 Km<sup>2</sup>, which is approximately 2% of the entire City area. The 18 government estates cover an area of 6.4 km<sup>2</sup>, which is equivalent to 51.4% of the entire project area. They include Kaloleni, Makongeni, Mbotela, Landhies, Shauri Moyo, Bahati, Maringo, Lumumba, Jericho, Jerusalem, Uhuru, Gorofani, Bondeni, Majengo, Ziwani, Kariokor, Starehe and New Pumwani. The private estates are Buruburu, Harambee, Kimathi, Makadara, Ngara, Pangani and Eastleigh.

The location of these estates are shown overleaf.

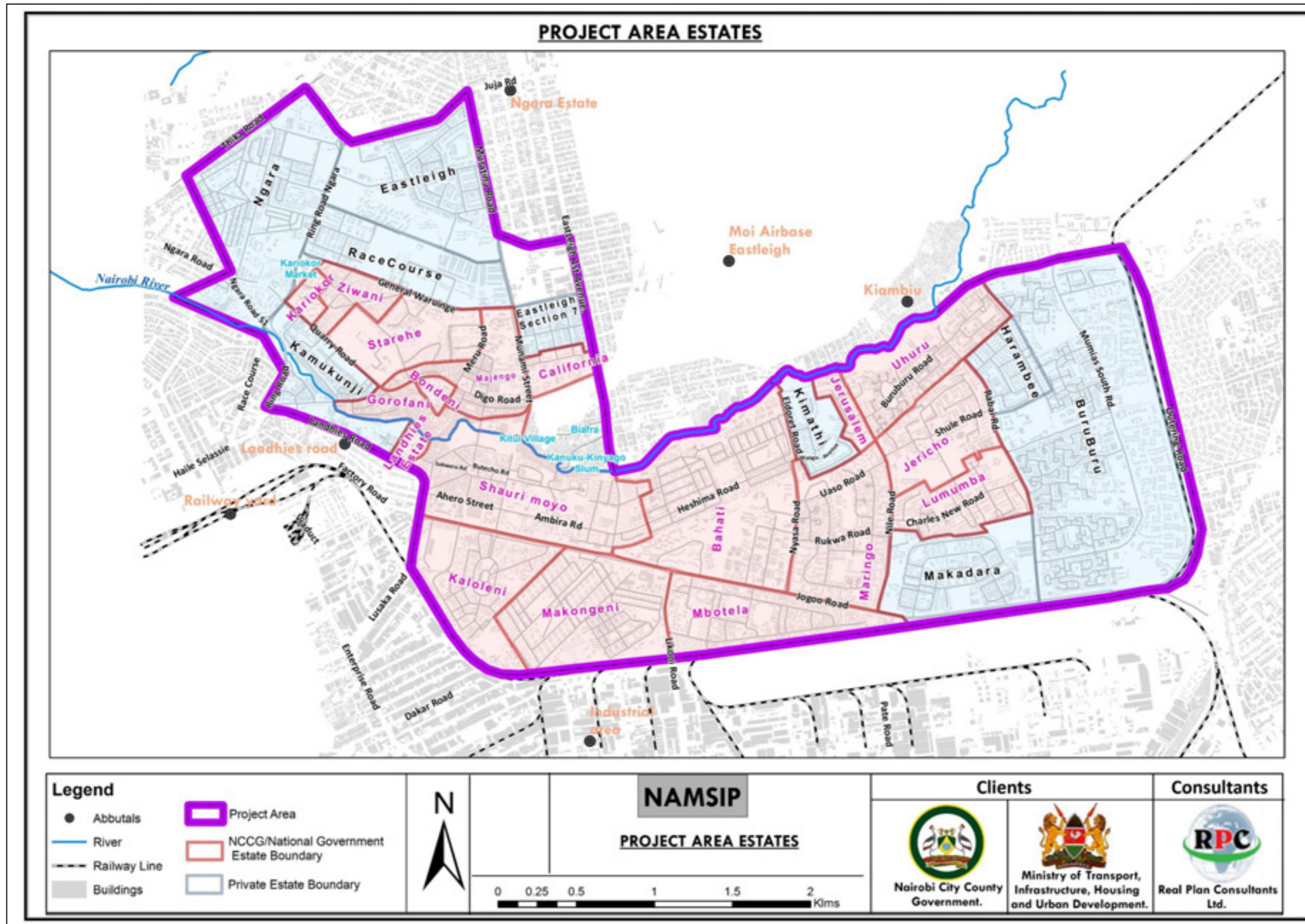


Figure 2: Project Area Estates

## 1.2 AIMS OF THE PLAN

The plan is intended to:

- Provide an Urban Development Framework that will cover a period of over 20 years
- Deliver strategies for dealing with urban blight in Eastlands
- Develop a functional urban system
- Recommend a responsive & sustainable development model

## 1.3 PLANNING PROCESS

The Urban Renewal Plan preparation process spanned six broad phases namely inception, awareness and sensitization, data collection, situational analysis, Draft Plan and Final Plan preparation. This is shown in the figure below.

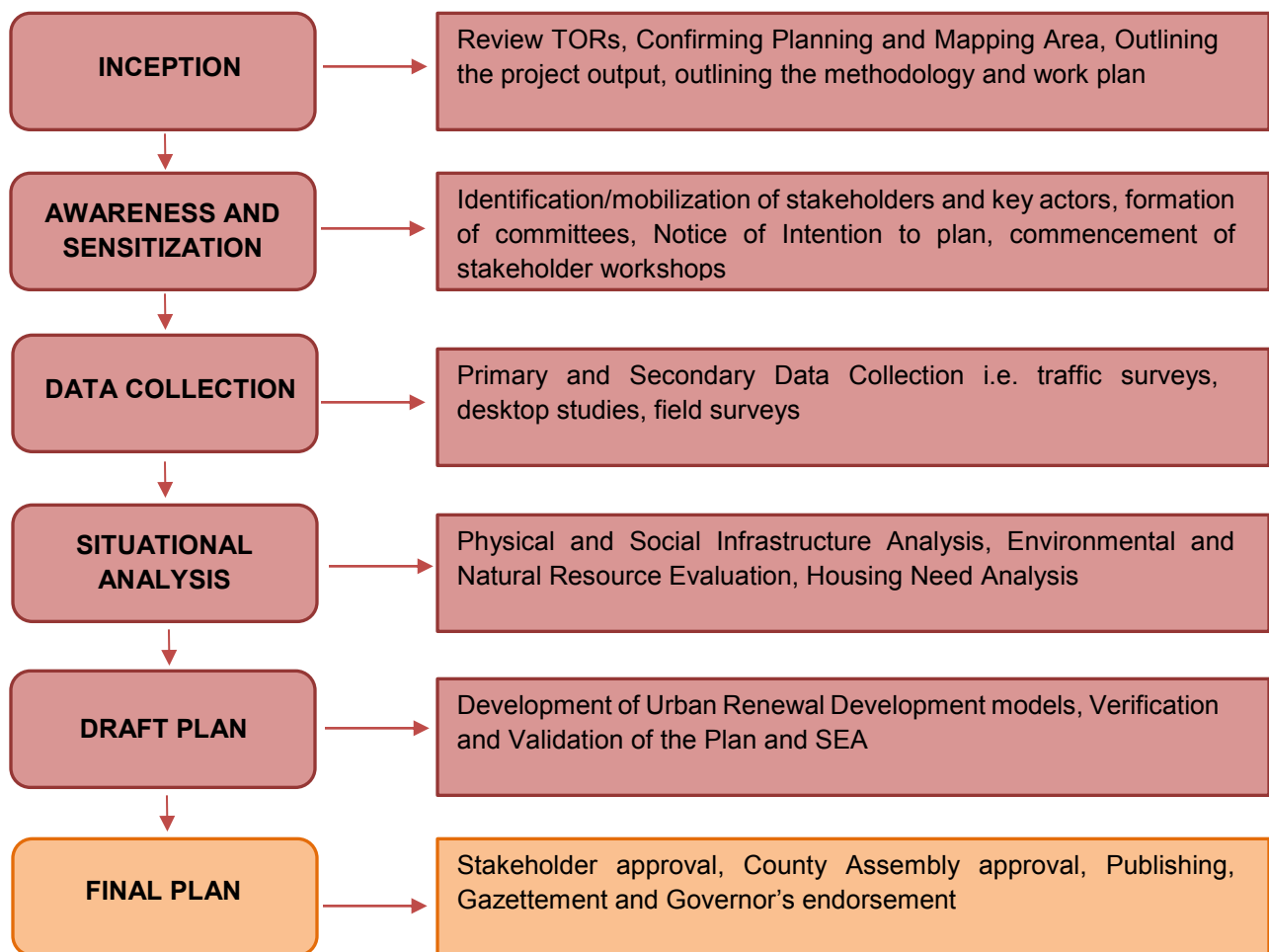


Figure 3: Planning Process

### 1.3.1 Inception

This phase began with a series of commencement and introduction meetings held in April 2016 between the consultants, National and County Government agencies. The meetings were followed by reconnaissance visits, preliminary data collection, reviewing of the Terms of

Reference, preparing the project work plan and defining the methodology. Demarcation of the Urban Renewal Area was also undertaken jointly by the County Government and Consultants team. An Inception Report was prepared to respond to the Term of Reference, present the work plan and methodology. This report of was reviewed and evaluated by the Technical Team and the Final Inception Report submitted thereafter.

### **1.3.2 Awareness and Sensitization**

This phase initially involved stakeholders mapping and analysis undertaken jointly by the Consultants, County and National Government. This was undertaken to identify key project stakeholders and actors. It was then followed by a series of stakeholders Awareness and Sensitization workshops organized with an aim to disseminate information relating to the project.

Public Notices of Intention to Plan were also published in national Swahili and English papers on 31<sup>st</sup> May 2018 and Kenya Gazette Notice of 14<sup>th</sup> September 2018. The aim was to invite all parties interested to participate in plan preparation process. Copies are annexed to this report.

### **1.3.3 Data Collection**

The data collection phase involved collection of primary and secondary data. Thematic areas covered included physical environment, socio-economic analysis. housing, land ownership and use, urban morphology, transportation, water and sanitation, storm water drainage, energy, social facilities and estate analysis.

### **1.3.4 Situational Analysis**

This stage entailed developing a profile for Eastlands by compiling and analyzing the secondary and primary data collected and preparation of a situational analysis report. This report was further subjected to the technical scrutiny and validation by local area stakeholders. It was thereafter reviewed based on the remarks from various quotas.

### **1.3.5 Draft Plan Formulation**

This involved the formulation of Draft Proposals aimed at guiding urban renewal in the project area. The proposals were validated by various stakeholders in various technical meetings and stakeholder workshops.

### **1.3.5 Final Plan Formulation and Approval**

This phase entailed the revision of the draft plan proposals based on the technical comments received at different times and the stakeholder suggestions made during the Draft Plan Validation Workshops. The final plan was also subjected to review and validation by the stakeholders during the Final Plan Validation Workshops.

The other activities in this phase included plan circulation, its publication, approval and launch. The plan was formally circulated to the relevant statutory agencies for recommendations, which were incorporated into the final document. A Notice of Completion of the Plan was thereafter published in the Kenya Gazette, the print media and notice boards of the County offices. Finally, the plan was approved by the County Assembly, formally be endorsed by the Governor and launched before commencement of its implementation.

## **1.4 PUBLIC PARTICIPATION**

The plan preparation process was participatory and included the views of a vast majority of the stakeholders and interest groups within the project area. There were numerous public consultation activities including:

- 10 Awareness & Sensitization Workshops, including a preliminary workshop for County Assembly Planning Committee members & Area MCAs, a meeting with Ward Administrators & Estate Officers and six Local Area Stakeholder Workshops
- Estate Consultations
- Focused Group Discussions with Gikomba Wholesale Traders, Gikomba Retail Traders, Kwa Gacucu Traders, Kamukunji Jua Kali Traders, Burma Market Traders, Kaloleni Residents Association and Matopeni Slum Residents
- Technical Consultative Meetings with the Governor, Deputy Governor and CEC Members, PS – Housing, CEC Member - Urban Renewal, Housing and Building Services, World Bank, Project Implementation Team (National and County Government), UN-HABITAT and KURA.
- Household and Market Surveys
- Publication of Notice of Intention to Plan on 2 local dailies and Kenya gazette
- Nine Situational Analysis /Draft Plan Validation Workshops including eight Local Area Stakeholder Workshops and one for the County Assembly Planning Committee Members & Area MCAs.
- Eight Final Plan Validation Workshops

## **1.5 POLICY AND LEGAL FRAMEWORK**

This plan has been prepared based on the provisions of various laws, policies, plans and regulations. Some of the policies and plans include the Big 4 Agenda (2017-2022), Kenya Vision 2030, Sustainable Development Goals (2015-2030), National Urban Development Policy, Urban Renewal and Regeneration Policy for Nairobi City County Government (2018), National Spatial Plan (2015-2045) and NIUPLAN (2014-2030).

Among the key laws reviewed are the Constitution of Kenya (2010), Physical Planning Act (Cap 286), Urban Area and Cities Act (No. 13 of 2011), County Governments Act (No. 17 of 2012), Land Act (No. 6 of 2012) and Public Private Partnership Act (2013). Also considered is the institutional framework for implementation of the plan and the ongoing projects that affect the planning area.

## **1.6 SUMMARY OF SOCIO-ECONOMIC SURVEY FINDINGS**

The survey findings indicate that Eastlands is an area with very high socio-economic prospects due to its strategic location and proximity to the CBD and the industrial area. It also has vast land which can accommodate major investments, both social and economic. About 372.8 Ha (30% of the total) exists as voids where new developments can commence.

The area also has favourable climatic conditions and stable geological structure which can support high density developments. The labour force is huge and the people possess high literacy levels and an array of skills that are useful for growth and development. About 46% and 34% of the population has attained secondary and tertiary levels of education. The group with tertiary

level of education is composed of those that have certificates, diplomas, undergraduate and post graduate degree holders

The economy is characterised by thriving business nodes like Gikomba market a vibrant Jua kali (light industrial) sector. The people also have a strong business culture with 49% engaged in various forms of commercial activities. This means that if the area is boosted with bigger business investments and the right infrastructure, then there are higher chances of economic growth.

On the other hand, there are significant challenges, which need to be solved. Among these are demographic problems some of which include high mortality rates, low employment rates and high poverty levels. The unemployed constitute 33% of the residents and among the employed, only 7% and 11% have jobs in Government and private sector organizations. The rest are self-employed mostly in the informal business sector.

The level of revenue generation is also below expectations. In the year 2016/2017 for instance, it was expected that the NCCG houses would generate Ksh. 300,000,000. However, due to the high defaulting rates of rent payments (which is as high as 100% in an estate like Shauri Moyo), the ceiling could not be realized.

Secondly, even though Eastlands has access to basic infrastructural facilities, a number of shortcomings are identifiable. The transportation system is generally inefficient. Jogoo Road as the major Road experiences congestion, traffic jam and is in a poor condition, which is a manifestation of the challenges in the transportation sector in Eastlands Area. Roads like Dr. Griffins, Ring Road Pumwani, Juja Rd, General Waruinge and Kinyanjui Street are for instance operating at poor levels of service below LOS C. The commuter train system also manifests inefficiency due to frequent delays and breakdowns. In addition, accidents have generally been on the rise since the year 2012. A total of 3732 accidents occurred between 2012 and 2016 with fatal and serious accidents accounting for 33% and 55% of all the reported ones respectively.

The water and sewerage networks are old, dilapidated and overstretched. There is also shortage of water supply with most residents experiencing water rationing at least 2-3 times a week. Additionally, while the desirable water availability duration per day is estimated by WASREB to be 18 hours in Nairobi, the project area residents have access to water for approximately 6 hours or less per day.

The social facilities are dilapidated and poorly equipped. Considering the population of the school age population, the analysis in this study reveal that public primary and secondary schools currently have a population capacity deficit of 9,929 and 7,546 respectively. On health facilities, the average number of beds per 1,000 people in the project area stands at three, a figure that is much lower than the city's average of 74. The doctor/population ratio is on the other hand 1:7,816. This is way beyond the WHO recommendation of 1: 1,000. There is also under provision of facilities such as fire stations, libraries, homes for the elderly and rehabilitation centres.

The housing sector experiences major challenges. The demand far outweighs supply; leading to overcrowding in government houses, illegal extensions and slums. While the existing housing stock in the public estates is 15,127, the number of households stands at 55,670. A big chunk of this population resides in the extensions and slums. The general living condition has deteriorated

in most of the estates owing to the dilapidated housing, low quality building materials in the informal sections and insufficient sanitary facilities and utility services.

As far as housing affordability is concerned, the study reveals that the affordability bracket for most people (44%) is between Ksh. 2501 and 5000 per month. This is a significantly low level of affordability, considering that the minimum purchase price for houses built by private investors is Ksh 1,200,000 for a bedsitter, Ksh 1,500,000 for a one-bedroom unit, Ksh 2,500,000 for a two-bedroom unit and Ksh 3,500,000 for a three-bedroom unit. It means that for residents in Eastlands to own new houses (as 85% of the population would prefer), it will take a majority at least 20 years to pay for the smallest desired dwelling unit (bedsitter). This may not be economically viable for most investors, hence the need to maintain the social housing program.

There are also major social issues that need to be solved. The high level of youth unemployment has led to major insecurity problems. Eastlands ranks high among the insecure parts of Nairobi with some of the most common crime cases including theft and robbery with violence. These issues require strategic and integrated interventions especially in the socio-economic sector.

The project area is also one of the fastest developing parts of the city. High-rise housing and BCR developments are upcoming at a high rate, especially within the interface estates like Makadara, Harambee, Ngara, Pangani and Eastleigh. Others are also notable within the private enclaves in the government estates. There are also a number of infrastructural development projects, which have been initiated by the government in the area. However, these developments are taking place without a guiding framework hence the need for a development plan.

## **1.7 CONCLUSION**

The redevelopment initiative comes at a time when a high level of housing and infrastructure dilapidation has been witnessed in Eastlands. A number of other challenges that require planning intervention have also cropped up. In addition, the area has major development opportunities that need to be harnessed through planning. As such, the redevelopment process needs to be guided by a development framework, which is this Urban Renewal Plan.

The planning process adopted in the preparation of the plan has been systematic, methodical and aligned to the existing legal and policy framework. It has also provided adequate platforms for public engagement at different levels, thereby strengthening ownership of the plan by the stakeholders who will influence its implementation.

## **CHAPTER TWO**

### **URBAN RENEWAL FRAMEWORK**

This plan gives a clear framework within which the urban decay issues in Eastlands can be addressed. It has identified the diverse areas of decay and proposed responsive strategies to each. It is notable that Eastlands was developed over 6 decades ago and has therefore gone through a series of transformations, most of which depict deterioration. The areas that have been affected include:

- Economy
- Land Use patterns
- Housing and the general living environment
- Physical and social infrastructure
- Natural environmental systems
- Social values

Some of the specific issues that depict urban decay/blight within the project area are:

- i. Dilapidated housing
- ii. Old and insufficient infrastructure, both physical and social
- iii. Disorderly land use pattern
- iv. Environmental degradation
- v. Proliferation of slums
- vi. Delinquency

The proposed Urban Renewal strategies have been detailed out within the various plan components, including:

#### **1. Land Use Plan**

This plan has been prepared to re-align the existing land use pattern and meet the current societal development needs. Due consideration has been made for the original designs for each of the public estates, the abutting land uses, the current land use structure of Nairobi as envisaged in NIUPLAN and the existing land use challenges.

#### **2. Thematic Strategies**

These strategies focus on various sectors, including Housing, Infrastructure and Services, Environment, Economy and Heritage. These are the sectors where special attention and transformations are needed given the significance of the challenges identifiable in each. The importance of these strategies is that they will facilitate the coordination of developments across the said sectors.

### **3. Action Area Plans**

The Action Area Plans unpack the Urban Renewal proposals into specific local spatial units in order to facilitate their implementation in various zones of the project area. The plans are prepared for estates, which are the discernable lowest planning units that were formed the basis of the precolonial designs conceived for Eastlands. By focusing on the Action Area Plans, the unique identities between the various localities are brought out.

### **4. Development Control Guidelines for Private Areas**

In recognition to the significant number of private estates, the ongoing private developments and the transformations being witnessed within the project area, it is found essential to re-examine the development control guidelines. The purpose of doing this is to re-align the guidelines with the urban renewal proposals for the public estates. It is noteworthy that the process of reviewing these guidelines was executed in consultation with the Residents Associations of the concerned estates.

### **5. Urban Design Models**

In preparing these models, contemporary design techniques have been applied to develop habitable urban spaces where people can live, work and play.

### **6. Implementation Framework**

The components of this framework include an outline of the proposed development projects per sector, their costing, Project Financing Models, Public Private Partnership (PPP) Framework, Resettlement Strategy, Implementation matrix and Monitoring and Evaluation Strategy. The framework provides the guidelines on how to finance and implement the proposed projects. It also identifies the actors and timelines for implementing the projects and contains measures for ensuring that the targeted outputs and outcomes are realized.

## **2.1 URBAN RENEWAL PRINCIPLES**

The principles applied in the preparation of this plan include:

### **2.1.1 Enhancing Access to Affordable Housing**

Access to habitable shelter is a constitutional right in Kenya. However, the country has fallen short of supplying adequate affordable housing for several years now. As such, there are efforts by the National Government to improve the situation. As noted earlier, the Big 4 agenda points to the plan to provide 500,000 affordable housing units in the Kenyan cities between now and the year 2022.

From the assessment done during the preparation of this plan, the project area has the capacity to deliver about 20% of the targeted stock. In view of this and the socio-economic background of the population residing in Eastlands, this plan proposes four types of dwelling units, each of which meets the affordability levels of various groups of people. They include studios/bedsitters, 1, 2 and 3-bedroom. Furthermore, flexible housing access options have been recommended, both for the sitting and new tenants.

### **2.1.2 Economic Revitalization**

This entails revamping Eastlands economic sector, which has overtime slowed down due to dilapidated infrastructure, dysfunctional nodes and informality of working spaces. The plan aims to revitalize the economy by:

- Strengthening of emerging nodes such as Gikomba, City Stadium and Makadara Station nodes by designating adequate working spaces for varying specializations, increasing access and linkage to work spaces and allocating space for support facilities.
- Creating more spaces for business developments and introduction of new specialized markets such as the furniture market in the proposed secondary node.
- Reorganizing and increasing access to Gikomba, Uhuru/Jogoo Road, Jericho, Hamza, Kariokor and Burma markets.
- Enhancing opportunities formal business sector and supporting the informal economy
- Heritage preservation, enhancing potential tourist sites and introduction of tourism circuits across the project area, in order to open up opportunities for revenue and income generation through tourism.

### **2.1.3 Development Integration**

Development Integration is considered essential in ensuring land use compatibility, functionality of activity spaces, effective economic and social interactions between various districts of an urban area or region and optimal utilization of the otherwise scarce land resources.

In Eastlands, the proposed approaches to development integration include:

- Enhancing the transport and communication systems between the project area and the CBD, industrial area, other socio-economically significant districts in the city and the rest of Nairobi Metropolitan Region.
- Densification and mixed-use developments at the proposed nodes and the active edges of the proposed residential zones.
- Promoting compatibility between the existing and proposed land uses
- Enhancing healthy co-existence between the built and the natural environments e.g. between the Nairobi River riparian zone and the adjacent activity areas

### **2.1.4 Environmental Conservation**

Environmental conservation efforts in this plan are directed towards the following areas:

- Natural systems
- Waste management
- Energy consumption
- Emissions into the air
- Aesthetics of the living environment

Specific proposals aimed at achieving environmental conservation include:

- Development of the Nairobi Riverfront Development Plan, which provides strategies for regenerating the river, protecting it and improving the green spaces aligned thereon e.g. Kamukunji grounds
- Provision of adequate and well-designed sewer and solid waste management systems to prevent riparian dumping and flow of sewage into Nairobi river
- Formulation of storm water management strategy that will promote filtering waste from the surface run-off before it joins the river basin.
- Development of an Environmental Management Plan and a Disaster Management Strategy, which identify environmental issues and disasters prone to the area and thereafter, proposes strategies for dealing with each.

- Preparation of a waste management strategy which outlines effective approaches for improving waste collection, sorting, transportation, disposal, re-use and recycling systems.
- Promotion of green energy technologies
- Provision mass transit and NMT systems and restriction of heavy industrial activities from the project area to minimize carbon emissions into the air
- Provision of a network of green spaces which can act as carbon sinks in the project area
- Elimination of slums and informal business structures and improving the general living and working environments by design in order to improve the aesthetic value of the project area

### 2.1.5 Socio-Economic Inclusivity

This principle advocates for fairness in access to humane and productive living and working environments, regardless of someone’s gender, financial capabilities, physical health, age or other circumstances, over which they have no control. It has been applied in the provision of housing, work places and public spaces as follows:

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- Provision of housing in numbers that are adequate for both sitting and new tenants. A formula for sharing the houses between the two groups has further been worked out
- Provision of different housing types which are affordable for the various income groups in the city
- Provision of housing access options suitable for different groups of people i.e. rental and tenant purchase options
- Distribution of housing for sale and rental in proportions that will ensure optimal economic returns to the private investors and the governments.
- Promotion of building designs that are friendly to the people with disability

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- Increasing work spaces to accommodate both the formal and the informal traders. This is by expanding and densifying market developments, providing additional space at Kamukunji Jua Kali business area, redesign and improvement of Gikomba node and establishment of the secondary CBD at Makadara
- Opening up investment opportunities for both public and private sectors, as provided for in the proposed PPP Framework
- Provision of alternative work spaces for those currently operating on road reserves e.g. a proposed market at Kaloleni for the informal traders operating around City Stadium and the proposed furniture market for the entrepreneurs located along Jogoo Road, near Mbotela and Makongeni estates
- Provision of opportunities for income generating activities at the proposed CORE Centres

- Provision of shared green spaces in each residential court
- Expansion of transport network to cater for all modes, including NMT facilities, which are currently underprovided.
- Provision of mass transit options which are geared towards enhancing equal access to efficient and effective transportation to all people
- Provision of new social facilities, expansion of existing ones and optimizing utilization of others, in order to increase their capacity and open up opportunities for access to the social services by all

### 2.1.6 Investment Attraction

In the bid to make Eastlands a place where people can invest, potential areas of investment have been identified in this plan. The opportunities opened up in each of them are summarized below:

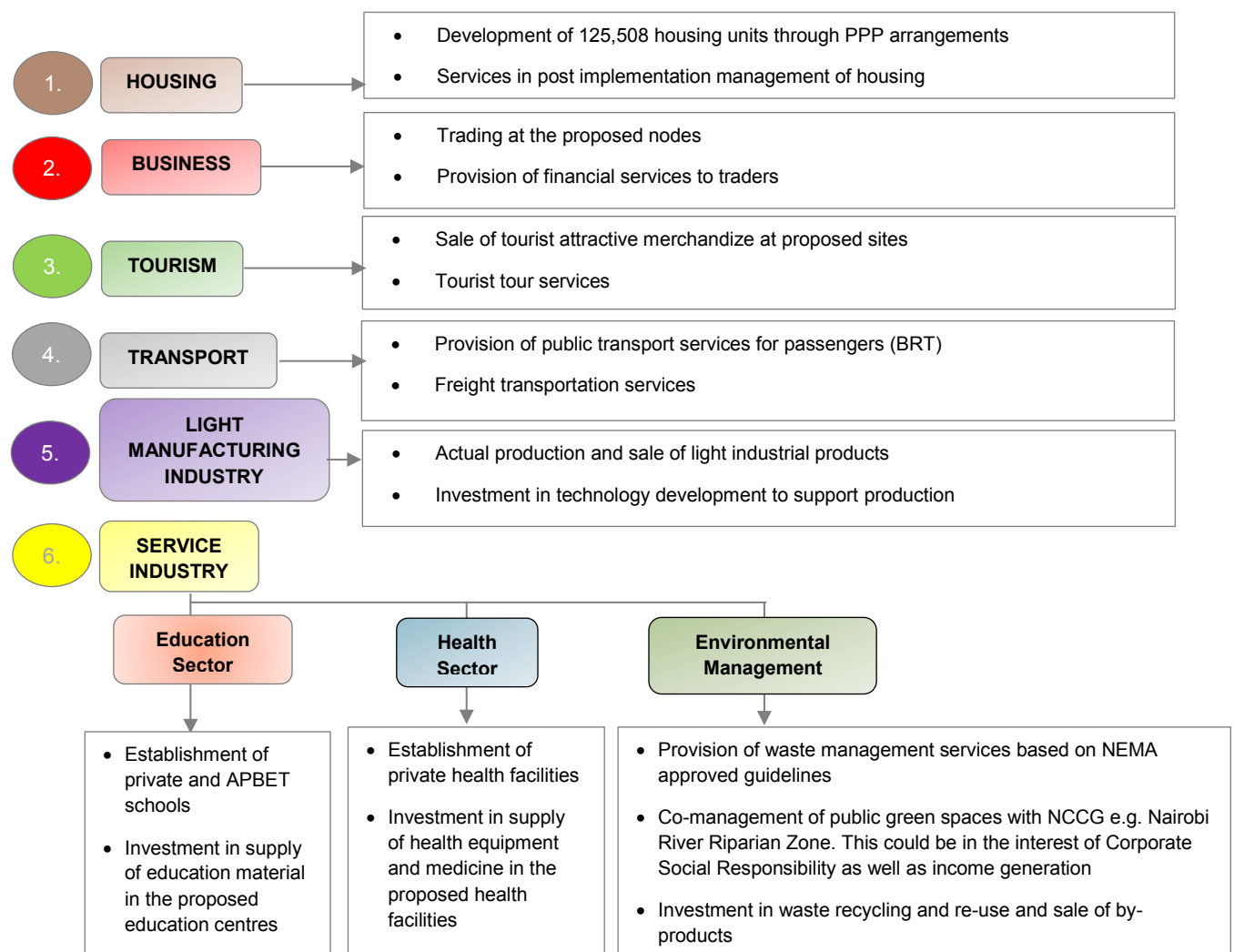


Figure 4: Investment Attraction Model

### **2.1.7 Heritage Preservation**

This principle has been applied in the Heritage Preservation Strategy presented in section 7.13 of this report. The strategy identifies the various heritage sites in the project area and proposes effective ways of preserving them, adding value thereon and enhancing their socio-economic benefits to the people and the government. An important component of this strategy is the proposed tourism circuit, which would serve to promote tourist activities and enhance income generation thereof.

## **2.2 URBAN RENEWAL APPROACHES**

A combination of various urban renewal approaches has been considered in this plan. It is noted that each of them is applicable in different sections of the project area. They are discussed below.

### **2.2.1 Total Redevelopment**

This approach involves demolition of all structures and constructing new ones altogether. It is best applicable in areas that have experienced extreme decay, those that are not optimally productive and need revitalization, or those that have no heritage assets that may need preservation. The approach is applicable in most of the estates, including Jericho, Landhies and Jerusalem.

### **2.2.2 Selective Redevelopment**

Selective redevelopment entails demolition of only the irreparable developments while retaining the rest. Those that could be retained include those that are not too old or those that have heritage significance. In the context of Eastlands, developments that are privately owned may also not be demolished, unless the owners are willing or/and able to re-construct. Some of the estates where selective redevelopment applies include Kaloleni (because of heritage preservation) and Mbotela (due to existence of privately owned developments).

### **2.2.3 Renovation**

Renovation involves repair of developments that are in fairly good condition and still serve their purpose effectively. Areas that can be renovated are Kariokor and New Pumwani estates.

### **2.2.4 Enhancing Public Spaces**

The process of enhancing public spaces is an urban renewal approach that helps to improve the quality the living and working environment. The plan seeks to actualize this by:

- Redesigning the residential neighborhoods and providing adequate circulation areas
- Improving access in areas like the currently overcrowded Gikomba market
- Improvement of the transport network to enhance movement of passengers and freight
- Regeneration of Nairobi River and redesign of the riparian corridor
- Enhancing existing green spaces e.g. Kamukunji Grounds and introducing new ones e.g. the proposed parks at Makadara node
- Upgrading existing social facilities e.g. health centres and social halls

### **2.2.5 Enhancing Connectivity and Functional Linkages**

The functional linkages that need to be enhanced are those between Eastlands and the CBD, Industrial area and the wider Nairobi Metropolitan Region. This will be achieved by improving transportation corridors connecting the project area to the rest of the metropolitan region.

## **2.3 URBAN RENEWAL CONCEPT**

The Urban Renewal Concept illustrates the manner in which the above principles and approaches have been spatially contextualized within the project area. It shows the overall manifestation of the proposed changes. (See the figure overleaf).

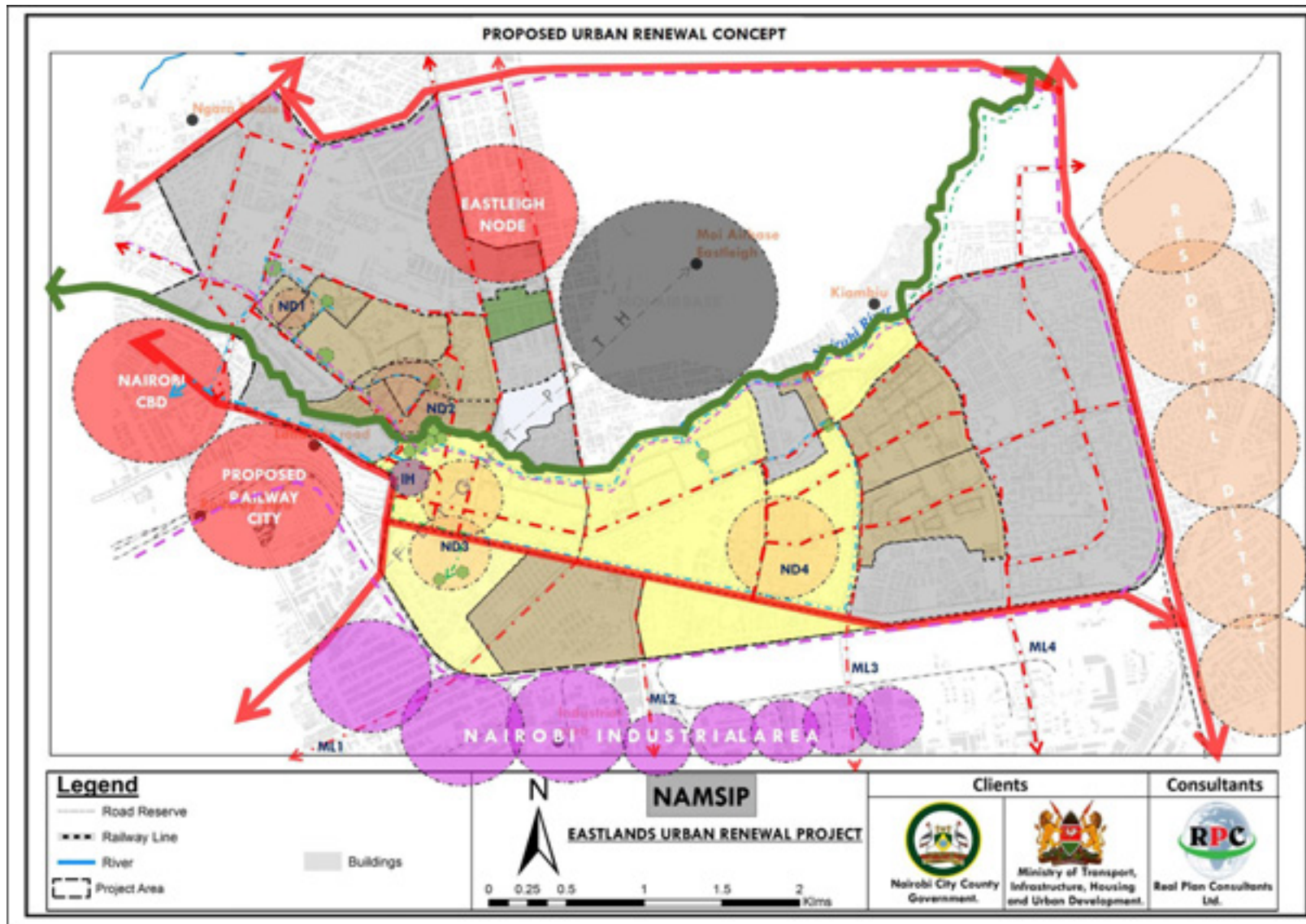
It is noteworthy that in while the concept shows the 2-Dimensional illustration of the proposed actions, the overall development direction leans towards densification (vertical expansion of developments). The main aim of adopting this strategy is to facilitate optimal utilization of the on land and redesign the trunk infrastructure including road, water and sewer networks.

The strategy is also necessary in addressing the housing shortage and meeting the needs of the sitting tenants and the informal traders. It is further expected to create opportunity for expansion of infrastructure and public spaces which are also currently strained. It is noteworthy that meeting the needs of the sitting tenants and traders is key to the success of this project



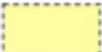



Densification is to be achieved in the project area by increasing building heights in both residential and commercial areas in order enhance the supply of the much needed residential and workspaces. Specifically, the following have been recommended:

- Building heights ranging from 5 to 16 floors in the residential zones
- Building heights of up to 5 floors in the proposed market developments like Gikomba, Burma, Jericho, Jogoo Road and Kamukunji Jua kali markets.
- High-rise mixed use developments on selected blocks within the nodes
- A multi-level furniture market at Makadara node
- Multi-level buildings within schools, hospitals and other public facilities

It has also been proposed that the existing infrastructural networks be expanded and new ones provided (where necessary) in order to better serve the higher population that is envisaged to occupy the spaces after redevelopment.








## REDEVELOPMENT APPROACHES

- 
**1. Areas of NO Development:**
  - Flight funnel
- 
**2. Areas for Renovation:**
  - New Pumwani
- 
**3. Areas for Selective Re-development:**
  - Shauri Moyo
  - Bahati
  - Maringo
  - Mbotela
  - Uhuru
  - Kaloleni
  - Jericho
- 
**4. Areas for Total Redevelopment:**
  - Ziwani
  - Starehe
  - Bondeni
  - Kariokor
  - Gorofani
  - Makongeni
  - Lumumba
  - Majengo
- 
**5. Development Control Guidelines**
  - Private Estates
- 
**6. Sites for Heritage Preservation**
  - Kaloleni social hall
  - Residence to the 1<sup>st</sup> Governor of the British Colony
  - Kamukunji Grounds
  - Pumwani Social Hall etc.

## PRINCIPLES

### 1. Economic Revitalization

- Development of Nodes i.e.
  - ✓ ND1 – Mwariro/Kariokor Commercial Node
  - ✓ ND2 - Gikomba Commercial Node
  - ✓ ND3 – Shauri Moyo Kaloleni Node
    - Heritage and Sports node on the Kaloleni side
    - Commercial node on the Shauri Moyo side
  - ✓ ND4 – Makadara Secondary CBD
-  Tourism Circuit  
 CBD → Kamukunji Ground → Riparian area (via Leisure Corridor) → Bahati → Jerusalem → CBD → Kariokor War Cemetery → Kariokor Market → Pumwani Social → Kaloleni → CBD
- Improved connectivity to Nairobi CBD, Industrial Area and other city districts
  - ✓  BRT Corridors
  - ✓  LRT Corridors
  - ✓  Road network upgrades
  - ✓ Missing Links (ML1, ML2, ML3 and ML4)
-  Innovation Hub

### 2. Heritage Preservation

- Kaloleni Heritage and Sports Node
- Tourism Circuit
- Other heritage sites e.g. Kamukunji Grounds

### 3. Enhancing Access to affordable housing

- ✓ Redevelopment and densification of public estates

### 4. Environmental Conservation

- ✓  Nairobi Riverfront Development

### 5. Enhancing Public spaces

- ✓ Transport network upgrades
- ✓ Nairobi Riverfront Development
- ✓ Kamukunji grounds improvement
- ✓ Re-organization of and provision of access in Gikomba

Figure 5: Urban Renewal Concept

## **2.4 CASE STUDIES**

Case studies are an empirical inquiry used to investigate matters in life (Rowley, 2002). Case studies offer a detailed approach to research where different research methods can be used concurrently (Soy, 1997). For instance, documenting observations in the form of diaries and photographs to graphically represent information from the case study. The researcher collects information from an in-depth study using a variety of collection procedures. For the context of Eastlands, Nairobi, three types of case studies will be discussed in the following section namely, incremental upgrade, redevelopment and strategic intensification

### **2.4.1 Incremental Upgrade Case: Yerwada Slum, Pune, India**

The Yerwada slum that is located in Pune, India, has changed over the past 5 years. Part of the Jawaharlal Nehru National Urban Renewal Mission, Yerwada underwent a redevelopment in order to improve upon the living conditions of those living in the area. The vision for the mission was to create a 'sustainable and slum-free city'. The area was previously an unplanned maze of ramshackle homes, whereas now, there are sturdier homes, planned inner lanes and pockets of public space. (Shirva, 2015)

The Yerwada slum was upgrading without relocating the residents as it was completed in phases and took on more of a refurbishment approach to what was currently in the area. The renewal program made use of the in-situ scheme whereby developments that take place are at the same site as former structure. Therefore, the actual ground structures are kept as the original state. Furthermore, throughout the project, there was an emphasis on the inclusion of public engagement in the form of engaging with unions from slum-dwellers' communities. (Shirva, 2015)

Lessons that can be learnt from Jawaharlal Nehru National Urban Renewal Mission include listening to the residents, mapping the existing layouts, retaining what can be kept of the existing area, build up not out to allow for more public open spaces, use local labour, employ spatial modelling and making the housing affordable. (Shirva, 2015)

### **2.4.2 Redevelopment Cases**

#### **1. Alexandra Renewal Project**

After the 2001 Alexandra Summit, the Alexandra Renewal Project began. It followed a phased approach to realise the following visions:

- Reduce levels of unemployment.
- Facilitate a healthy and clean living environment.
- Provision of services at affordable and sustainable levels.
- Reducing crime and violence.
- Upgrading existing housing and develop affordable housing options.
- Facilitate sustainable communities. (Mendrew, 2015)

Phase 1 ran between 2001 and 2004. Phase 2 ran between 2005 and 2010 whereas phase 3 ran between 2011 and 2015. The initial budget for the Alexandra Renewal Project for 7 years was R1.3 billion. During Phase two it was decided that the project would be extended from a seven-year project to a ten-year project. Phase two and three would had a stronger emphasis on affordable housing developments. (Mendrew, 2015)

Key achievements for the Alexandra Renewal Projects included housing delivery, social services, engineering services, access and mobility improvements, and economic development. The project yielded 14 322 housing opportunities across greater Alexandra, Diepsloot and Bramfisherville and a further 552 housing opportunities are under construction in Alexandra. Furthermore, within the latest Linbro park Spatial Development Framework, an additional 5500 housing opportunities for the people of Alexandra has been planned and bulk services are already underway. (Mendrew, 2015)

Further achievements include the formalisation of several parks and school playgrounds, the building of cemeteries and an air quality monitoring station. The project has further allowed for the development of a recycling centre, police station, street and public lighting, the refurbishment of 18 schools and the redevelopment of 2 schools. Alongside the refurbishment and redevelopment of these schools, training was undertaken for teachers, governing bodies, support management and administrative staff. Additional achievements include the improvement of 4 clinics together with the acquiring of three new ambulances. Several sport and recreational facilities were redeveloped. (Mendrew, 2015)

From a bulk services perspective, the Western sewer line was constructed alongside the improvement of the existing water lines. The electrical network has been stabilised allowing for an additional 40 000 houses to have a stable electrical supply. In terms of roads and connectivity to adjoining areas, London Road was widened to accommodate more traffic to facilitate a stronger connection to the N3 and Old Pretoria Road. The connection to Sandton was facilitated by the upgrading of Rautenbach St and the widening of Watt St. Further pedestrian bridges such a Florence Moposho were built to accommodate connections between the West and East banks alongside a Rea Vaya BRT route through the Alexandra area for upgrading modes of mobility. (Mendrew, 2015)

## **2. Cato Manor Area Based Management Program**

Cato Manor is situated in Durban, South Africa. Cato Manor was identified as an opportunity for metropolitan restructuring and was a pilot model for post-apartheid sustainable urban development practice. The core purpose of the area-based management project was to facilitate interventions for socio-economic opportunities, public information and communication services management, improve and coordinate service delivery, building and facilitation of partnerships, land management support, and local development management and support. It therefore targeted the poor and/or marginalised and integrated them into the city spatially, politically, economically and socially. (EThekweni Municipality, n.d.).

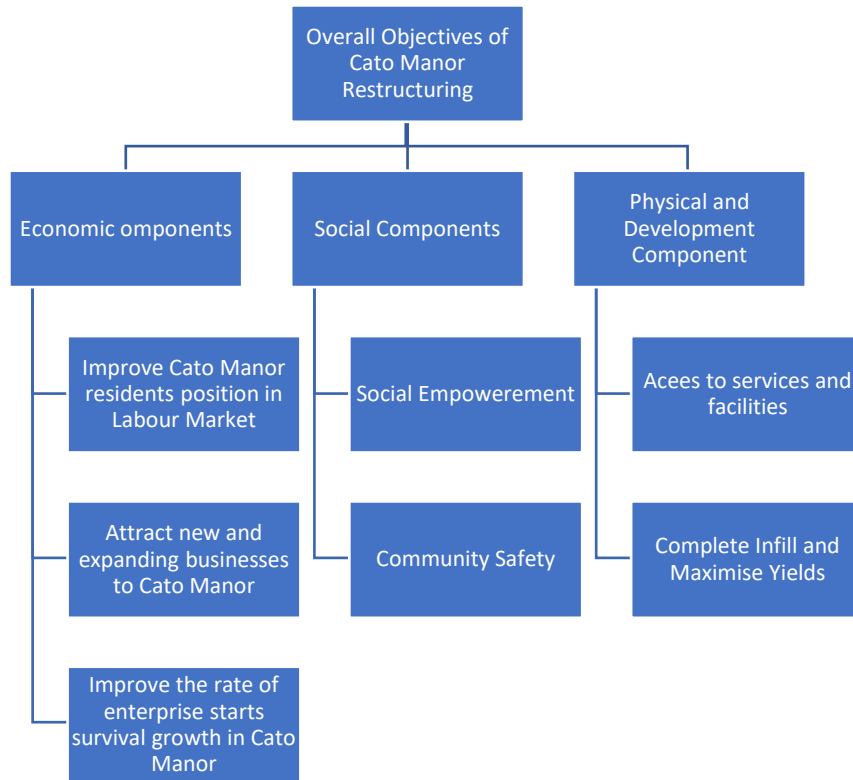


Figure 6: Overall Objectives of Cato Manor Restructuring

The Outcomes and Strategies for Cato Manor are tabulated below.

Table 1: Outcomes and Strategies for Cato Manor

Outcomes	Strategy
Residents are able to function effectively in the local and regional economy	a. Increase residents' ability to compete in the Metropolitan Labour Market b. Promote and support participation of residents in production, retailing and service enterprises c. Exploitation of industrial and commercial investment opportunities
Residents have enhanced human capacity and experience a stabilized environment.	d. Address crime, mitigate and avoid local disasters and unavoidable hardship e. Empower communities and promote personal dignity amongst residents
Resources and services in Cato Manor are efficiently utilized	f. Improve access to services and facilities g. Complete in-fills and maximize yield and strive for efficiency
Capacity of Cato Manor Team to contribute to all outcomes is increased	h. Improve capacity of Cato Manor ABM Team

It is the largest inner-city urban development project in post-apartheid South Africa. Much of its success is attributed to a higher level of grassroots community involvement. The project consists of the construction of low-cost housing, schools, libraries, community halls, roads, clinics.

In addition, the CMDA (Cato Manor Development Association) focuses on the stimulation of economic development and community empowerment through interventions such as training schemes and small, micro and medium enterprise development. The project redeveloped the Cato Manor Slum inclusive of 90 000 people and 33 000 households.



Figure 7: A view of Cato Manor, Durban

The area based management project has yielded results. Residential neighbourhoods now include low and medium income housing. There are still two large informal settlements but they are in the process of being upgraded. The bulk infrastructure is still in progress but there has been a significant increase in social infrastructure where a new clinic, pre-schools, primary and secondary schools, libraries, community halls and sports grounds have already been developed. Furthermore, over 7000 people have been assisted with literacy, numeracy, and basic management skills. (Odenhaal, 2003)

The success of the Cato Manor area based management project was going to be applied to the City of Durban, in the form of replicating the integrated approach used in Cato Manor. As urban regeneration is an on-going process, the area still struggles with high unemployment and high HIV/AIDS incidents. The project seeks to formulate a local community organization and a Local Economic Development Agency to help drive social development and economic development. (Odenhaal, 2003)

#### **2.4.3 Strategic Intensification Case: Corridors of Freedom, S. Africa**

Corridors of Freedom is a project aimed at densifying and renewing the city through corridor development or the improvement and redevelopment of existing corridors. The City of Johannesburg Metropolitan Municipality is embarking on spatial plans for Joburg 2040 to be in line with the Growth Development Strategy. The main principle used makes use of Transit Orientated Development. An example of such corridor is the Louis Botha Avenue Development Corridor. The Corridors of Freedom are one of the ways in which the City will transform entrenched settlement patterns that have kept many marginalised communities at the outskirts of the City, away from economic opportunities and access to jobs and growth.

Once the corridors are developed, growth is envisaged to include medium to high rise mixed use developments that are expanding around nodes along these corridors. Furthermore, the densities are higher closer to the corridor and become lower in density and height as you move away from the corridors and nodes. Social infrastructure such as schools, clinics, police stations and government offices will be strategically located along these corridors to promote further investments in the nodes that are connected by the corridor.

#### **2.4.4 Slum Upgrading Project in Kibera, Kenya**

Kibera Soweto East slum is located in Nairobi, Kenya. It measures 21.3 Ha and accommodates 19,318 people and 2,396 structures. The aim of the slum upgrading project was to rehabilitate the area by providing permanent housing which are equipped with services. This was guided by the millennium goals that aimed to improve lives of 100 million slum dwellers by the year 2020.

A Settlement Executive Committee (SEC) was established to act as a link between the programme implementation unit and the settlements committee. The committee was expected to facilitate community networks, resource mobilization processes and ensure participation in decision-making.

The project area was divided into zones i.e. A, B, C and D. the first zone (Zone A) of 6.9Ha and 876 structures was the first to be developed. It is currently 70% complete with 17 blocks of five levels. These blocks have a total of 770 three roomed dwelling units. This phase of the project was expected to give rise to 980 housing units. However, this has not been realized because conflict arose between the slum landlords and a few tenants. The former group felt that their streams of rental income would be interfered with in the event that they were not allocated new houses.

The process of relocation to another other location to create room for new developments was met with some difficulties. The first proposal was that the residents be relocated to Athi River. This proposal was rejected by residents due to the long distance between Soweto and Athi River. The government thus intervened and the people were later on relocated to Langata.

Some fears expressed during this project are:

- Bias in allocation of the new houses
- Ethnic conflicts - a larger part of Kibera is occupied by the *luo* community and so those with the *Kikuyu* ethnic descent felt they would be overshadowed during house allocation.
- Higher monthly rental charges than the stipulated Ksh. 3,000
- Loss of rental income by the slum Landlords
- Disintegration of social networks among the residents

Before relocation to Lang'ata, the government, with the help of SEC, identified all the residents and gave cards to them as a way to give assurance that they would all be allocated a house.

#### **2.4.5 Lessons Learnt**

The following lessons are notable from the above case studies:

- There are a number of approaches, other than pumping financial resources, that can be used to meet the costs of construction by project beneficiaries
- Participation of Project Affected Persons is necessary at every stage of decision making in the redevelopment process.
- Incremental upgrading approach to redevelopment is an easier and viable alternative to comprehensive redevelopment
- Redevelopment initiatives require full cooperation and trust between government and Project Affected Persons.

## **2.5 CONCLUSION**

It is evident that the estates within the project area present diversities that need to be considered strategically. As such, various renewal approaches have been identified to respond to the unique situations in the different estates. The differences in renewal approaches notwithstanding, the need to achieve integrated development and a functional urban environment has not been overlooked. The urban renewal concept developed thus provides for improved connectivity and coordination between the various activity spaces.

## **CHAPTER THREE**

### **LAND USE PLAN**

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This plan shows the proposed land use structure for the project area. The delineation of land for various uses gives the project area a definite form and is a basis for developing land use control guidelines for the private areas. The establishment of a new land use structure stems from the need to address planning challenges influencing growth and development of the area and tap into the available resources and opportunities as established in the preceding chapter of this report. The objectives of the plan include separating conflicting land uses, creating spatial order and developing a framework that creates spatial harmony.

The process of preparing the plan entailed mapping out and analyzing of the structuring elements and other design considerations to inform future development scenarios. These are detailed below.

### **3.1 DESIGN CONSIDERATIONS**

In preparing the plan, key considerations including the structuring elements, existing land use, land tenure system and population growth were taken into account.

#### **3.1.1 Structuring Elements**

These consist of physical elements (natural and manmade) influencing the form, direction of growth and structure of Eastlands. These features either deter or spur the growth significantly, thereby determining the shape taken by the proposed Land Use Plan.

The structuring elements identified include the natural, transportation and nodal systems. This section provides a detailed account on how the identified features influence growth and inform the desired plan.

##### **a. Natural System**

Nairobi River is a tributary of the Athi River and the key natural element in Eastlands. The river stretch within the project area measures approximately 5.93 Km, and runs from West to East. It is mapped out below.

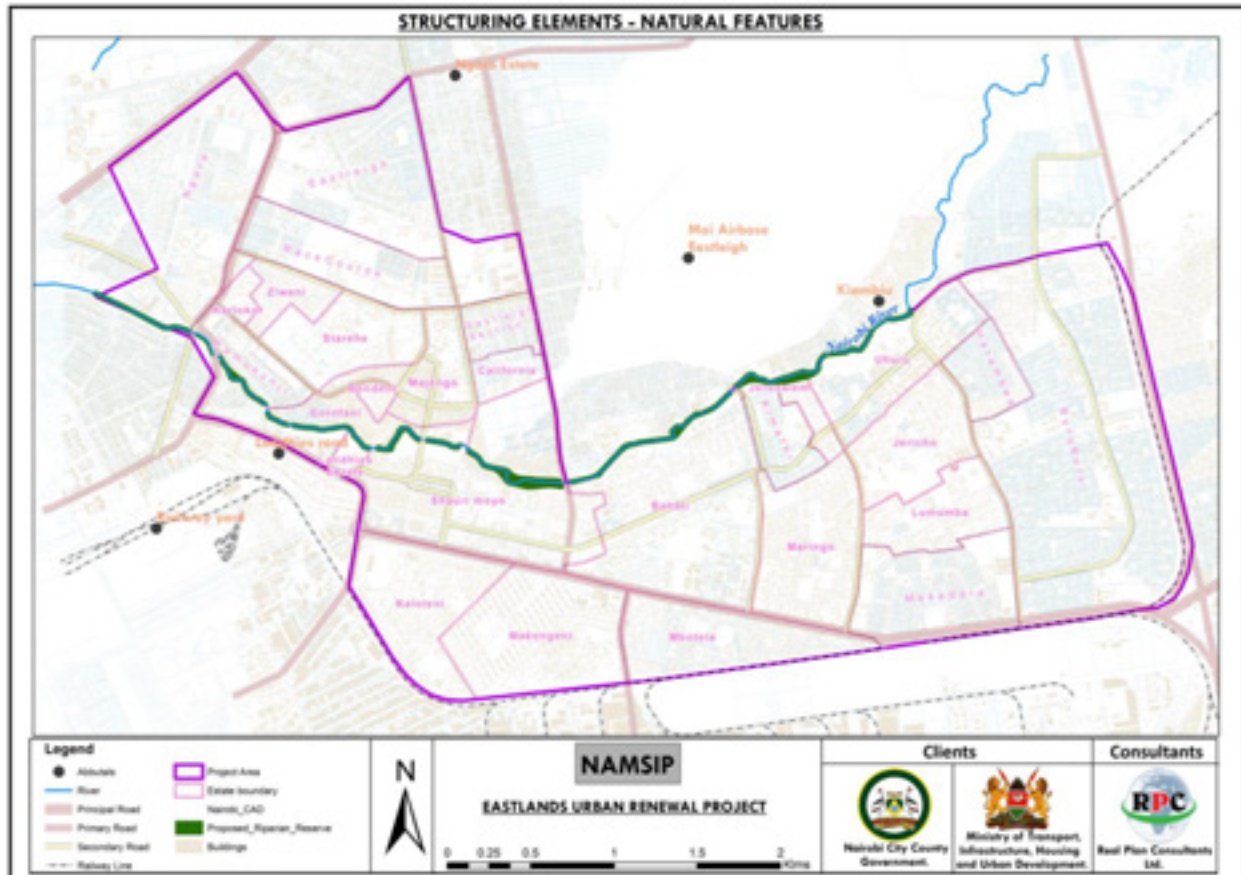


Figure 8: Natural System

The River dissects the project area into two distinct spheres (Northern and Southern) hence the need for a number of crossover points. The latter are however limited, making the two spheres poorly interconnected. Currently, Lamu road is the only connection between the two spheres. This greatly impedes the interaction between them. In order to improve the status quo, the plan proposes the establishment of the missing links by extending Quarry and Bondo roads. Further, footbridges are recommended to facilitate non-motorized movements this will further activate the riverfront zone.

The riparian reserve is also an environmentally fragile area that cannot accommodate physical developments. This is the reason behind delineating the zone as a green open area where only outdoor recreational and environmentally friendly activities are allowed. It is thus notable that the river affects the overall development densities achievable in the project area.

The river is also heavily encroached by human settlements. As a result, it is polluted with garbage, human and industrial waste, liquid effluents, chemicals and over-flowing sewers. The riparian reserve has thus not been distinctively demarcated. As a remedy, a Riverfront Development Plan has been prepared to provide a framework for regenerating and protecting the reserve henceforth.

On the positive end, the river is both a natural and an economic asset. As a natural asset, it is a potential source of water, both for domestic and non-domestic uses. It is also a potential home to a variety of aquatic flora and fauna and a booster of the aesthetic value of the project area.

Economically, it is a potential tourist attraction site whose value can be enhanced and recreational activities introduced for income generation purposes. Considering this, a tourism circuit has been proposed to run along a proposed leisure road corridor, which is parallel to the river basin.

**b. Movement System**

The movement corridors influencing the growth direction of Eastlands are the Moi Airbase, the railway corridor and the major roads. These are shown in the map below.

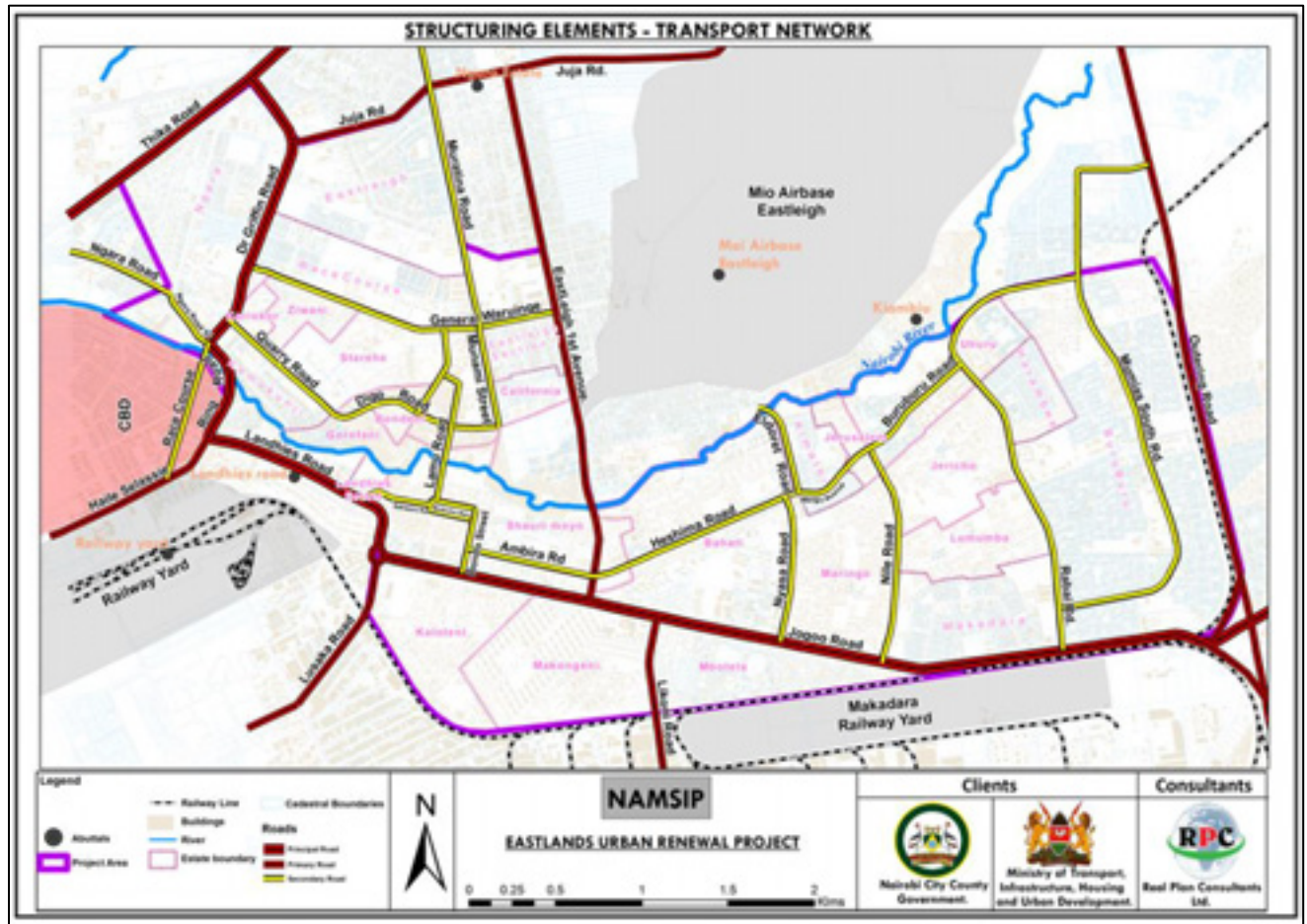


Figure 9: Movement System

The Moi Airbase borders the project area to the North and it significantly influences the developable building heights. This is due to the existence of the flight path that cuts across the project area (through Shauri Moyo and Kaloleni). Consequently, the airbase land next to New Pumwani estate, which also directly linked to the flight funnel, is for instance a no-development zone. On the other hand, the areas along the flight path are limited to 5 levels. The building heights increase as one moves away from the flight path. Therefore, this will considerably shape the skyline of Eastlands.

The railway line traversing the project area runs along the Southern edge. Combined with the expansive railway yard located between the railway line and the adjacent Industrial area buildings, the railway corridor has impeded connectivity between the project area and Nairobi Industrial

district. The only connection points between the two areas are Lusaka, Likoni and Lungalunga Roads. These are located at least 2.5 Km from each other (See the illustration below).



Figure 10: Connectivity between the Project Area and Industrial Area

This situation limits direct access to and from the industrial area, which is one of the major employment zones in the city. In recognition to this constraint, it is recommended that additional corridors connecting the two zones be introduced.

Secondly, Makadara Railway Station is identified as a potential booster to the development of the Hamza node, which mainly houses BCR developments and can be improved to be one of TOD zones within the project area. This node is noted as an area that can significantly contribute to the economic transformation of Eastlands.

Regarding the influence that the existing road network has on the development of Eastlands, it is noted that different corridors have different levels of influence, depending on their ranks in the overall hierarchy of roads. The major roads structuring Eastlands are Jogoo, Landhies, Outering, Dr. Griffin Road, Eastleigh 1st Avenue, Juja, Dr. Griffin, Lusaka, and Nyasa among others. Jogoo roads has the most functions, traffic and concentration of activities such as the Railway station, proposed Makadara and City Stadium nodes.

The plan recognizes these corridors as anchors of facilitated movement and mobility. These corridors form development axils along which developments have emerged. This could be associated with the better access and constant supply of clients/consumers. Therefore, these major corridors will extensively inform the location and distribution of land use activities and linkages. TOD nodes have also been established along the key transport corridors where areas close to public routes will be densified.

It is also important to note that the Eastlands road system is anchored on the greater Nairobi transport network that affect the functions, traffic and interactions with the city. The project area is directly connected to the following key city spines: Mombasa-Waiyaki way corridor, Lang'ata, Thika and Murang'a roads. It is linked to Mombasa road through Lusaka and Likoni road, Thika road via Outering road, Murang'a road via Juja road, Lang'ata road through Lusaka road.

The following strategies are proposed to enhance the network.

- The upgrading of roads to promote mobility, connectivity and efficiency whilst spurring growth in the wider area. In this regard road, widening and establishment of service lanes has been recommended.

- The development of a series of secondary routes that form cross linkages and connections to the primary routes; improving the access to services and facilities of the CBD, other nodes and estates. The secondary routes also improve access and linkages between the envisaged hierarchies of nodes.

**c. Nodal System**

Urban nodes are significant growth poles that promote productivity and ensure that the spread effects of the developments are widely. However, growth nodes of different levels ought to be properly networked and linkages between them be propelled efficiently.

In the project area, the proposed nodes, which have been proposed at locations where there are markets, shopping centres and informal trading areas, are the main growth areas. The nodes include the proposed Makadara secondary CBD, Gikomba and Shauri Moyo Kaloleni node. They are sites where densification of activities are recommended and are shown below.

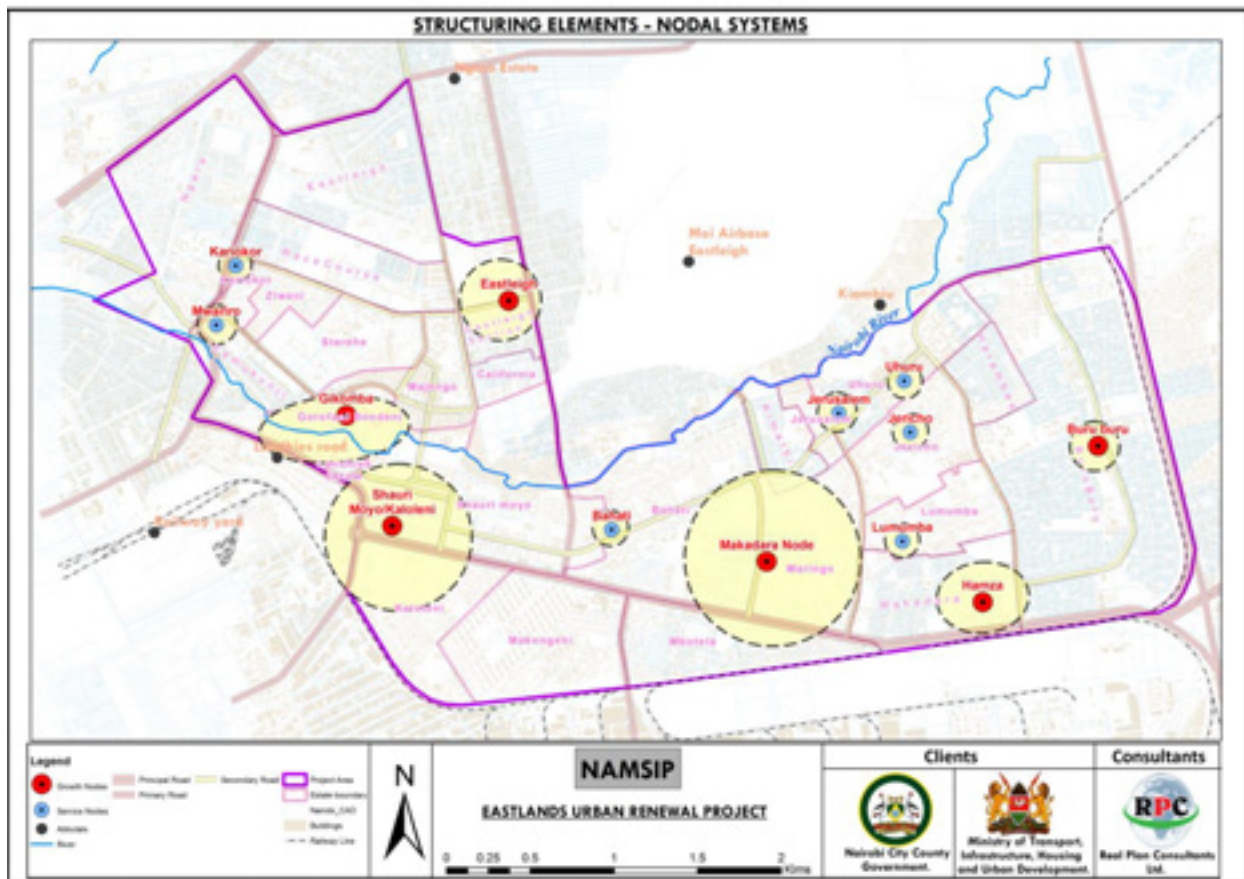


Figure 11: Hierarchy of Nodes

In hierarchical order, Makadara ranks at the top. It is proposed to have a higher concentration of activities and functions compared to others. These functions include Magistrate court, Huduma Centre, Deputy County Commissioner office, markets, TVET College, police station, level 4 hospital and termini. Secondly is Gikomba node, which has the following functions market area, Deputy County Commissioner, health centre and CORE centre. The City Stadium node will serve as sports hub, heritage zone, markets, light industries area, police station and fire station. Other

key nodes will include Eastleigh, Buruburu and Hamza. Uhuru, Jericho, Lumumba, Jerusalem, Bahati and Maringo will serve as service nodes. These nodes are expected to be the main employment areas.

### 3.1.2 Existing Land Use

The existing land use structure significantly informs the preferred Land Use Plan taking into account that human settlements have taken shape. It manifests developments which have taken significant investments of private and public resources. The existing pattern has defined residential, commercial and institutional zones that the plan has appreciated.

### 3.1.3 Population

Currently, the population in Eastlands is estimated at 252,331 by 2015 and is projected to expand to 4331,332 by 2030. The ballooning population has implications on future demands of dwelling areas, working areas, hard and soft infrastructure.

## 3.2 LAND USE PLAN

This is one of the key outputs of the project. It provides the overall growth strategy and direction that will be used to assign space to specific land uses in an effort to achieve harmony, compactness, complementing land uses, efficiency and sustainability. It further seeks to contain activities within designated areas and achieve a sustainable distribution of activity areas.

The project area is delineated into three broad land use categories namely housing, work places and public spaces. Housing takes 39.8% while work places and public spaces cover 9.3% and 51.2% respectively. The housing area has been reduced from 44.5% while land assigned to work places and public spaces have increased from 8.6% and 46.9% respectively. The areas are summarized in the table and chart below.

Table 2: Proposed Broad Land Use Distribution

Land Use	Proposed Area (Ha)	%	Net Area Gained/Lost (Ha)
Housing	501.1	39.8	-60.8
Work Places	117.7	9.3	8.7
Public Spaces	645.2	51.2	52.2
<b>Total</b>	<b>1264.0</b>	<b>100.0</b>	<b>0.0</b>

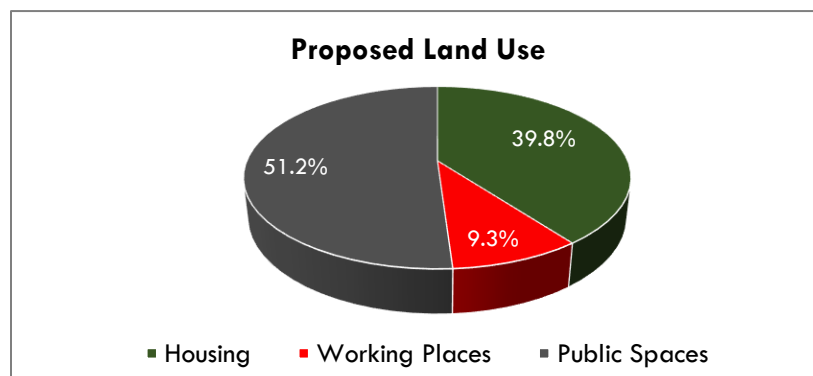


Figure 12: Summary of the Proposed Broad Land Use Budget

The above broad land use zones are comprised of various land use categories. The areas under Housing are those that are to be used for Residential purposes. Workplaces encompass

commercial and light industrial spaces while public spaces include educational, recreational, public purpose, transportation, public utilities, and conservation area. The detailed distribution of these land uses is summarized in the table below.

Table 3: Proposed Detailed Land Use Distribution

Land Use		Proposed Area (Ha)	%	Net Area Gained/Lost
Housing	<b>Residential</b>	<b>501.1</b>	<b>39.7</b>	-60.8
Work Places	Commercial	84.6	6.7	7.9
	Light Industrial	8.9	0.7	-20.7
	BCR	24.2	1.9	21.5
	<b>Sub-total</b>	<b>117.7</b>	<b>9.3</b>	<b>8.7</b>
Public Spaces	Public Utility	14.9	1.2	6.9
	Public Purpose	71.0	5.6	16.8
	Recreational	43.1	3.4	-36.1
	Educational	181.8	14.4	-3.8
	Conservation	26.4	2.1	8.9
	Transportation	308.0	24.4	59.5
	<b>Sub-total</b>	<b>645.2</b>	<b>51.2</b>	<b>52.2</b>
<b>Total</b>		<b>1264.0</b>	<b>100.0</b>	<b>0.0</b>

The map below shows the Land Use Plan.

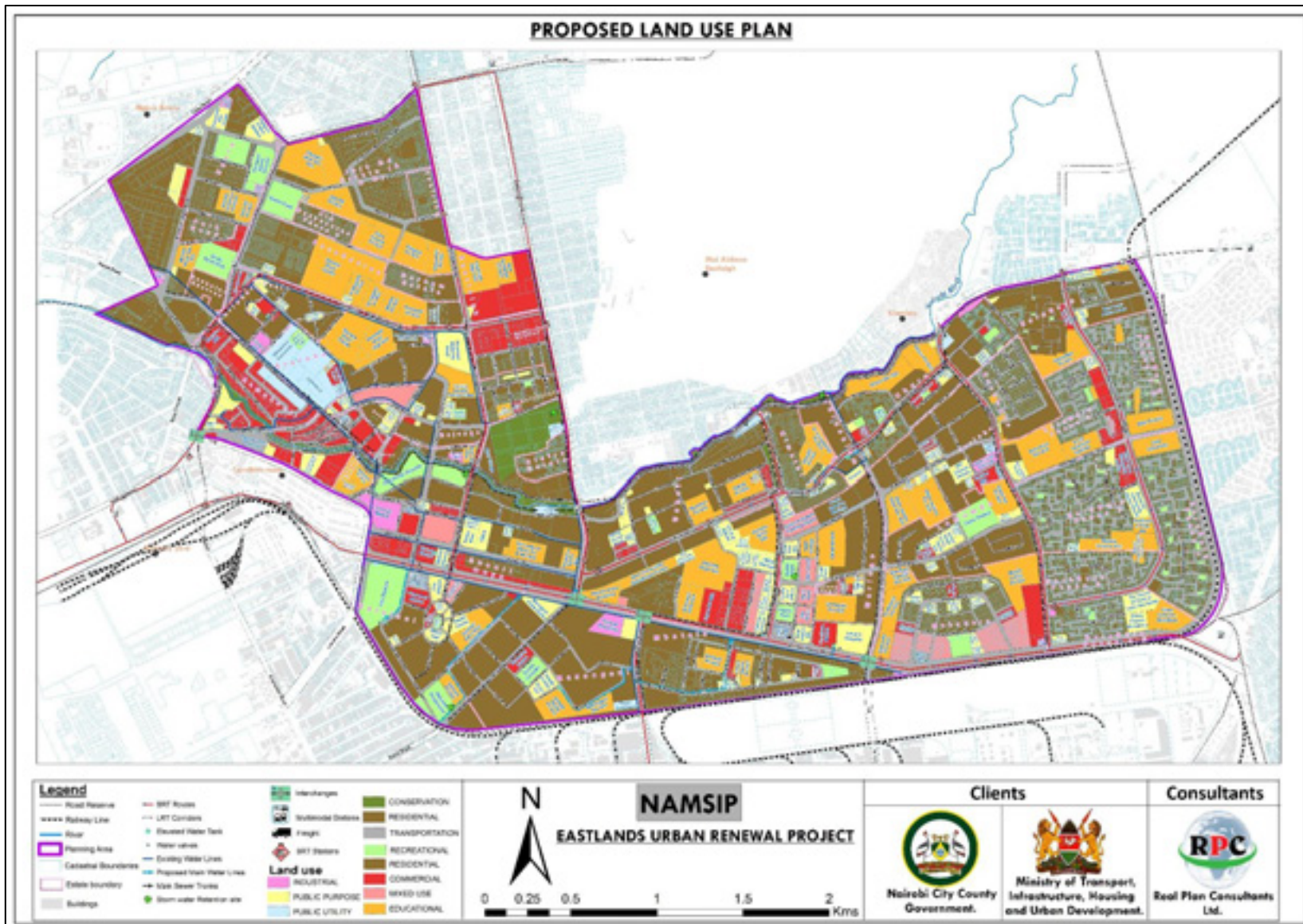


Figure 13: Proposed Overall Land Use Plan

### 3.2.1 Housing

The space assigned to housing is both in the private and public estates is 501.1 Ha, which is equivalent to about 40% of the total project area. This is justified by the fact that Eastlands is mainly a residential area. The land allocation made in respect to residential spaces is in consideration of the fact that increasing the stock of affordable housing is at the core of the objectives of this plan.

In the public estates alone, the earmarked residential space covers 249.0 Ha. The portions taken by the built up area and the green open spaces (courtyards) are 141.7 Ha and 107.3 Ha respectively as summarized below.

Table 4: Distribution of Open Spaces in Residential Areas

Estate	Built –up Residential Area (Ha)	Courtyard Open Space Area (Ha)	Gross Residential Area (Ha)
Maringo	8.1	6.8	14.9
Mbotela	23.5	4.8	28.3
Kaloleni	8.4	10.1	18.5
Bahati	22.7	18	40.7
Jerusalem	2.2	3.1	5.3
Jericho	6.9	11.5	18.4
Lumumba	5.6	10	15.3
Uhuru	14.6	4.4	19.0
Makongeni	16	21.6	37.8
Bondeni	0.5	0.6	1.1
Gorofani	0.7	1	1.7
Shauri Moyo	16.5	4.5	21.0
Ziwani	3.1	3.7	6.8
Starehe	4.7	4.3	9.0
Kariokor	1.4	2.2	3.6
New Pumwani	6.1	0.1	6.2
Makadara RH	0.5	0.9	1.4
<b>Total</b>	<b>141.7</b>	<b>107.3</b>	<b>249.0</b>

Notably, about 43% of the residential space is left for courtyard recreation, parking and circulation. This is meant to enhance the quality of the living spaces.

The proportions of residential land distributed between built-up areas and courtyard open spaces are informed by the proposed standard ground coverages for various zones demarcated with respect to allowable maximum building heights i.e.

- 50% ground coverage for 5 level zones
- 45% ground coverage for 8 level zones
- 40% ground coverage for 12 level zones
- 35% ground coverage for 16 level zones

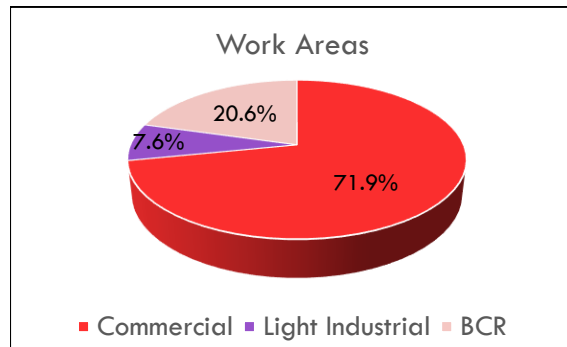
### 3.2.2 Working Spaces

The plan has earmarked 117.7 Ha as employment areas. This area represents 9.3% of the project area. The spaces constitute areas demarcated for commercial, light industrial and business cum residential uses and they mainly make up the growth nodes. Within the work areas, commercial

zone accounts for the largest spaces at 84.6 Ha, followed by BCR and light industrial at 24.2 Ha and 8.9 Ha respectively. The commercial area and BCR have increased from the current 76.7 Ha and 2.7 Ha respectively. The light industrial area has however reduced from 29.6 Ha. The proposed areas for work places are shown below.

Table 5: Work Areas

Land Use	Proposed Area (Ha)	%
Commercial	84.6	71.9
BCR	24.2	20.6
Light Industrial	8.9	7.6
<b>Total</b>	<b>117.7</b>	<b>100.0</b>



More workspaces are earmarked at the ground floor and first floors of residential blocks fronting key transport corridors.

### Commercial Zones

These zones account for 72% of the work areas. They constitute markets, shopping centres and nodes.

#### a. Markets and Shopping Centres

The markets include Jericho (1.3 Ha), Kariokor (0.7 Ha), Mwariro (0.9 Ha), Shauri Moyo (0.8 Ha), Hamza (0.4 Ha), Jogoo Road (2.2 Ha) and the proposed Kaloleni market (1.0 Ha) and Makadara furniture market (2.1 Ha)}. The shopping centres are Uhuru (1.6 Ha), Jericho (0.6 Ha), Maringo (0.8 Ha), Bahati (1.1 Ha), Mbotela (0.9 Ha), Kaloleni (0.5 Ha) Shauri Moyo (2.4 Ha), Makongeni (1.1 Ha), Starehe (1.2 Ha), Kariokor/Ziwani (0.8 Ha), Majengo (0.2 Ha) and Lumumba (0.5 Ha). The nodes are inclusive of Gikomba, Eastleigh, City Stadium and Makadara.

Jericho, Burma, Jogoo Road Kariokor and New Pumwani markets have been given special attention given the fact that they require revitalization. Despite the fact that they offer specialized commodities, their productivity levels have continued to dwindle over the years. Like these markets, the neighborhood level shopping centres also do not perform well economically. Most of them are mainly entertainment centres with no significant commercial investments. As such, significant land use re-adjustments have been proposed within and around them so that their performance can be boosted.

There are also quite a number of informal business areas, which significantly contribute to the economy of the project area. A good example is the City Stadium node. Others are the garages, furniture and tent making areas along Jogoo Road (near Makongeni estate). Such areas have been noted as economic boosters which must be reorganized and the required services provided, so that their functionality can be enhanced and the returns they generate optimized. This is why for instance the City Stadium business area has been merged with the Burma market side to form the Shauri Moyo-Kaloleni node, whose functions are oriented towards sports development, heritage preservation, tourism and business.

## b. Nodes

### i. Gikomba Node

Ring Road Ngara to the West, Quarry and Digo roads to the North, Muinami and Bondo streets to the East and Jogoo-Landhies Corridor to the South mark the proposed Gikomba node. It incorporates Kamukunji business area, Gikomba market, Gorofani and Bondeni estates, a section of Shauri Moyo estate, Kamukunji jua kali area, Burma market and the Eastern part of Landhies corridor. It measures 98.2 Ha.

The section of Landhies corridor captured within the node covers Wakulima Retail Market, Machakos Country Bus Station, the Little Dubai private market, office buildings and business complexes such as NACICO and SK buildings, a petrol station, Jua kali sheds and county government offices and a few schools. This zone is part of the larger logistics node of the city (where most transport destinations are located e.g. Railway Central Station, Machakos Country Bus and several bus termini). Notably, the Landhies corridor is mainly a commercial area which and is proposed to maintain the same functions.

The proposed plan for Gikomba node is shown below.

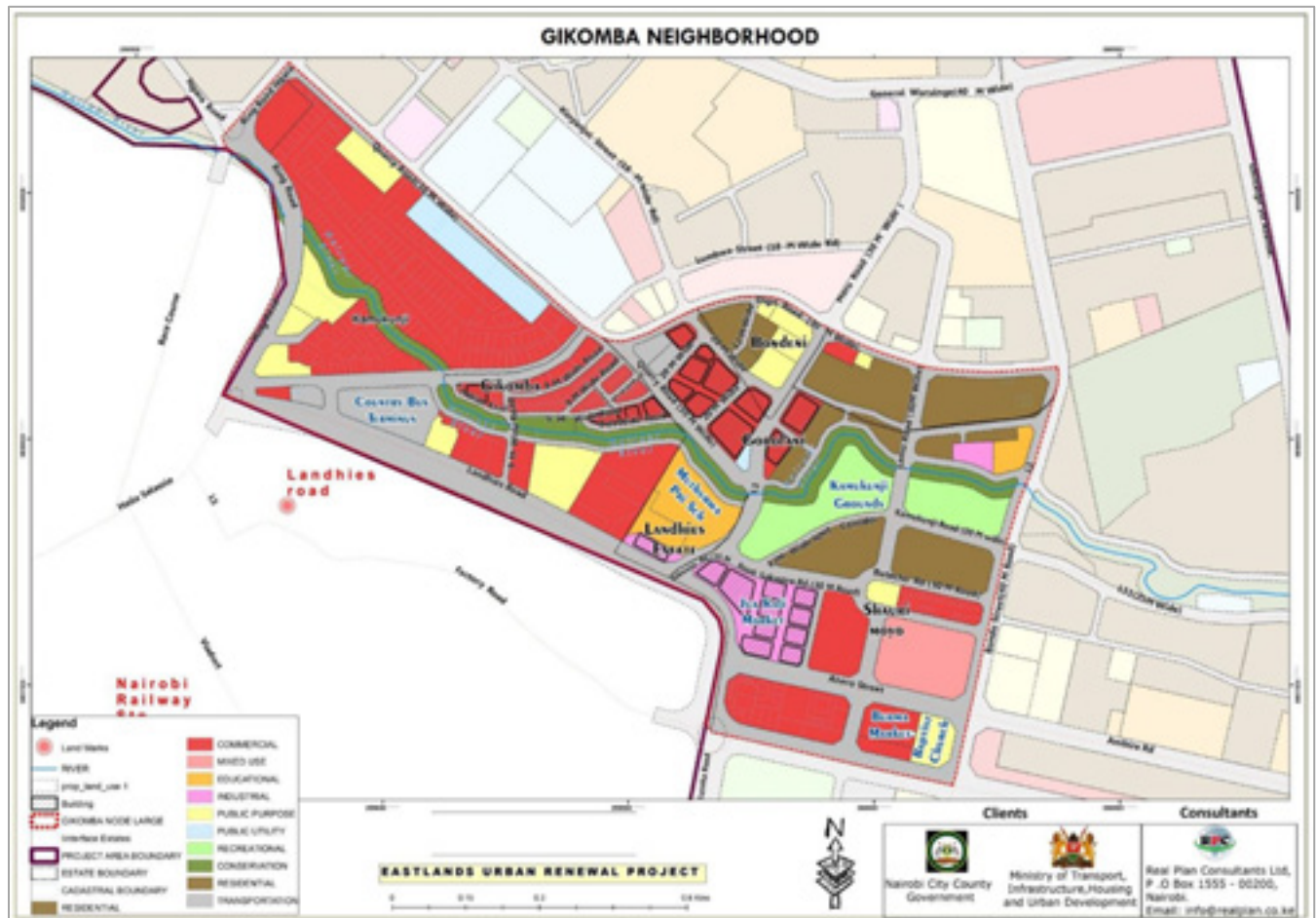


Figure 14: Proposed Land Use in Gikomba Node

## ii. Makadara Node

Makadara node is proposed as a fully functional CBD, which is secondary to the existing Nairobi Central Business District. Its main function is to decentralize the functions of a CBD to Eastlands area and reduce over-reliance on the current Nairobi CBD by the Eastlands residents. Furthermore, this is intended to help increase the work places in the project area and reduce the amount of time currently taken in traffic to access work places in areas located far off. The proposed land use structure for this node is shown below.

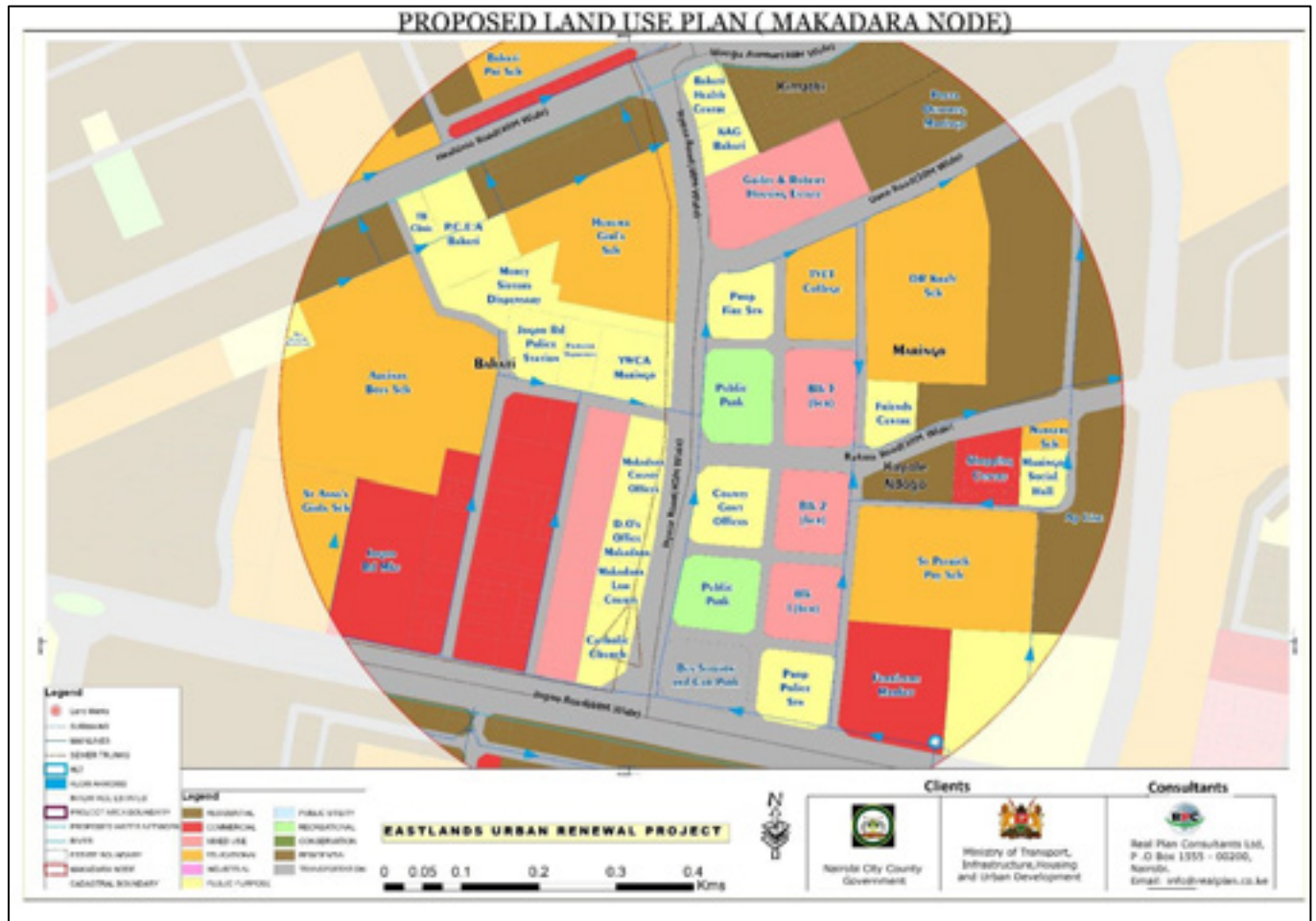


Figure 15: Proposed Land Use Plan for Makadara Node

### Light Industrial Zones

The light industrial zones are mainly made up of the Jua kali works, garages and fueling stations that account for significantly 7.6% of the designated employment zones. The plan has set aside adequate space (3 Ha) for Kamukunji Jua kali industrial park situated off Landhies Road in Shauri Moyo. It has also designated garage yards across the project area to formalize these activities.

### Business-Cum-Residential (BCR)

BCR zones represent 20.6% of the total employment area. They constitute areas where business activities are to be allowed within the lower floors of residential buildings, in an effort to increase gross leasable workspace. The zones allow a limited range of business activities that can

harmoniously co-exist with residential areas such as shops, eateries and groceries among others. They exclude nightclubs, hardwares and other functions not conducive for residential housing.

Such zones are earmarked in the proposed secondary node where commercial and office uses will be allowed in the lower floors. Additionally Hamza area is currently emerging as a BCR zone which has been adopted as such so that it can support the Makadara node, in which 4.96 Ha of land has been set aside for BCR uses.

Within Gikomba Market Node, BCR zone of 0.32 Ha has been planned. Combined with the purely commercial zones measuring 3.07 Ha of business space. The projected gross leasable business area is 241,150 m<sup>2</sup>. In Shauri Moyo-Kaloleni node, an area of 5.78 Ha is planned as BCR.

### 3.2.3 Public Spaces

These include land dedicated to public use such as transport corridors and termini, educational facilities, religious facilities, open spaces, conservation areas, recreational zones, public utilities and government institutions. The plan has designated 645 Ha for the public use, accounting for 51% of the project area. Transportation accounts for the largest space at 308 Ha while public utility areas cover the lowest at 14.9 Ha (See the table and chart below).

Table 6: Land Distribution to Public Spaces

No.	Land use	Area (Ha)	%
1.	Transportation	308.0	47.7
2.	Educational	181.8	28.2
3.	Public Purpose	71.0	11.0
4.	Recreational	43.1	6.7
5.	Conservation	26.4	4.1
6.	Public Utility	14.9	2.3
	<b>Total</b>	<b>645.2</b>	<b>100.0</b>

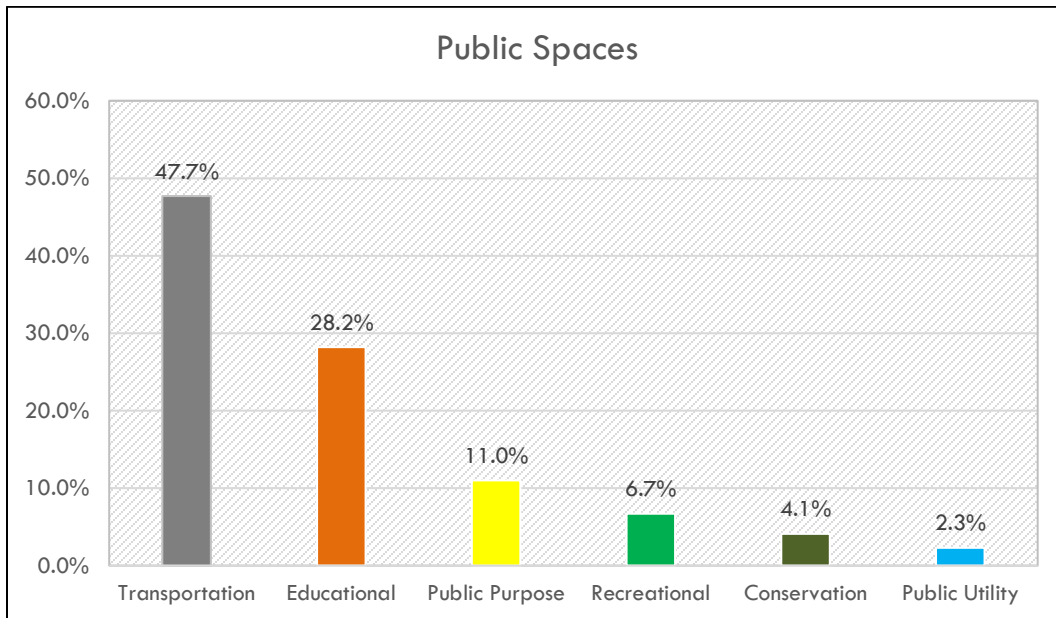


Figure 16: Land Distribution to Public Spaces

Further details are given herein after.

## **Transportation**

These areas constitute land designated for the use of transport facilities. This includes roads, railways and their terminals. The plan has made various transportation proposals including road expansion, provision of link roads and secondary accesses to increase mobility and accessibility as shown in the overall Land Use Plan. Transportation zone accounts for the 47.7% of the land, which has been dedicated to public spaces. A transport management strategy has also been developed whose detailed account is in the sector strategies section.

## **Educational**

The strategies applied in planning for educational spaces include retention of all existing facilities, expansion of some of them, creation of new ones and optimizing utilization of all facilities. The aim is to meet the increasing demand for education. The proposed educational space account for 181.8 Ha, which is 28% of the public space and 14% of the total land. The facilities include ECDE centres, primary schools, secondary schools and tertiary institutions. Further, vertical development and sharing of facilities such as playgrounds is encouraged, taking into account the high demand against the scarce land. Key facilities include proposed TVET College, Aquinas Boys, Starehe Centre, Pangani Girls, Buruburu Girls, KAG University and Ofafa Education Complex and the proposed nursery school in Mbotela.

## **Public Purpose Areas**

The strategies used in providing and improving public purpose facilities are similar to those used in improving the provision for educational centres. Public purpose zones cover 71.0 Ha (11% of the public space). These are areas set aside as hospitals, administrative offices, police stations, government institutions, social halls, and religious facilities. Major public purpose zones constitute the proposed level 4 hospital, Makadara Law Court, Pumwani Maternity Hospital and Jogoo Road Police Station, proposed fire stations and expanded social halls among others.

## **Recreational Zones**

Recreation is the sum total of all human, social-cultural and economic activities that enhances the therapeutic status of the mind. It brings a relaxation of the body and mind. Areas designated for this purposes include stadia, playgrounds, recreational parks and courts that account for 43 Ha. Main zones designated include City Stadium (7.4 Ha), Camp Toyoyo (3.5 Ha), proposed sport complex in Makongeni (1.5 Ha), Sir Ali Sport Ground (3.6 Ha), Pumwani Sport Ground (2.7 Ha), Ziwani (0.8 Ha), Majimbo (2.9 Ha), Kamukunji (4.5 Ha) and Makadara ground (1.6 Ha).

Some of the recreational facilities such as City Stadium and Camp Toyoyo have been expanded to increase their capacities to the level that they can meet the emerging needs. New ones, such as the Makongeni Sports Complex have also been introduced. On the other hand, most of the neighborhood level open spaces have been incorporated into residential areas, leading to a general reduction of the gross area under recreation from 79 Ha to 43 Ha. However, the open spaces have been compensated by the green spaces provided in each of the residential courts per estate.

## **Public Utility Areas**

Public utilities include water supply systems, sanitation facilities, power stations, communication networks and cemeteries. These areas provide the opportunity for systems or utilities that are used to benefit the public, such as water, sewage disposal, electricity, waste management,

drainage and telecommunications. The various public utilities in Eastlands include the cemeteries in Starehe and a power station in Makongeni that account 15 Ha, which is 2% of the public space. Most public utilities space is provided along designated road reserves.

### **Conservation Areas**

The Nairobi River riparian zone has been identified as the conservation area. This zone covers an area of 16.07 Ha. The river is under threat from encroachment, pollution and deforestation. The river course is currently under poor management. It is not well delineated and protected. It covers the entire stretch of the section of the river within the project area.

It is expected that the conservation area will be formally set aside, extending to the other areas outside the project area.

### **3.3 CONCLUSION**

The proposed land use structure promotes optimal utilization of the available space. It provides for a land use mix that incorporates all urban functions and gives room for functional interlinkages between all activity areas. It also presents balanced ratios between housing, work and public spaces, making Eastlands a place where people can live, work, invest and play.

## **CHAPTER FOUR**

### **THEMATIC STRATEGIES**

The thematic strategies include sector-specific proposals. The sectors covered are housing, transportation, water and sewerage, storm water management, education, health, community facilities, energy, environmental management, heritage preservation, economic development and revenue enhancement.

#### **4.1 HOUSING**

The housing sector proposals provide strategies for increasing the housing stock to sitting and new tenants, improving quality of housing and service areas, enhancing access to affordable housing and improving government revenue accruing from the public housing. Specific recommendations have been made with regard to permissible building heights, dwelling unit typologies, unit layouts, housing access options and relocation approach.

##### **4.1.1 Building Heights**

One of the urban renewal strategies is increasing building heights. This is in consideration of the need to meet the increasing housing demand and adapt to the emerging development trends. Notably, the buildings within the government estates range between one and two levels and a few flats. On the other hand, the private sector has significantly changed the skyline with high-rise residential and commercial structure up to 13 floors as shown figures below.

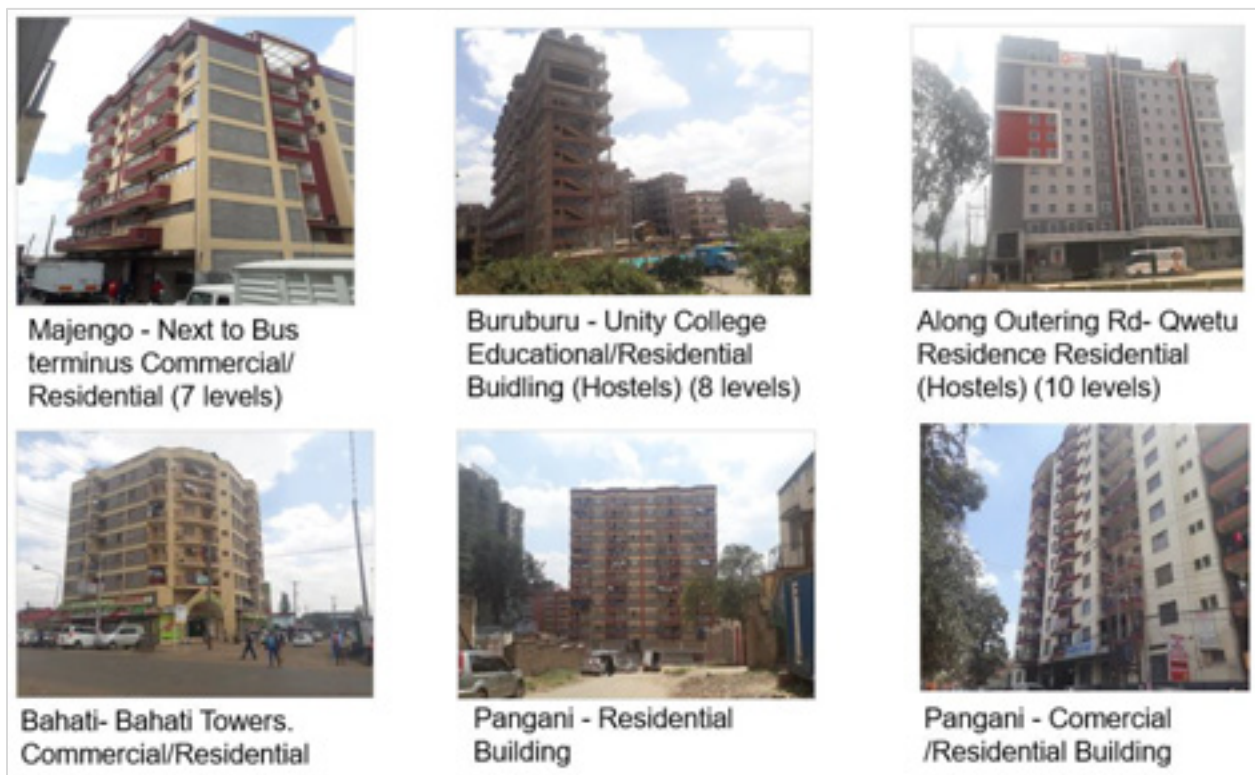


Figure 17: Emerging High-Rise Developments in Eastlands

The proposed building heights in the various estates are tabulated below.

Table 7: Proposed Building Heights

No	Estates	Proposed Height
1.	New Pumwani, Shauri Moyo, Kaloleni and sections of Makongeni	5
2.	Bondeni, Gorofani, Ziwani, Starehe and sections of Makongeni	8
3.	Bahati	8,12 and 16
4.	Makadara, Maringo, Jerusalem, Lumumba, Jericho, Uhuru, Kariokor, Mbotela and sections of Makongeni	16

It is noteworthy the proximity of the project area to Moi Air Base significantly influences the permissible heights. KCAA in conjunction with Department of Defence regulates building heights. The proposed height in the estates that are close to the flight path is 5 levels while the zones that are farthest from the path can have buildings of up to 16 floors.

The 3-D impressions of some of the proposed building heights are shown below.



Figure 18: 3-D impression of Proposed Heights

The map below shows the recommended zones with reference to permissible building heights.

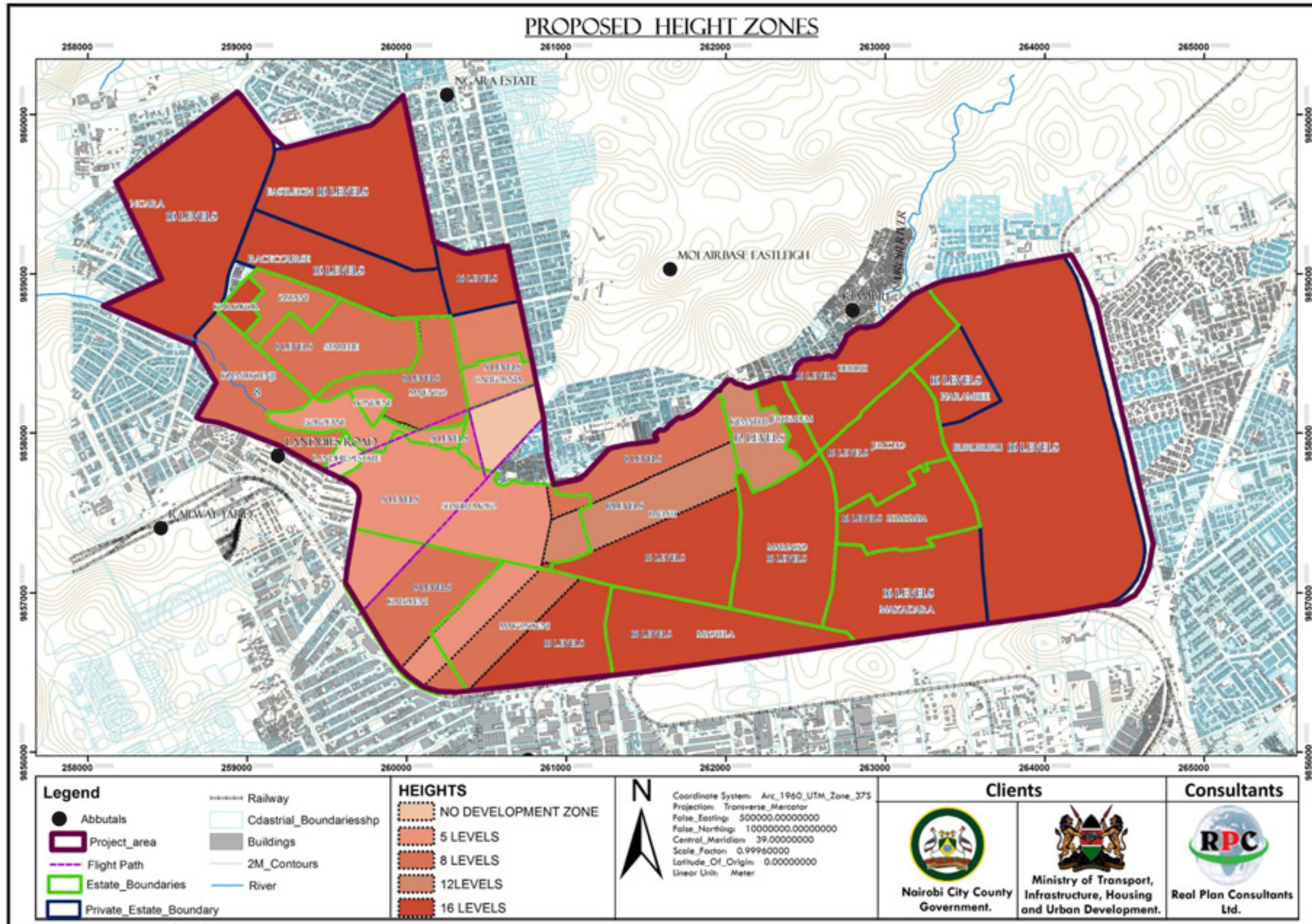


Figure 19: Proposed Building height zones

### 4.1.2 Unit Types

In order to meet the housing preferences of residents, a variety of dwelling units have been proposed. They include bedsitters, one-bedroom, two-bedroom, three-bedroom, three-bedroom with Servant Quarter units and hostels. This is opposed to current situation where the dominant houses are single rooms and one-bedroom units (see the illustration below).

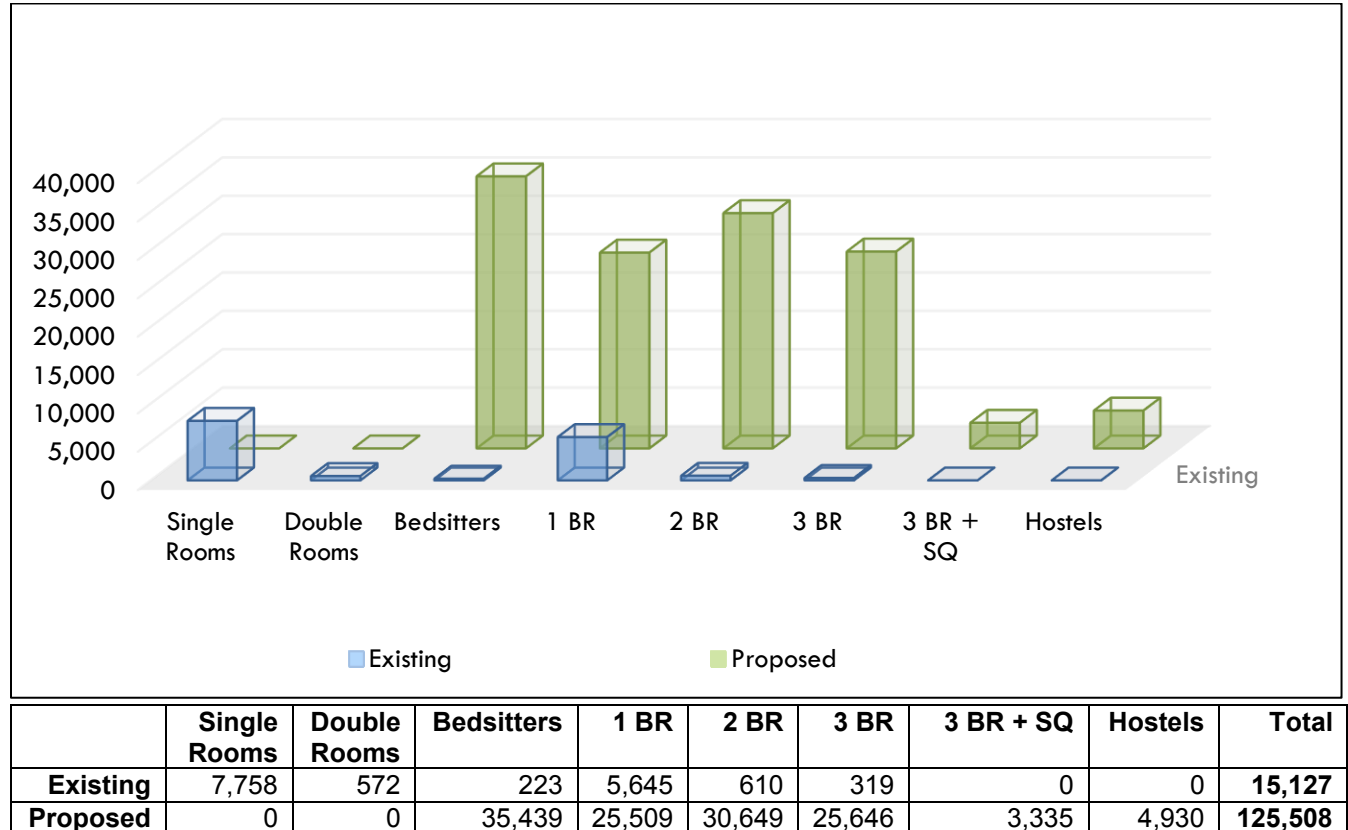


Figure 20: Existing vs Proposed Unit Types

The number of proposed bedsitters, one-bedrooms, two-bedrooms and three-bedrooms has significantly increased. However, single and double rooms have been eliminated. This is because the socio-economic survey findings indicate that about 87% of the residents prefer between one and three bedroom units. The proposed unit types have distinct features as described below.

#### a. Bedsitters/Studio

The proposed bedsitter has a kitchen, bathroom, a bed space and a small lounge. It occupies an area of 21 m<sup>2</sup> and is ideal for approximately two inhabitants mostly, young families and single people. The floor plan is shown below;

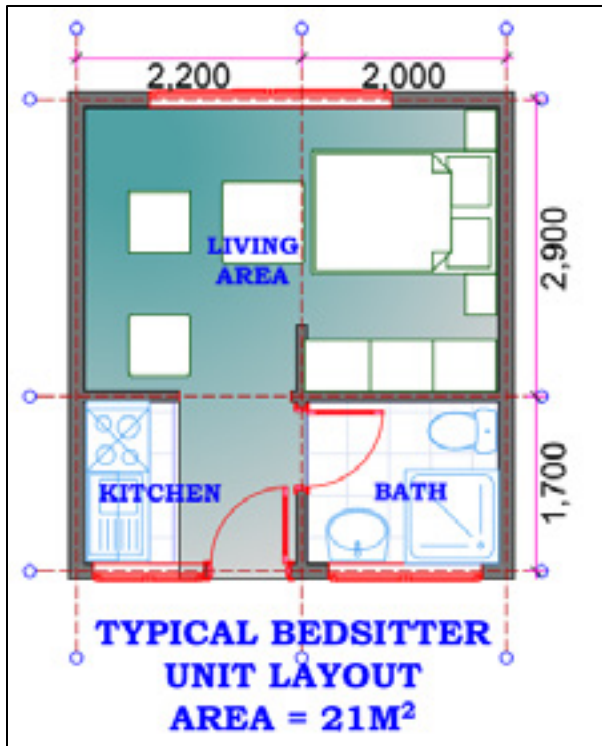


Figure 21: Proposed Bedsitter Layout.

**b. One Bedroom Unit**

A one-bedroom unit consists of a living room, bedroom, kitchen and washroom. The proposed floor area is 30 m<sup>2</sup>. The unit is preferable for a couple without children. The floor plan layout is shown in the figure below.

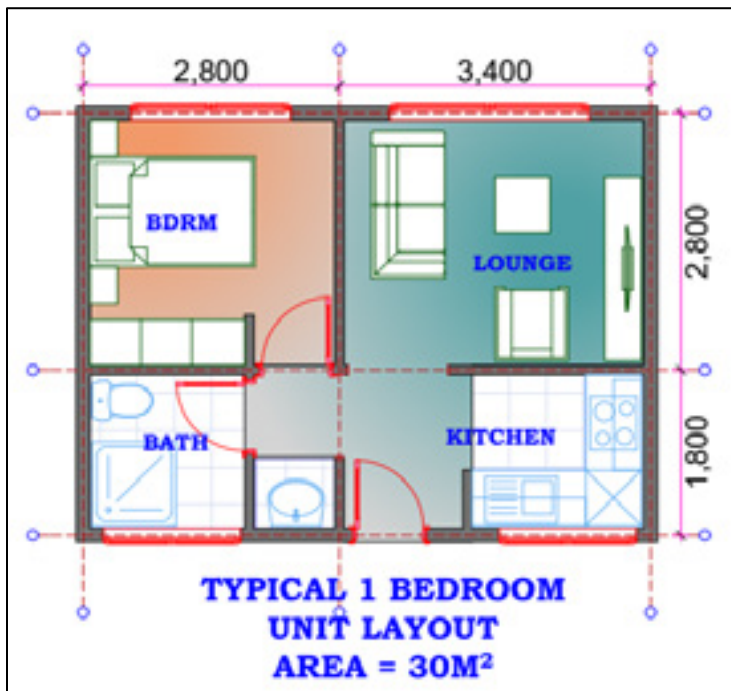


Figure 22: Proposed One Bedroom Layout

### c. Two Bedroom Unit

A two-bedroom unit is proposed to occupy an average of 51 m<sup>2</sup> and consist of a lounge, two bedrooms, a kitchen and washroom. The units are envisaged to accommodate up to five inhabitants. The proposed unit layout is as shown below.

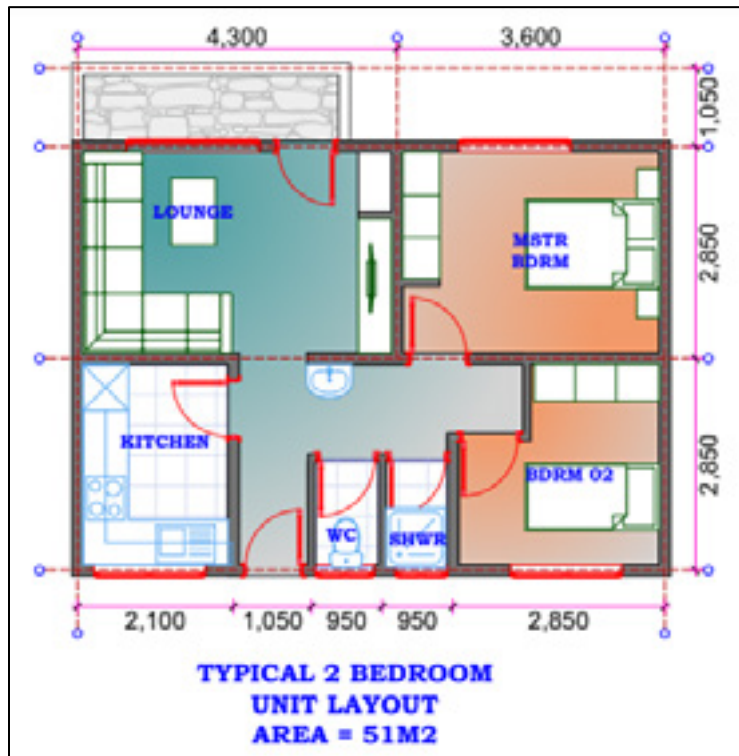


Figure 23: Proposed Two Bedroom Layout

### d. Three Bedroom Unit

The proposed 3-bedroom unit consists of two ordinary bedrooms, master bedroom ensuite, lounge, kitchen, balcony, common toilet and bathroom. Its floor area is 68 m<sup>2</sup> and is expected to host up to 6 inhabitants such as nuclear families living with relatives or elderly parents living with their children and grandchildren. The floor layout is shown overleaf

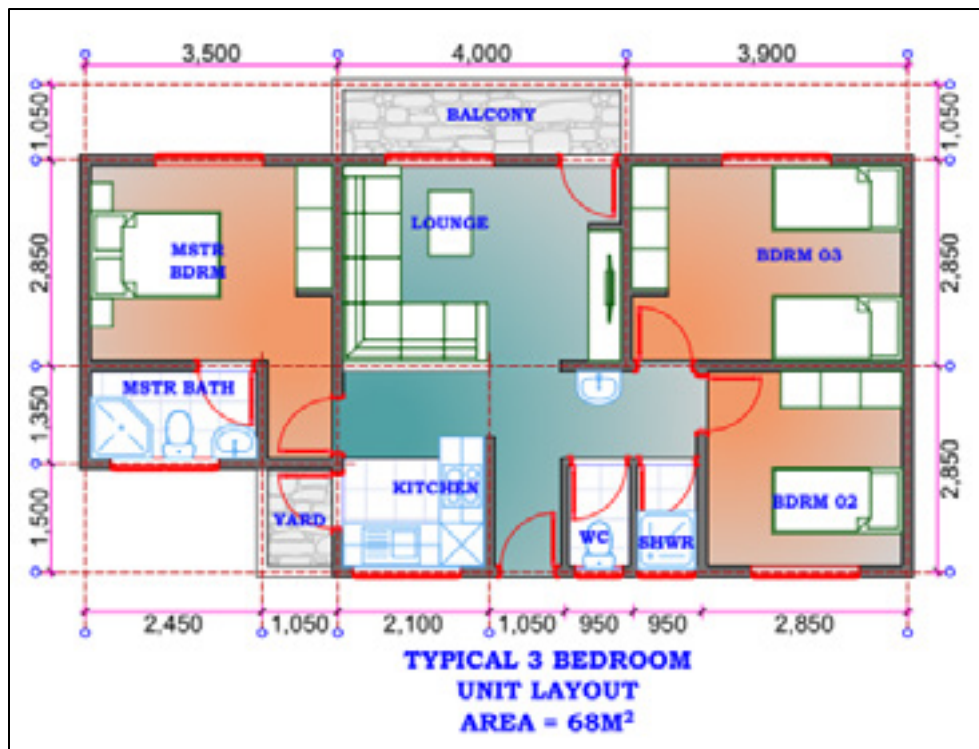


Figure 24: Proposed Three Bedroom Layout

From the public consultations, different house types were preferred. Some stakeholders requested for a minimum two bedrooms in some estates, others one bedroom as a minimum while others support the notion that there should not be any bedsitters so as to generally improve the housing standards.

#### 4.1.3 Building Floor Plans

Four types of floor plans consisting of a varying mix of studios/bedsitters, one, two and three bedroom units have been recommended. They are tabulated below.

Table 8: Plan Types

Plan type	Number of Units					Total
	Studio	1 BR	2 BR	3 BR	3 BR+SQ	
Type 1 (Studio, 1BR & 2BR)	8	4	2	0	0	14
Type 2 (Studio, 1BR, 2 BR & 3BR)	2	6	2	6	0	16
Type 3 (Studio, 1BR & 2BR)	16	6	6	0	0	28
Type 4 (Studio, 1BR, 2BR, 3BR & 3BR+SQ)	0	0	8	7	1	16

In the floor designs, bedsitters and one-bedroom units are situated next to each other and so are the 2 and 3-bedroom units. The bedsitters and one-bedroom units are placed around the busier parts of the floor such as stairs while 2-bedroom and 3-bedroom units are placed in quieter parts of the floor.

The different types of dwelling units are mixed in order to

- Cross-subsidize social housing
- Promote mixed tenure neighbourhoods
- Promote mixed income neighbourhoods

- Reduce welfare dependency/de-concentrate poverty
- Promote sharing of costs related to infrastructure and utility maintenance

Additional details of the plans are highlighted below.

**Plan/Block Type 1**

In this plan, the total number of housing units on one floor is 14. They include 8 bedsitters/studios, 4 one-bedroom and 2 two-bedroom units. The housing mix is ideal for young families and single people. The building blocks with this type of plan are proposed to be located in the active parts of the estate. A typical floor plan is shown below.



Figure 25: A Typical Floor Plan 1

**Plan/Block Type 2:**

In this plan, a floor has 16 units, including 2 bedsitters, 6 one-bedroom, 2 two-bedroom and 6 three-bedroom units. The blocks with this plan are envisioned to accommodate households from across the various socio-economic groups and are to be located between the least and most active zones of an estate. A typical floor plan is shown below.



Figure 26: A Typical Floor Plan 2

**Plan/block Type 3**

This plan has 16 bedsitters, 6 one-bedroom, and 6 two-bedroom units. This gives a total of 28 units on one floor. The design is shown below.



Figure 27: A Typical Floor for House Type 3

**Plan/Block Type 4**

The plan provides for 8 two-bedroom, 7 three-bedroom and 1 three-bedroom units with an SQ. The block is suitable for the least active zones of the estate and furthest from main entrance. The floor/structure has adequate circulation spaces to support the large number of units as shown in the floor plan below.



Figure 28: Typical Floor Plan 4

#### 4.1.4 Proposed Housing Stock

The proposed housing stock is categorized into the following:

- i. Public estates housing
- ii. Housing from ongoing NCCG Projects
- iii. Private estates housing
- iv. Housing in the proposed BCR Zones

The units achievable in each of the above areas is tabulated below.

Table 9: Estimated Achievable Housing Stock by Area

Category	Sub-Category	Approx. No. of Units	%
Private Estates	-	149,266	53.6
Public Estates	Pure Residential zones	121,964	43.8
	BCR zones	3,544	1.3
	<b>Sub-total</b>	<b>125,508</b>	<b>45.1</b>
Housing from ongoing NCCG Projects	-	3,554	1.3
<b>Total</b>	-	<b>278,328</b>	<b>100.0</b>

#### (a) Private Estates

The existing number of housing units in the private estates within the project area is estimated at 149,266. The estimations have been done based on the average number of plots, ground coverages, dwelling unit sizes and building heights (see the table below).

Table 10: Estimated Housing Stock in Private Estates

Estate	Estimated plot size (Ha)	Ground Coverage	Estimated No. of plots	Estimated No. of Units per Floor	Unit Type	Average Unit Size (m <sup>2</sup> )	Optimal Heights	Achievable Housing Units (all floors of all plots)
Kimathi	0.02	50	355	1	2 & 3 BR	57.5	1	355
Makadara-Hamza	0.01	50	734	2	Bedsitters & 1 BR	26.5	7	10,276
Racecourse	0.01	50	513	2	1 BR	32.0	2	1,603
Ngara	0.04	50	404	8	Hostels, bedsitters, & 1 BR	26.5	7	21,343
Majengo	0.02	50	895	5	Bedsitters	21.0	4	17,048
Buruburu	0.01	50	4435	1	2 & 3 BR	57.5	2	4,435
Rabai Road	0.02	50	57	1	2 & 3 BR	32.0	2	114
Harambee	0.02	50	342	2	1 & 2 BR	41.0	2	1,368
Eastleigh	0.1	80	185	20	1 & 2 BR	41.0	10	36,098
New Pumwani	0.02	50	143	4	Bedsitters & 1 BR	26.5	5	2,698
Kayole Ndogo	0.02	50	24	4	Bedsitters & 1 BR	26.5	5	452

Bahati	0.02	80	219	6	Bedsitters &1 BR	26.5	7	<b>9,256</b>
Mbotela	0.02	60	180	5	Bedsitters &1 BR	26.5	5	<b>4,075</b>
Pangani	0.045	80	590	6	2 & 3 BR	57.5	10	<b>36,939</b>
Ushirika	0.045	50	55	5	1 & 2 BR	41.0	4	<b>1,207</b>
Uhuru Phase 3&4	0.01	60	533	2	1 BR	32.0	2	<b>1,999</b>
<b>Total</b>								<b>149,266</b>

### (b) Public Estates Housing Zones

The proposed housing units within the residential areas of the public estates is 125,508. This represents a huge increase from the current stock, resulting from increased heights in various estates. See the table below.

Table 11: Proposed Number of Units in the Residential Zones of Public/Focus Estates

No.	Estate	Studio	1 BR	2 BR	3 BR	3 BR+SQ	Hostels	Total
1.	Bahati	4,397	3707	3992	3850	422	0	16,368
2.	Kaloleni	2,529	2093	2290	2173	243	0	9,328
3.	Mbotela	2,029	1438	1940	1594	231	0	7,232
4.	Makongeni	4,882	3338	4116	3280	448	4930	20,994
5.	Shauri Moyo	1111	805	920	774	98	0	3,708
6.	Bondeni	292	190	126	96	0	0	704
7.	Gorofani	306	256	126	144	0	0	832
8.	Kariokor	739	577	796	698	102	0	2,912
9.	Ziwani	1,097	782	890	742	90	0	3,601
10.	Starehe	1,338	846	1016	746	102	0	4,048
11.	Maringo	4,182	2810	3728	2926	426	0	14,072
12.	Jerusalem	1,386	830	1144	800	128	0	4,288
13.	Lumumba	3,639	2621	3212	2682	358	0	12,512
14.	Jericho	4,738	3225	4004	3181	435	0	15,583
15.	Uhuru	2481	1789	2130	1786	230	0	8,416
16.	New Pumwani	40	20	10	0	0	0	70
17.	Makadara RH	253	182	209	174	22	0	840
	<b>Total</b>	<b>35,439</b>	<b>25,509</b>	<b>30,649</b>	<b>25,646</b>	<b>3,335</b>	<b>4,930</b>	125,508

It is noteworthy that the distribution of the various types of dwelling units in the public estates is based on socio-economic findings on preferences of houses by size and affordability/ willingness to pay. While the highest majority of the residents preferred between 1BR and 3BR houses, they indicated that they would be willing to pay a maximum of Ksh. 5000 per month. The number of bedsitters, 1BR and 2BR units provided will thus cater for this group. The rest of the houses will then accommodate the group that can afford to pay more that Ksh. 5000 per month.

### (c) Public Estates BCR Zones

Various BCR zones have been proposed both in the public and private estates. The latter are already existing and the residential units thereon already estimated as part of the private estates housing stock.

In the public estates, the BCR buildings are expected to accommodate residential units from 3<sup>rd</sup> floor and above. However, the first two lower floors are recommended to accommodate business premises. The number of residential units achievable in these buildings is estimated at 4,246 as tabulated below.

Table 12: Proposed Number of Units in the BCR Zones of Public/Focus Estates

Estate	Building Heights	No of floors with Residential Units	Bedsitters	1 BR	2 BR	3 BR	3 BR+SQ	Total
Maringo	16	14	280	840	280	840	0	2240
			560	280	140	0	0	980
Shauri Moyo	5	3	72	36	18	0	0	126
			18	54	18	54	0	144
			48	18	18	0	0	84
Makadara RH	16	14	84	252	84	252	0	672
<b>Total</b>			<b>1062</b>	<b>1480</b>	<b>558</b>	<b>1146</b>	<b>0</b>	<b>4246</b>

From the above analysis, approx. (676 housing blocks have been proposed. The distribution per estate is shown in the table below.

Table 13: Proposed Distribution of Housing Blocks

No.	Estate Name	Type 1	Type 2	Type 3	Type 4	Hostels	Total
1.	Makongeni	28	31	20	35	29	<b>143</b>
2.	Bahati	23	45	17	33	0	<b>118</b>
3.	Kaloleni	13	25	10	19	0	<b>67</b>
4.	Jericho	13	15	10	17	0	<b>55</b>
5.	Maringo	12	13	9	17	0	<b>51</b>
6.	Shauri Moyo	12	14	7	13	0	<b>46</b>
7.	Lumumba	11	13	7	14	0	<b>45</b>
8.	Uhuru	7	9	5	9	0	<b>30</b>
9.	Starehe	7	7	6	8	0	<b>28</b>
10.	Mbotela	6	7	4	9	0	<b>26</b>
11.	Ziwani	5	8	5	7	0	<b>25</b>
12.	Jerusalem	4	3	3	5	0	<b>15</b>
13.	Kariokor	3	3	1	4	0	<b>11</b>
14.	Gorofani	2	3	1	0	0	<b>6</b>
15.	Makadara RH	1	1	2	1	0	<b>5</b>
16.	Bondeni	2	2	0	0		<b>4</b>
17.	New Pumwani	1	0	0	0	0	<b>1</b>
	<b>Total</b>	<b>150</b>	<b>199</b>	<b>107</b>	<b>191</b>	<b>29</b>	<b>676</b>

#### (d) Ongoing GK/NCCG Projects

The ongoing housing projects are being implemented in Jevanjee/Bachelors, Pangani, Old Ngara and New Ngara estates. The proposed number of units total to 3554. These houses are expected to house people within the Eastlands area, hence their consideration in this plan. The table below gives the details of these houses.

Table 14: Proposed Number of Units from NCCG Ongoing Projects

Estate	LR No	Area (Ha)	Proposed Units				Total
			Bedsitter	1BR	2BR	3BR	
Jevanjee/Bachelors	209/5458	3.594	108	108	108	72	<b>396</b>
Pangani	209/4300/162	2.096	160	160	528	420	<b>1268</b>
Old Ngara	209/2760/2	1.245	0	300	600	150	<b>1050</b>
New Ngara	209/5439	0.311	0	240	480	120	<b>840</b>
	209/5438	1.667					
<b>Total</b>	-	-	<b>268</b>	<b>808</b>	<b>1716</b>	<b>762</b>	<b>3554</b>

Source: NCCG, 2019

### 4.1.5 Access to Housing

Two options of accessing housing are proposed i.e.

- Renting
- Tenant purchase

The above options are informed by the government’s guidelines on affordable housing, which are captured within the housing pillar of the Big 4 Agenda. The affordable housing program targets three income segments and the categories of houses they can access.

No.	Income segment	Housing Category
1.	Ksh. 0 – 19,999 Social	Social Housing
2.	Ksh. 20,000 – 49,999	Low cost Housing
3.	Ksh. 50,000 – 149,999	Mortgage Housing
4.	Ksh. 150,000 +	Middle to High Income Housing

It is noted that a majority of the people in Eastlands fall under the first two categories. Such people include low-income families, people at the risk of homelessness and those that are actually homeless, the elderly and persons with disabilities. These people mainly require subsidized housing and in order to enhance the government’s ability to address this demand, it is recommended that a bigger proportion of the houses be made rental, particularly under the social housing program.

#### a. Rental Housing

Among the people for whom rental houses are suitable are the sitting tenants, 64% of whom earn less than Ksh. 24,000 per month. They consist of households residing in the official government houses and those living in the informal extensions. They are 16,569 and approximately 33,893 respectively. The total number of sitting tenant households is thus 50,462.

Given that this group of people can only afford low-income housing as revealed by the socio-economic survey findings, it is proposed that about 62,930 units be assigned to them through the social housing program, which mainly provides for rental houses.

The recommended distribution of these houses by dwelling unit size is informed by the affordability levels of the residents as shown below.

Table 15: Proposed Distribution of Housing and Rents for Sitting Tenants

House Type	Social Rent	Affordability In %	% of Sitting Tenants Targeted	No. of Units (Sitting tenants)
Bedsitter/Studios	2,400	82%	46%	28,948
One Bedroom	3,200	64%	28%	17,620
Two Bedroom	5,800	33%	17%	10,698
Three Bedroom	8,200	23%	9%	5,664
<b>Total</b>			<b>100%</b>	<b>62,930</b>

It is notable that the housing stock assigned to the sitting tenants exceed the current number demand (which is equivalent to the existing number of households) by 12,468 units. This extra number of units is set aside for additional people who may move to the public estates over the period between plan completion time and housing development commencement. This position is informed by the observation that Eastlands area experiences a high rate of immigration given the relatively affordable standards of living.

Additionally, the proposed rents are quite below the current local market rents. Rent for a bedsitter in the local market ranges between Ksh. 5,500 -13,500, a one-bedroom unit from Ksh. 10,000 to 18,000, a two-bedroom unit Ksh. 14,000 to 25,000 and a three-bedroom unit from Ksh. 32,000 to 40,000.

The units assigned to sitting tenants are distributed per estate as tabulated in the table below.

Table 16: Dwelling Units assigned to Sitting Tenants

Estate	Studio	1 BR	2 BR	3 BR	Total
Bahati	3592	2561	1393	850	<b>8,396</b>
Kaloleni	2066	1446	799	480	<b>4,791</b>
Mbotela	1657	993	677	352	<b>3,680</b>
Makongeni	3988	2306	1437	724	<b>8,455</b>
Shauri Moyo	908	556	321	171	<b>1,956</b>
Bondeni	239	131	44	21	<b>435</b>
Gorofani	250	177	44	32	<b>503</b>
Kariokor	604	399	278	154	<b>1,434</b>
Ziwani	896	540	311	164	<b>1,911</b>
Starehe	1093	584	355	165	<b>2,197</b>
Maringo	3416	1941	1301	646	<b>7,304</b>
Jerusalem	1132	573	399	177	<b>2,281</b>
Lumumba	2972	1810	1121	592	<b>6,496</b>
Jericho	3870	2228	1398	702	<b>8,198</b>
Uhuru	2027	1236	743	394	<b>4,400</b>
New Pumwani	33	14	3	0	<b>50</b>
Makadara RH	207	126	73	38	<b>444</b>
<b>Total</b>	<b>28,948</b>	<b>17,620</b>	<b>10,698</b>	<b>5,664</b>	<b>62,930</b>

## b. Tenant Purchase Housing

This option applies to people with the ability to buy the houses. It is envisaged that such people will mainly consist of new tenants and the 36% of the sitting tenants whose monthly incomes exceed Ksh. 24,000.

It is proposed that 62,578 units will be under sale option to be able to attract investors. The number of units proposed for tenant purchase is as follows.

Table 17: Tenant Purchase Units

No	Unit Type	No. of units	(%)
1.	Bedsitter/Studio	6,491	10.4
2.	1 Bedroom	7,889	12.6
3.	2 Bedroom	19,951	31.9
4.	3 Bedroom	19,982	31.9
5.	3 Bedroom with servant quarter	3,335	5.3
6.	Hostels	4,930	7.9
	<b>Total</b>	<b>62,578</b>	<b>100.0</b>

The distribution of the units per estate is shown below.

Table 18: Tenant Purchase Units by Estate

Estate	Studio	1 BR	2 BR	3 BR	3 BR+SQ	Hostels	Total
Bahati	805	1146	2599	3000	422	0	<b>7,972</b>
Kaloleni	463	647	1491	1693	243	0	<b>4,537</b>
Mbotela	372	445	1263	1242	231	0	<b>3,553</b>
Makongeni	894	1032	2679	2556	448	4930	<b>12,539</b>

Shauri Moyo	203	249	599	603	98	0	<b>1,752</b>
Bondeni	53	59	82	75	0	0	<b>269</b>
Gorofani	56	79	82	112	0	0	<b>329</b>
Kariokor	135	178	518	544	102	0	<b>1,477</b>
Ziwani	201	242	579	578	90	0	<b>1,690</b>
Starehe	245	262	661	581	102	0	<b>1,851</b>
Maringo	766	869	2427	2280	426	0	<b>6,768</b>
Jerusalem	254	257	745	623	128	0	<b>2,007</b>
Lumumba	667	811	2091	2090	358	0	<b>6,017</b>
Jericho	868	997	2606	2479	435	0	<b>7,385</b>
Uhuru	454	553	1387	1392	230	0	<b>4,016</b>
New Pumwani	7	6	7	0	0	0	<b>20</b>
Makadara RH	46	56	136	136	22	0	<b>396</b>
<b>Total</b>	<b>6,489</b>	<b>7,888</b>	<b>19,952</b>	<b>19,984</b>	<b>3,335</b>	<b>4,930</b>	<b>62,578</b>

The proposed sale prices are also affordable as shown in the table below.

Table 19: Proposed Cost and Sale Prices of Houses

Unit type	Unit size	Unit cost (Ksh.)	Proposed Sale Price (Ksh.)
Bedsitter/Studio	21 m <sup>2</sup>	720,000	1,200,000
1 Bedroom	30 m <sup>2</sup>	960,000	1,500,000
2 Bedroom	51 m <sup>2</sup>	1,750,000	2,500,000
3 Bedroom	68 m <sup>2</sup>	2,470,000	3,500,000

The above prices compare favorably with the affordable housing maximum selling prices set by the Government of Kenya, which are as follows.

Table 20: Government-Set Prices of Affordable Housing

Housing Category	Unit size	Sale Price (Ksh.)
Social Housing	1 room	600,000
	2 rooms	1,000,000
Affordable Housing	Bedsitter/Studio	800,000
	1 Bedroom	1,000,000
	2 Bedroom	2,000,000
	3 Bedroom	3,000,000

### Distribution Summary of Rental and Tenant Purchase Housing

A summary of the proposed distribution of rental and tenant purchase housing units is shown in the table below.

Table 21: Proposed Distribution of Rental and Tenant Purchase Houses

Estate	Est. No. of Households	Proposed Housing Stock		
		Rental Housing (For Sitting Tenants)	Tenant Purchase (For New Tenants)	Total
Bahati	5934	8396	7972	<b>16,368</b>
Kaloleni	2643	4791	4537	<b>9,328</b>
Mbotela	3604	3680	3552	<b>7,232</b>
Makongeni	5416	8455	12539	<b>20,994</b>
Shauri Moyo	5006	1956	1752	<b>3,708</b>

Bondenii	1320	435	269	<b>704</b>
Gorofani	942	503	329	<b>832</b>
Kariokor	240	1434	1478	<b>2,912</b>
Ziwani	1807	1911	1690	<b>3,601</b>
Starehe	359	2197	1851	<b>4,048</b>
Maringo	8172	7304	6768	<b>14,072</b>
Jerusalem	1504	2281	2007	<b>4,288</b>
Lumumba	4164	6496	6016	<b>12,512</b>
Jericho	4851	8198	7385	<b>15,583</b>
Uhuru	2652	4400	4016	<b>8,416</b>
New Pumwani	224	50	20	<b>70</b>
Makadara RH	88	444	396	<b>840</b>
<b>Total</b>	<b>48926</b>	<b>62,930</b>	<b>62,578</b>	<b>125,508</b>

#### 4.1.6 Student Accommodation

While the project area accommodates so many college students (who prefer to stay there because of close proximity to the city's main tertiary learning institutions), there is an under provision of hostels. For that reason, 29 hostel blocks area proposed in Makongeni estate. The recommended building height is five (5) levels generating 4930 units. The student layout design is H-shaped block as shown in the plan below.

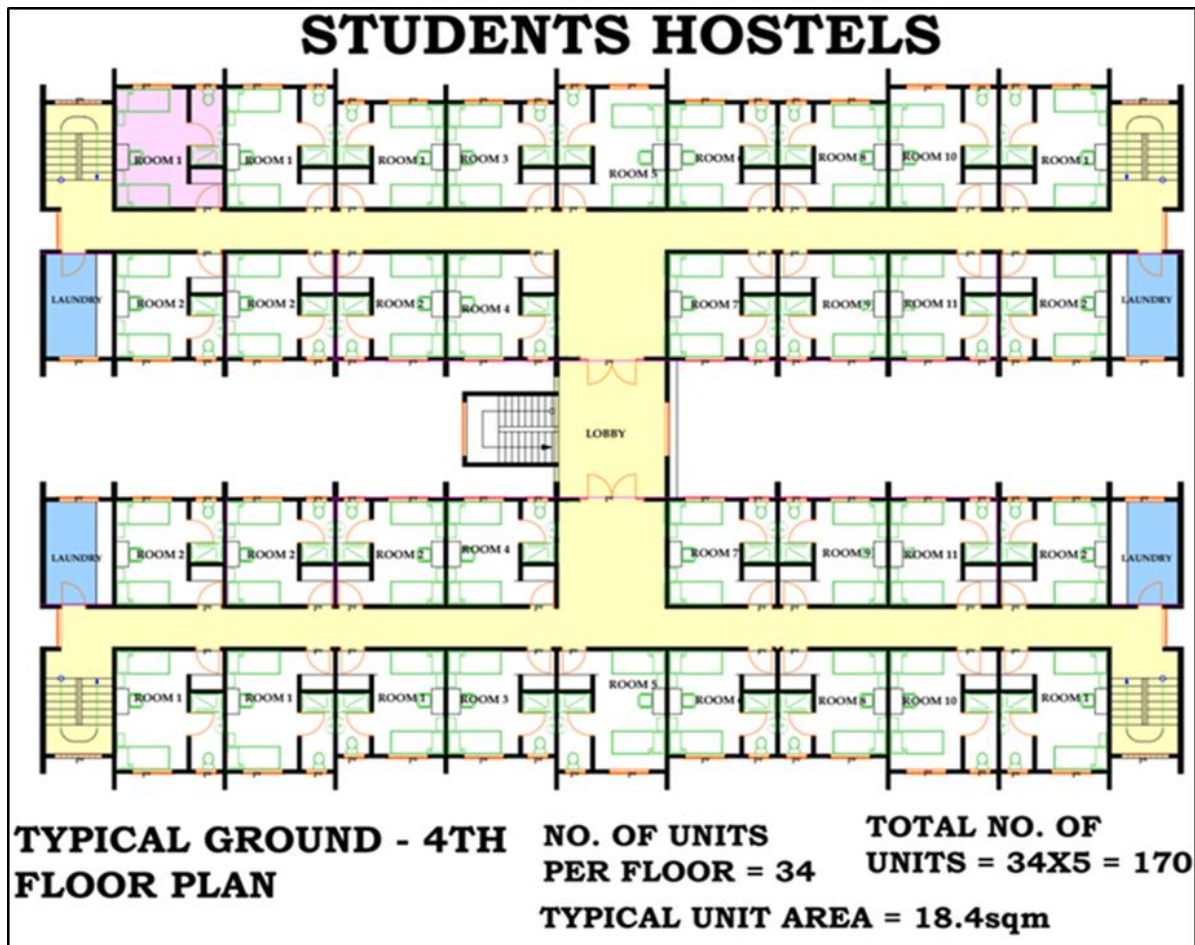


Figure 29: Typical Floor Plan for Hostel Blocks

A typical floor has 34 units, each of which has an in-built bathroom and toilet and measures 18.4 m<sup>2</sup>. A unit is proposed to be shared by two (2) individuals. Each floor space has 4 laundry areas. A kitchen/dinning block has also been designed to accommodate a kitchen, dining room, TV Room, area for indoor games and ablution blocks.

Hostel blocks are arranged around a common kitchen/dinning block. The students are therefore able to access the services from a common area. The layout plans of a typical unit and the kitchen cum dining area are shown below.

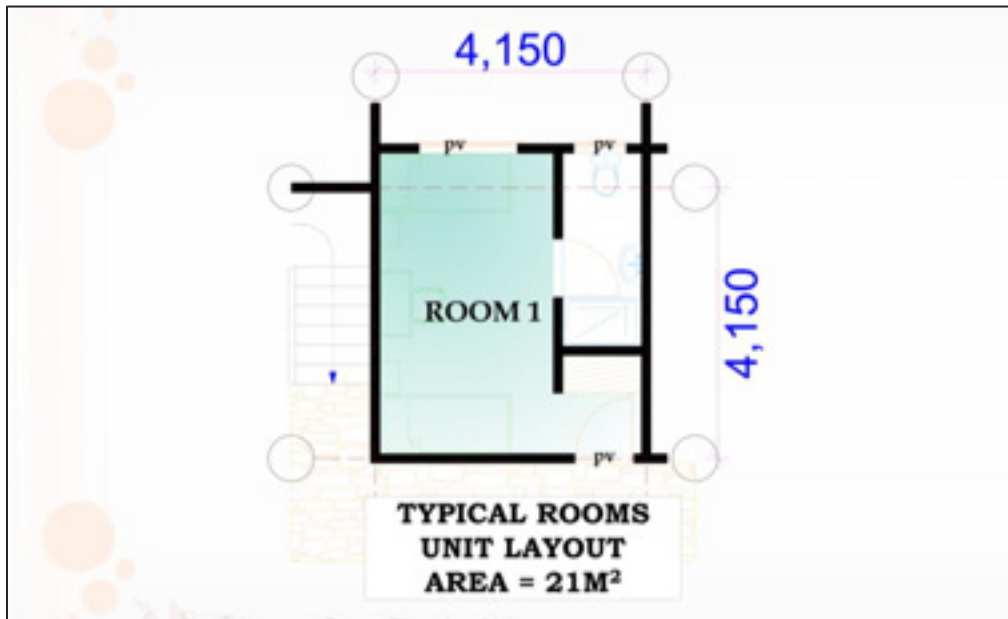


Figure 30: Typical Unit Layout of a Hostel

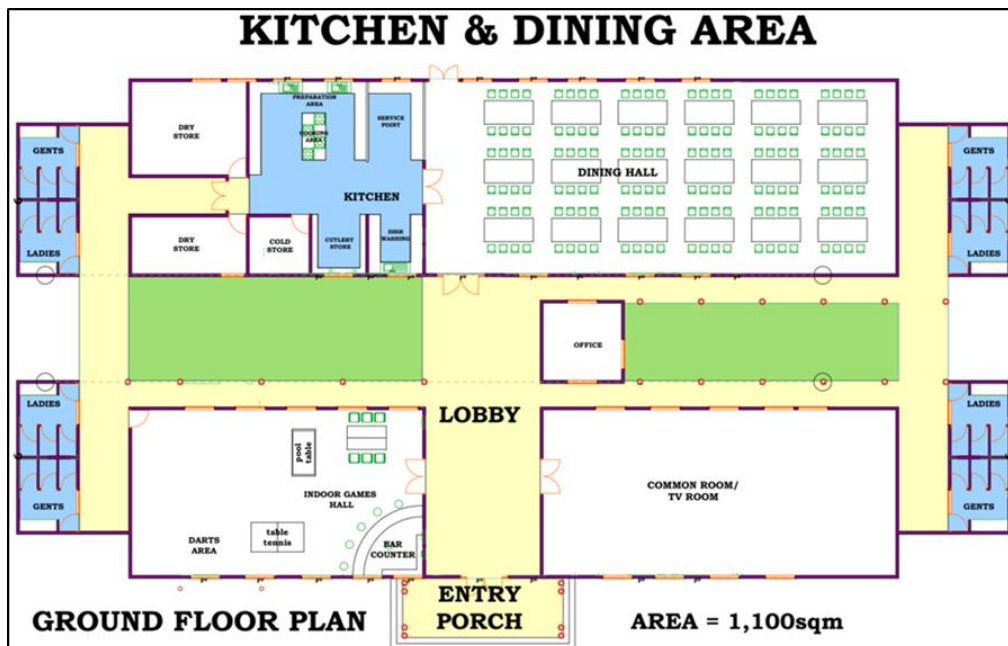


Figure 31: Kitchen and Dining Area Ground Floor Plan

#### **4.1.7 Design of Residential Neighbourhoods**

Many of the existing residential houses were built in the pre-colonial period and the design of the over fifty-year-old estates has become obsolete and outdated. The living environment in the project area is unsatisfactory taking into account the deteriorating sanitation and hygiene conditions, the security and safety concerns, diminishing green areas and the over stretched infrastructure.

In light of the above, a more organized and rejuvenated Eastlands characterized by livable neighborhoods with quality work places is envisioned. The proposed neighbourhood design promotes a sense of community, privacy and space ownership. This is achieved by creation of courtyards or defensible spaces within the walkable neighborhoods. The number of blocks per court ranges from 2 – 5 depending with the size of the available space. Each block fronts an open space which is meant to be multipurpose i.e. fire assembly point, playground and meeting point.

Mixed commercial and residential zones are proposed on areas fronting key roads to increase neighbourhood- level working spaces. Commercial activities are permitted on the two lowest floors while the upper levels are reserved for residential use.

The neighbourhoods have been designed to accommodate appropriate dwelling densities and adequate ancillary facilities. It is expected that air ventilation would be much improved and noise pollution much reduced because the appropriate building setbacks have been observed. Adequate space for road widening and provision of NMT facilities has also been provided.

The proposed housing layout within the public estates is shown in the figure below.

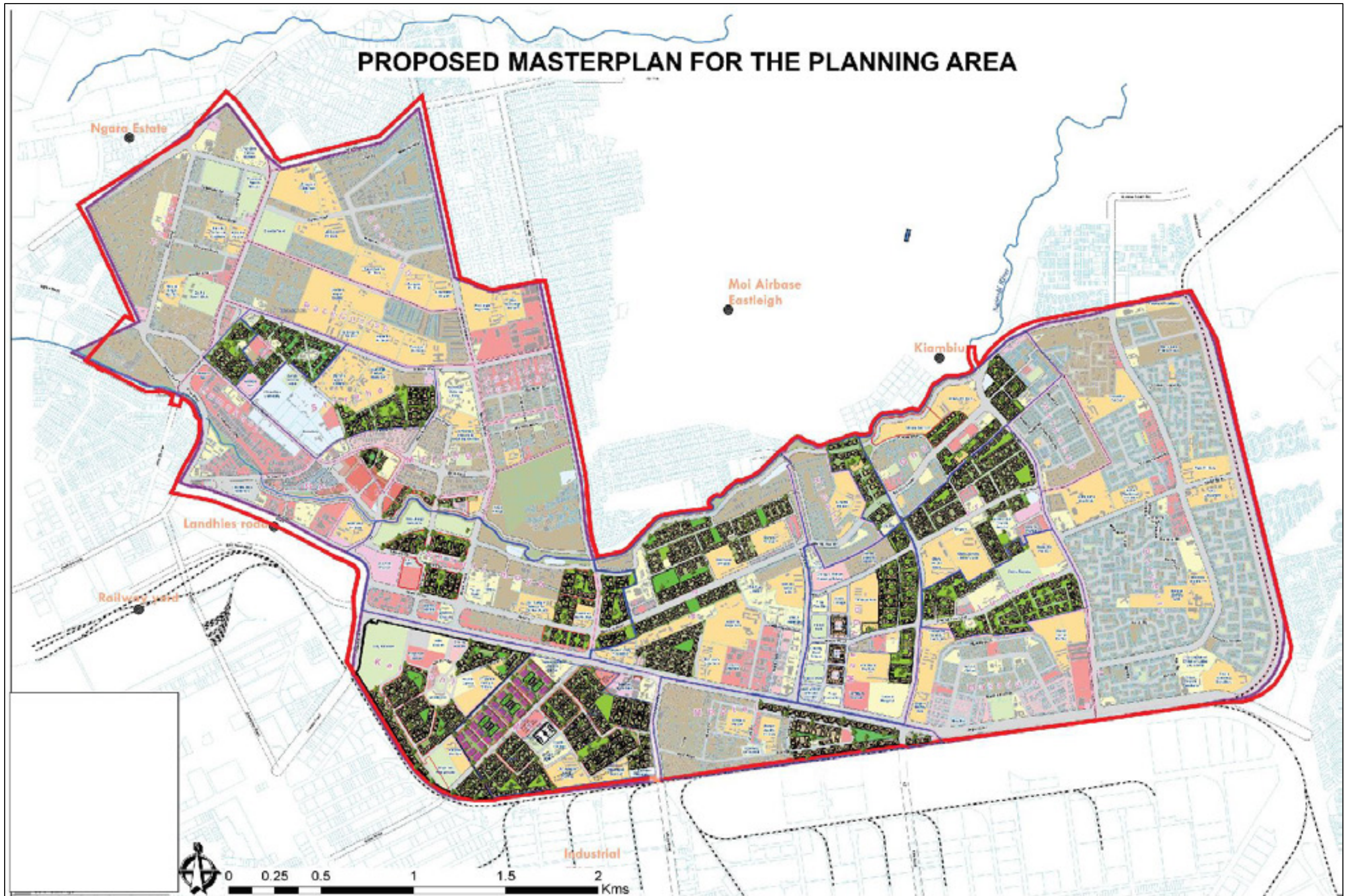


Figure 32: Proposed Housing Layout

#### 4.1.9 Cost of Housing Development

As stated earlier, the cost of the houses does not include the cost of land; the cost of rehabilitating infrastructures such as roads, water and sanitation, electricity and the provisions of social services and other amenities. In addition, the sizes of the proposed houses have been reduced to make them more affordable. Appropriate materials are proposed to be applied to avoid cost escalations.

Considering the estimated unit costs of the affordable housing, the construction of the 125,508 units is expected to be Ksh. 181 billion (See the table below)

Table 22: Cost of Housing Development

Unit type	Unit cost (Ksh.)	Number of Units	Total Construction cost (Ksh.)
Hostels	720,000	4,930	3,549,600,000
Bedsitter/Studio	720,000	35,439	25,516,080,000
1 Bedroom	960,000	25,509	24,488,640,000
2 Bedroom	1,750,000	30,649	53,635,750,000
3 Bedroom	2,470,000	25,646	63,345,620,000
3BR with SQ	3,190,000	3,334	10,635,460,000
<b>Total</b>		<b>125,508</b>	<b>181,171,150,000</b>

#### 4.1.10 Affordability Enhancement Strategies

The proposed strategies for enhancing housing affordability are discussed below.

##### (i) Use of Low Cost Technology

One of the major causes of high cost of building construction is the use of expensive materials, methods and equipment. To avoid this, the following technology options are proposed:

- Prefabrication
- Post tensioned structures
- EPS Panel technology
- Interlocking blocks/ brick partitions
- Steel formwork

The above technologies are known to enhance reduction of labor costs and shortening the construction period. It is also recommended that the government implements Zero rating VAT and reduction of import duties on main imported items for affordable housing e.g. steel, cement manufacturing related imports, etc.

##### (ii) Reducing Sizes of Dwelling Units

A second strategy of achieving affordable housing is the reduction of the unit sizes. The proposed ones are 21 m<sup>2</sup>, 30m<sup>2</sup>, 51 m<sup>2</sup> and 68 m<sup>2</sup> for bedsitter, one, two and three bedroom compared to standards sizes of 30m<sup>2</sup>, 45m<sup>2</sup>, 50m<sup>2</sup> and 65m<sup>2</sup> respectively. This is expected to reduce the overall cost of constructing the houses.

##### (iii) Exclusion of Land Cost

Insufficiency of affordable land for urban development particularly for low-income housing is a key impediment to providing affordable housing. Considering the skyrocketing land prices in the city, land cost is estimated to constitute up to 35% of the project cost.

In the project area however, the bulk of the land belong to the Governments. It can thus be provided at no cost, thereby reducing the total cost of housing development.

**(iv) Exclusion of Cost of Trunk Services**

On average, infrastructure installation in Kenya constitute 35% of the housing construction cost. This cost is often covered by house buyers and tenants. However, if the government covers the cost of providing the requisite infrastructure such as roads, power, water, and sewerage, then the housing cost expected to accrue to the beneficiaries will be highly reduced.

**(v) Flexible Terms of Housing Access**

The proposed rental prices for sitting tenants is quite affordable since they are highly subsidized. The tenant purchase option on the other hand gives room for flexible payment periods of 20, 25 and 35 years. These are quite longer than the window offered by government for mortgage repayment. The latter tend to extend to 25 years at maximum. Longer repayment periods are expected to allow the residents to make more affordable monthly payments.

**(vi) Low Interest Options**

For the purchase option, low interest rates are recommended to make the houses affordable. While the national government suggests interest rates of between 3% and 7% annually for affordable housing, the alternatives proposed in this plan include from 0%, 2% and 4%. The 0% interest option is proposed for those that are able to make an outright purchase.

Capping the interest rates at a maximum of 4% gives room for purchase of the houses by a bigger proportion of the population whose income levels are quite low. Furthermore, the proposed interest rates are lower than what is typically charged by banks and SACCOs and what the government is proposing (all of which lead to costs that are not affordable to the Eastlands residents).

**(vii) Mixing of Dwelling Units**

Mixing of units within a block is recommended to promote and create more stable, cohesive and sustainable communities. It is also a soft way to subsidize the cost of social housing by breaking up the concentration of disadvantaged tenants, which has made some of the larger public housing estates virtually unmanageable. The proposed cross mixing of the house types is expected to draw investment into a neighbourhood, with wealthier residents attracting shops, services and investments.

The above strategies resonate with the options provided by the Government of Kenya affordable housing program. The latter include provision of land and bulk infrastructure, infrastructure funding under Kenya Urban Support Program (KUSP), tax incentives, tax breaks (zero rating of stamp duty for first time home owners, standardized designs and/or processes and extending mortgage tenures by Kenya Mortgage Refinance Company (KMRC).

#### **4.1.11 Relocation of Project Affected Persons (PAPs)**

Relocation of tenants is one of the processes that should proceed commencement of any development. The relocation will take place on estate-by-estate basis, thus will affect areas targeted by specific projects. From both social and environmental consideration, relocation of sitting tenants is necessary to avoid exposure to various hazards. It also ensures that tenants are not relocated without adequate accommodation.

It is significant to note that the ongoing Nairobi County Draft Urban Renewal Policy has provided a framework to guide relocation of sitting tenants affected by urban renewal. It states that the county shall establish a decanting site to house the relocated residents in areas it shall deem necessary to resettle residents in order to redevelop. To achieve this, it proposes that the county enters Memorandum of Understanding with the residents of the target estates. The MOU will bind resident to:

- Move to the decanting site or any other alternative place sourced for the;
- Move back to the redeveloped estates on tenant purchase or rental scheme on completion
- Seek alternative dispute resolution measures in the event of disagreements between the parties

To address potential issues that may arise from decanting, the NCCG shall:

- Plan in advance of the demolition phase of the renewal project, to meet the housing needs of the displaced residents;
- Develop a decanting policy to govern, in a fair and timely manner, the relocation of affected tenants and landlords;
- Implement feasible methods for the temporary relocation of displaced tenants;
- Ensure that there area, or are being provided, in the renewal area or in areas close to the renewal area, enough housing units to accommodate the displaced tenants;

Taking the above into account, various relocation strategies are proposed to guide the relocation of sitting tenants as discussed below.

#### **Strategy 1: Hire temporary housing**

In this scenario, the county government temporary hires alternative housing to accommodate existing tenants before commencement of construction projects. On other instances, (depending on the terms of reference) the contractor rather the county may be charged with this responsibility. Such accommodation is expected to cover the entire construction period (contract period) after which the tenants will return to occupy the newly constructed units.

It is recommended that such temporary houses are sourced in the adjacent private estates to minimize interruption of tenants' day to day activities. This may ensure that the school going population will have access to the same facilities as before. During this period, the tenants may continue to pay the same rent as today or on other terms as agreed between the county government and tenants.

Some of the merits of this strategy are:

- It retains social ties and cohesion since the people stay together

- It ensures decent housing of the tenants during the construction phase i.e. begin to enjoy the benefits of better housing early
- It ensures that the house construction contract is implemented in good time otherwise incur extra costs

It is important to note that this is one of the preferred option taking into account the minimal voids in the estates presently.

### **Strategy 2: Finance hiring of temporary housing**

The county in this case provides the sitting tenants with cash to pay for alternative housing in a place of their choice during the construction phase. Therefore, tenants may opt for different location.

A disadvantage of this strategy is the risk of breaking social cohesion/tires unlike strategy 1 above. Other possible demerit of this alternative is possible misuse of funds and the likelihood of sitting tenants no paying for appropriate housing.

### **Strategy 3: Provide new units**

This alternative recommends that construction begins on voids and people be moved to newly constructed buildings incrementally. This will prevent demolition of occupied buildings/ structures and limit the need for temporary relocation sites.

If workable, this is the most desirable strategy, as it requires a relatively smaller budget (no need for compulsory acquisition and compensation of houses) and tenants are relocated permanently unlike other options. The approach will spur confidence with the PAPs since it causes minimal disturbance. It ensures less interruption of daily activities, social cohesion and minimal conflicts. Unlike others, approaches the tenants will directly move to their newly constructed units.

However, existing voids are not big enough to start construction with significant number of units which could subsequently cause delays.

### **Strategy 4: Occupation in leased county housing**

In this case the county government will lease housing space which acts as a temporary relocation area for the sitting tenants. Unlike strategy 1, leased county housing is relatively long-term and the county government is likely to negotiate better terms. Once construction is complete in a specific estate tenants move out to occupy the new units and others move in the leased houses to provide space for construction space.

Like strategy 1 it is desirable that these temporary houses are leased in the adjacent private estates to minimize interruption of tenants' day to day activities.

Notably, strategy 4 shares most of the merits of strategy 1

## 4.2 TRANSPORTATION

The proposed future transport network for the Eastlands has been compiled to take into consideration the user-demand from the transport model, as well as other operational requirements based on sustainable planning concepts, also outlined below. The transport plan has also considered other existing road and transit plans within and around the Eastlands area

### 4.2.1 Sustainable Transport Planning Concepts

#### 1. Transit-Oriented Development Concept

According to the Transit Oriented Developments (TOD) standard (ITDP, 2014), TOD implies high quality, thoughtful planning and design of land use and built forms to support, facilitate and prioritize not only the use of transit, but the most basic modes of transport, walking and cycling. It involves planning for high density, mixed-use development alongside a robust transport system.

The following are eight (8) design principles as described in the TOD Standard:

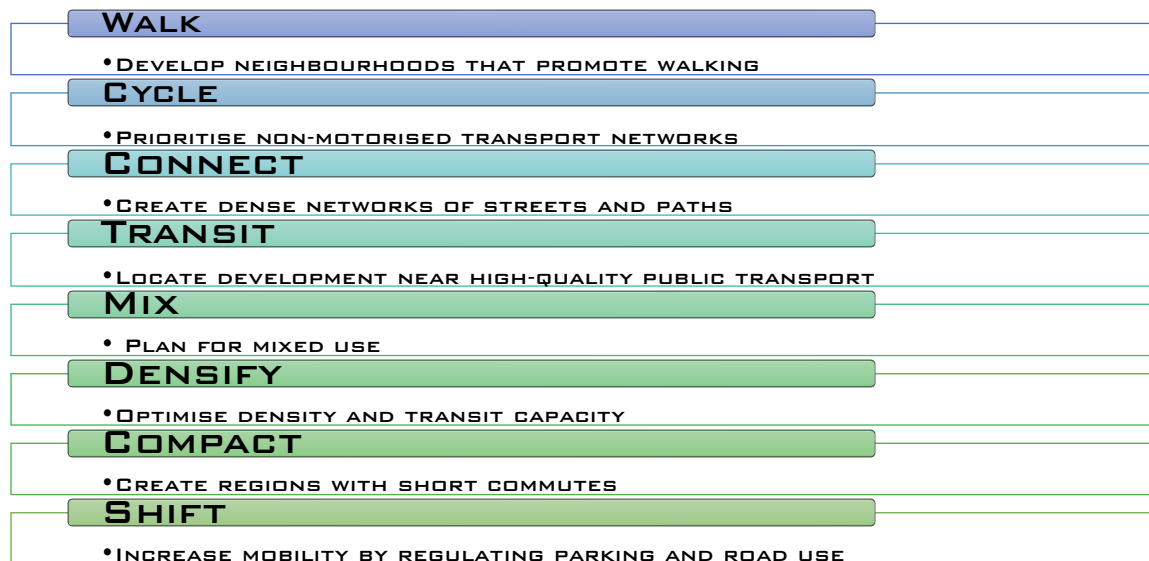


Figure 33: Principles of TODs

Examples of proposals that illustrate the above principles include:

Higher development densities near activity spines such as Heshima Avenue

Compact developments at nodes such as Makadara, Kaloleni-Shauri Moyo and Gikomba

Mixed use developments (BCRs) to promote walkability to different activity areas

Provision of NMT networks

#### 2. Complete Streets Design

The Complete Streets design principles require that streets should be designed to be safe for all i.e. pedestrians, cyclists, transit, drivers, and people of all ages and abilities – not just motorists.

The guiding principles are outlined in the figure below:

Safety	Reduce collisions and ultimately reducing injuries and fatalities
Connectivity	Optimize routes and provide route redundancy especially for NMT
Health	Encourage for healthy lifestyle through walking and cycling
Environment	Reduction of air pollutants
Livability	Enhancing quality of life and community engagement
Context	Enhances the identity, character, history and culture of the area
Equity	Provide for needs and safety of all users, including vulnerable users
Aesthetics	Supporting local economic activities by drawing customers to
Economy	Supporting local economic activities by drawing customers to businesses

Figure 34: Complete Streets Design Principles

The transport plan for the Eastlands area adheres to the Complete Streets design principles.

**3. Context Sensitive Solutions (CSS) for Urban Arterials and Collector Roads**

The traditional functional road classification system may sometimes pose a hindrance in design of urban road facilities by prescribing a “one size fits all” design for roads and streets where the character of the road or street may not agree with design such as is in a high activity and walkable community along an arterial or collector road. The CSS approach allows for the development of a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility.

Principles of CSS include (ITE, 2010):

1. Urban transport network should accommodate all modes including pedestrians, bicycles, transit, freight and motor vehicles, with the allocation of right-of-way on individual streets determined through the CSS process.
2. The larger network, including key thoroughfares, should provide safe, continuous and well-designed multimodal facilities that capitalize on development patterns and densities that make walking, transit and bicycle travel efficient and enjoyable.
3. Thoroughfare design should complement urban buildings, public spaces and landscape, as well as support the human and economic activities associated with adjacent and surrounding land uses.
4. Safety is achieved through thoughtful consideration of users’ needs and capabilities, through design consistency to meet user expectations and selection of appropriate speed and design elements.
5. Thoroughfare design should serve the activities generated by the adjacent context in terms of the mobility, safety, access and place-making functions of the public right-of-way. Context sensitivity sometimes requires that the design of the thoroughfare change as it passes through areas where a change in character is desired.

6. System-wide transportation capacity should be achieved using a high level of network connectivity and appropriately spaced and properly sized thoroughfares, along with capacity offered by multiple travel modes, rather than by increasing the capacity of individual thoroughfares

CSS principles have been integrated into the transportation planning process where the need to balance trade-offs between needs of users, adjoining land uses, environment and community interests has been given due consideration.

#### 4.2.2 Future Transport Demand Model

Formulation of the future transport demand has been carried out based on the four-step model as shown below:



Figure 35: Four-Step Modelling Process

The modelling was done for peak hour demand and comparisons made to the existing supply capacity, after which additional capacity was proposed where the existing facility was found to be adequate. The analysis duration was 20 years from base year of 2016, when the baseline data was collected, similar to the planning period.

The following sections discuss the model outputs and the proposals in detail.

#### 1. Trip Generation and Distribution

Trip generation and distribution was carried out based on the ITE Trip Generation Manual 9th Edition trip rates. Land-use locations and areas were obtained from land-use proposals. The typical trip rates are shown in the table below:

Table 23: Trip Generation Rates

No	Land / Floor Uses	Unit	Person Trips	
			AM Rate	PM Rate
1	High Rise Apartment	DU	0.3	0.35
2	E.C.D.E school	KSF2	12.18	12.34
3	Primary Schools	KSF2	5.2	1.21
4	Secondary school	KSF2	3.06	0.97
5	Health Centres	Employee	0.81	0.96
6	Hospital	Employee	0.31	0.29
7	Sport and recreational facilities	KSF2	2.05	2.74
8	Shopping Center / Market	KSF2	0.96	3.71
9	General Light Industrial	Acres	51.80	7.51
	General Heavy Industrial	Acres	6.75	1.98
10	Industrial Park	Acres	61.17	8.20
11	Manufacturing	Acres	38.88	7.44
12	Warehousing	Acres	57.23	10.03

The generated/attracted traffic in the above table are considered conservative as car ownership and usage rates in the United States of America are much higher than in Kenya. It is therefore reasonable to expect better actual levels of service if acceptable theoretical LOS is computed using the Highway Capacity Manual (HCM) approach.

## 2. Traffic Zones

Trip generation was done by zones which were taken as the existing estate boundaries shown in the table below. Special zones were also considered from major trip generating land-uses.

Table 24: Internal Zones for the Eastlands Project Area

Zone No	Zone Name	Remarks
1	Kaloleni Estate	Internal selected Zones by Estates
2	Mbotela Estate	
3	Makongeni Estate	
4	Shauri Moyo Estate	
5	Bahati Estate	
6	Landhies Estate	
7	New Pumwani Estate	
8	Bondeni Estate	
9	Majengo Estate	
10	Gorofani Estate	
11	Kariokor Estate	
12	Ziwani Estate	
13	Starehe Estate	
14	Maringo Estate	
15	Jerusalem Estate	
16	Lumumba Estate	
17	Jericho Estate	
18	Uhuru Estate	
19	Wakulima market	
20	Railway City	

External trips to and from the study area were computed from O-D matrices obtained from household surveys and traffic surveys. These trips were then forecast and added to the generated trips calculated earlier.

## 3. Mode Choice

The average modal split was computed from data collected on trips from household surveys. The results are given in the figure below.

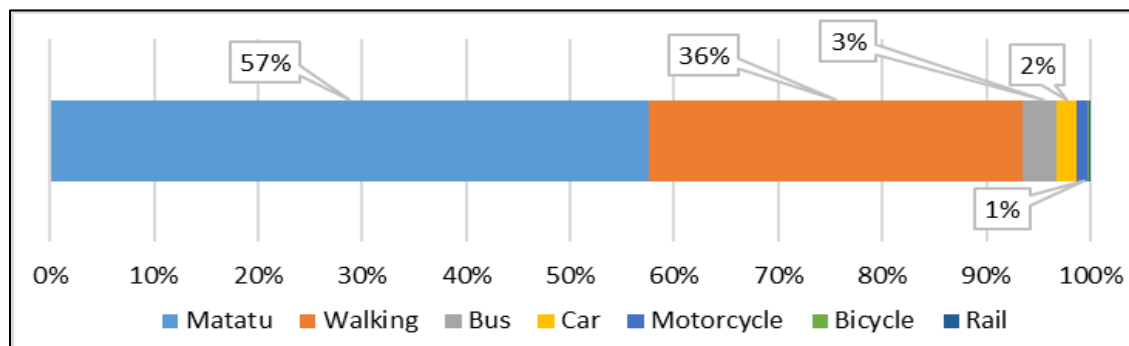


Figure 36: Estimated Modal Split for Study Area

The figure reveals low ownership of private car among the residents of the Eastlands area, and higher ridership in public transit modes. Walking is also quite common as most residents are living and working within walkable distances.

The figure below compares the average modal split for the City of Nairobi as computed NIUPLAN (NCC/JICA, 2014). It shows that the average modal split in the Eastland Area favours public transit and NMT.



Figure 37: Comparison of Modal Split for Nairobi Metropolitan Area (2004/2013)

Future network proposals will strive to maintain or enhance the existing modal split in the planning area.

#### 4. Route Assignment

Vehicle travel paths were assigned based on All-or-nothing method in which all trips generated are assigned the minimum path connecting the two zones. The minimum path is the route with the least travel time, travel cost or travel distance.

### 4.2.3 Summary of Transport Demand Results

#### 1. Analysis Scenarios

The traffic operations in the study area were analysed assuming various scenarios as listed below:

1. Base Conditions - Current operating conditions (2016) and then re-based to 2018 (these results have already been discussed in previous sections);
2. Future Conditions (2036) – With Development and No Road Improvements or policy Shift;
3. Future Conditions (2036) – With Development with Road Improvements plus Policy shifts in public transport.

#### 2. Discussion on Demand Analysis Results

The results show that in order to maintain acceptable operating condition of LOS C in the road network, the following assumptions were made in the future scenarios:

1. Specific intersections especially along Jogoo Rd. have to be grade separated while traffic lights were introduced in others;
2. An MRTS system was introduced on major routes and within the development to move large volumes of passengers;

3. All small buses and 'matatus' were 'banned' and the passengers shifted to larger capacity MRTS;
4. The introduction of a New Road Along Nairobi River, improvement of Enterprise road viaduct by JICA results in 15-20% redistribution and reassignment from existing road corridors private cars

Detailed analysis findings showing the number of trips, the volume/capacity ratio and the link LOS for all scenarios are annexed to the report.

Table 25: Demand Model Analysis Results

Road Intersection	With 30% Development trips + No Improvements		Improvement Strategies With Development (2016-2036)			
	AM peak	PM peak	AM peak	PM peak	Proposed Improvements	PT/NMT Modal Shift
Bondo/Jogoo Road	F	F			Dead end due to viaduct	N/A
City Stadium Round about	F	F			Viaduct	N/A
Rabai/Jogoo Road	F	F	C	C	Grade separation	1. Shift of 50% from large buses and 100% from matatus/ small bus to BRT, LRT and NMT  2. Diversion of 15% to the New Road Along Nairobi River, and 15% to Viaduct / Enterprise road and re-distribute
Nile/Jogoo Road	F	F	B	C		
Likoni/Jogoo Road	F	F	C	C		
Nyasa/Jogoo Road	F	F	B	C		
Jogoo Road/Eastleigh 1 <sup>st</sup> Avenue	F	F	C	C		
Landhies Road/Ring Road/Haile Selassie	F	F	C	D		
Nyasa/Heshima Ave	F	F	B	C		
Buruburu/Rabai Road	F	F	C	C	At-grade signal controlled junction	
Rabai/Mumias Road	F	F	B	B		
Heshima/Ambira/Eastleigh 1 <sup>st</sup> Avenue	F	F	D	C		
Eldoret Road /Wangu Ave	F	F	C	C		
Nyasa/Rukwa Road	F	F	C	C		
Buruburu/Nile/Wangu Ave	F	F	C	C		
Ring Road Ngara/Juja Road	F	F	D	C		
Juja Road-St Theresa	D	F	C	C	Grade separation	1. Shift of 50% from large buses, and 100% from matatus/ small bus to BRT, LRT and NMT  2. Diversion of 15% traffic to Juja Road and re-distribute
G. Waruinge/ Muratina Road	D	F	C	C	Dualling	
Gen. Waruinge/Eastleigh 1 <sup>st</sup> Avenue	D	F	C	C	At-grade signal controlled junction	
Kariokor Gyratory	F	F	C	C		
Lamu /Digo Road	F	F	C	C	Roundabout	

### 3. Phasing of the Transport Proposals

The table below summarizes the proposed implementation phases for the transport and policy proposals based on the demand / capacity requirements. The phases are also in line with the expected project completion rate of the various land-use and housing accumulation proposals, and the forecast uptake of floor space which generate trips.

Table 26: Transport Plan Implementation Phases

No	Infrastructure Implementation Phases	Duration (yrs.)	% Trips Generated	Cumulative (%)
1	Short term 2019-2023	5	30%	30%
2	Medium term 2024-2030	7	40%	70%
3	Long term 2031-2036	6	30%	100%

### 4. Proposals for Urban Street Design

Street design is critical in achieving sustainability in the future transport network. The thematic objectives of the street design adopted for the Eastland Panning Area include:

1. To enhance connectivity, mobility and accessibility within the study area and with other areas in the city;
2. To enhance the role of urban roads and streets in promoting business, employment and uplifting the economy and living standards of the local population; and,
3. To enhance health and safety in the study area through street design that encourages healthy lifestyles such as walking and cycling, while ensuring safety for all users.

Typical cross-sections for the various roads have been illustrated in the figures 40 to 49 below. Detailed cross-sections are given in the appendices.

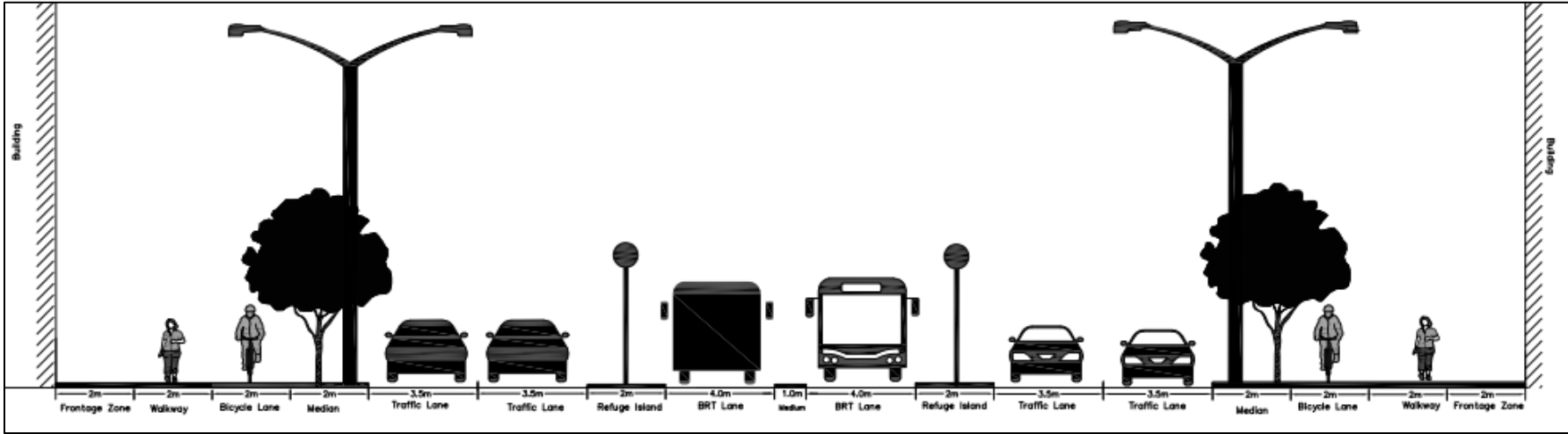


Figure 38: Type 1A: Urban Arterial 60m ROW (With BRT Travel Lanes)

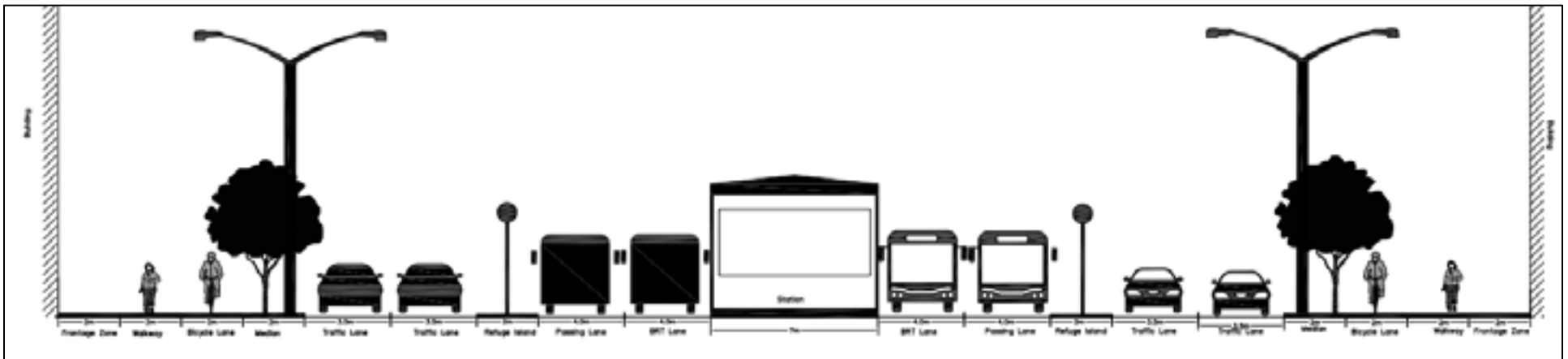


Figure 39: Type 1B: Urban Arterial 60m ROW (With BRT Station, BRT Travel Lanes and Passing Lanes)

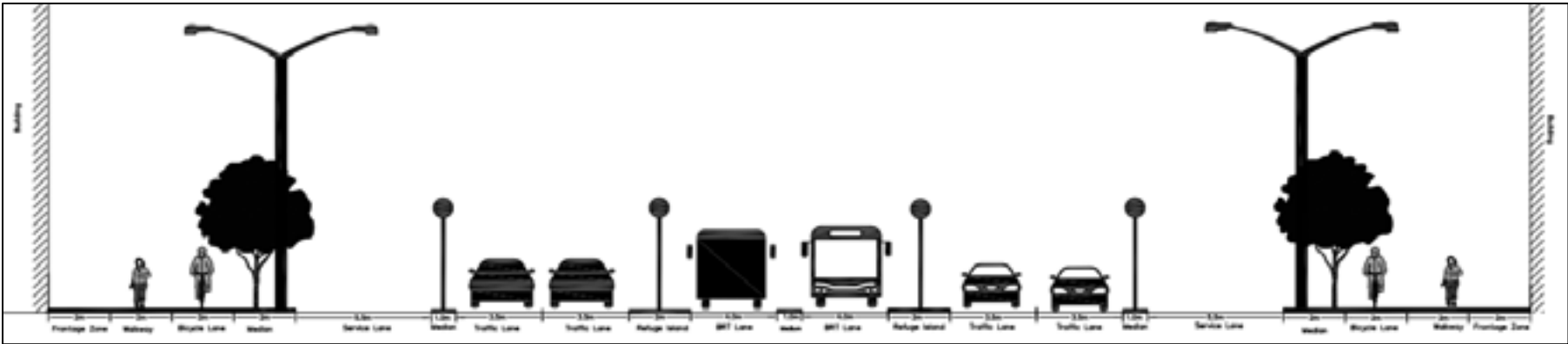


Figure 40: Type 1C: Urban Arterial 60m ROW (With BRT Station, Travel, Passing & Service Lanes)

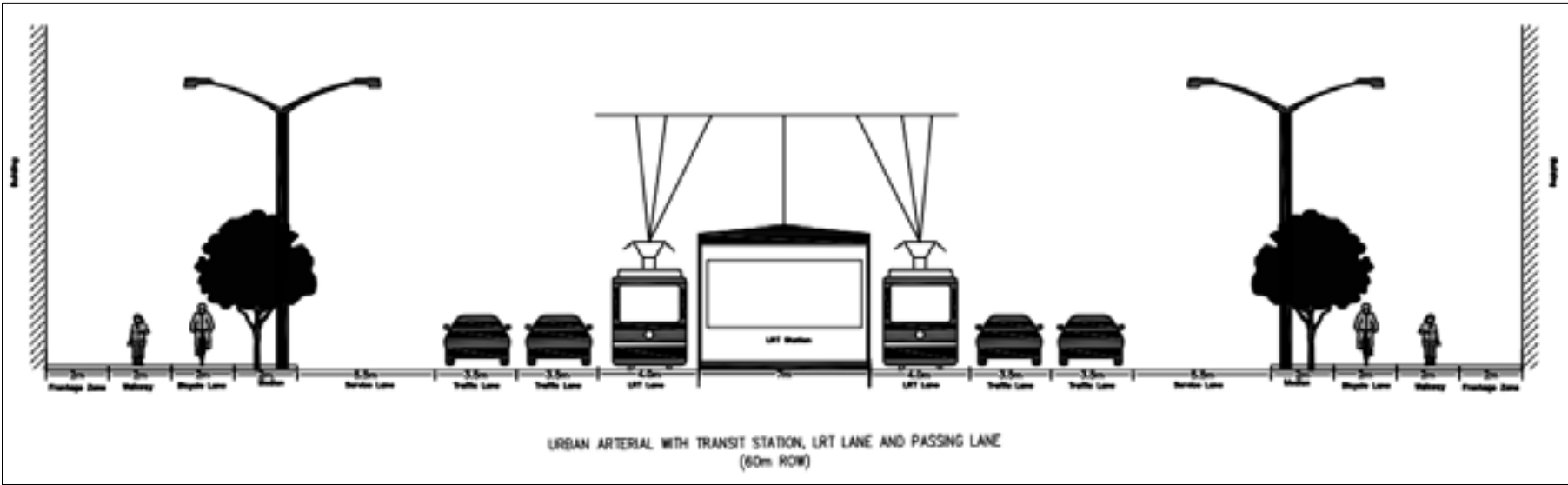


Figure 41: Type 1D: Urban Arterial 60m ROW (With LRT Station, Travel, Passing & Service Lanes)

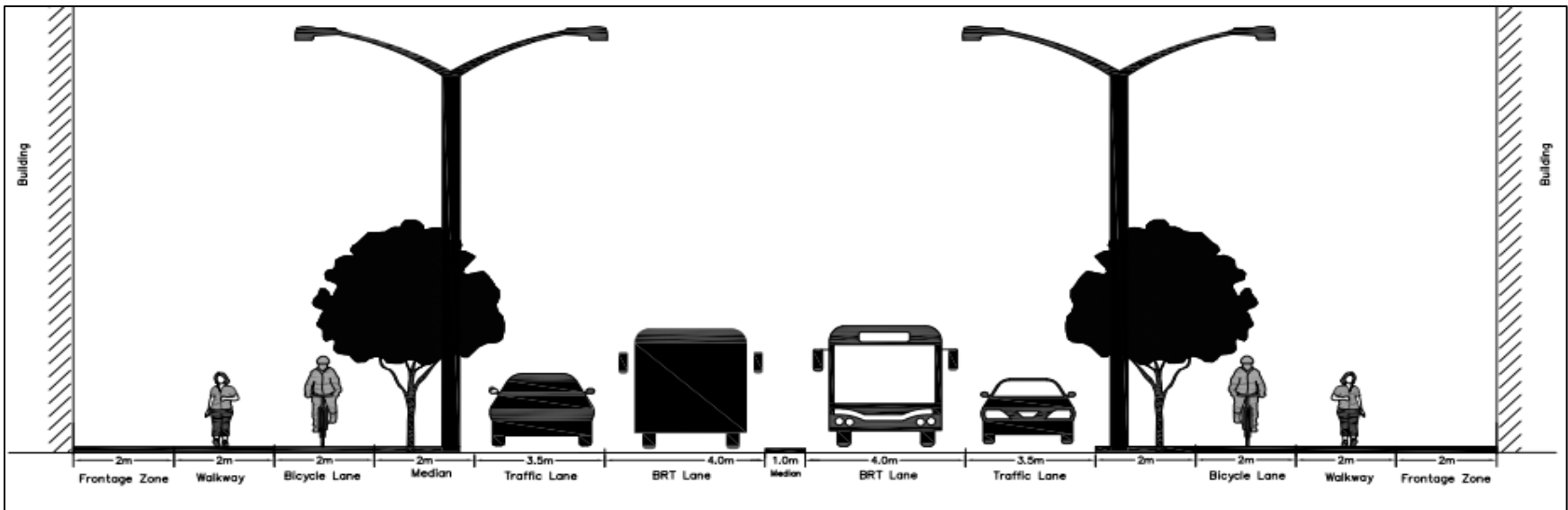


Figure 42: Type 2A: Urban Collector Road 40m ROW (With BRT Travel Lanes)

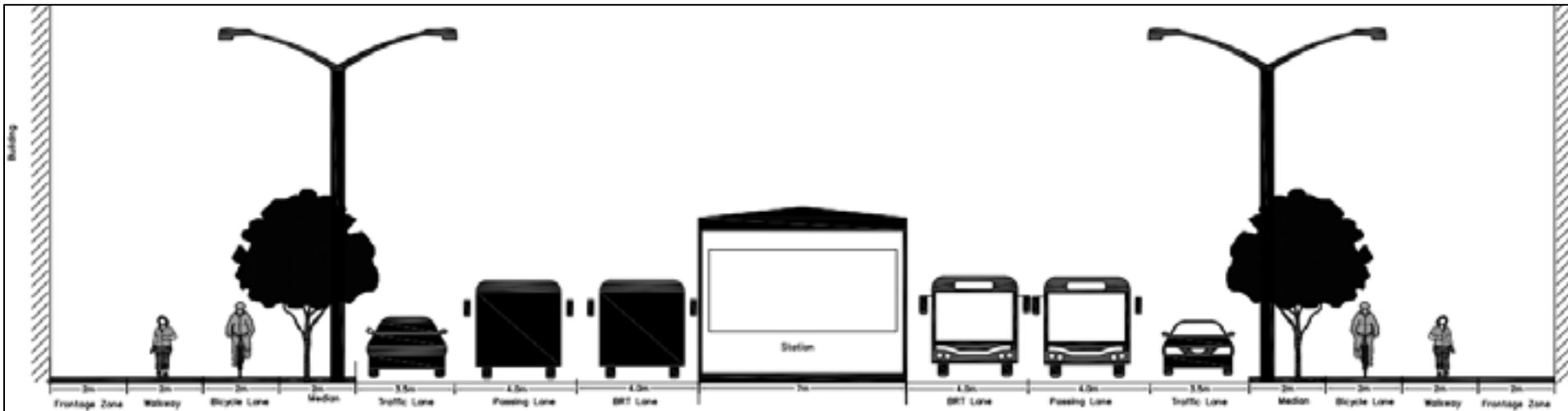


Figure 43: Type 2B: Urban Collector Road 40m ROW (With BRT Station, Travel and Passing Lanes)

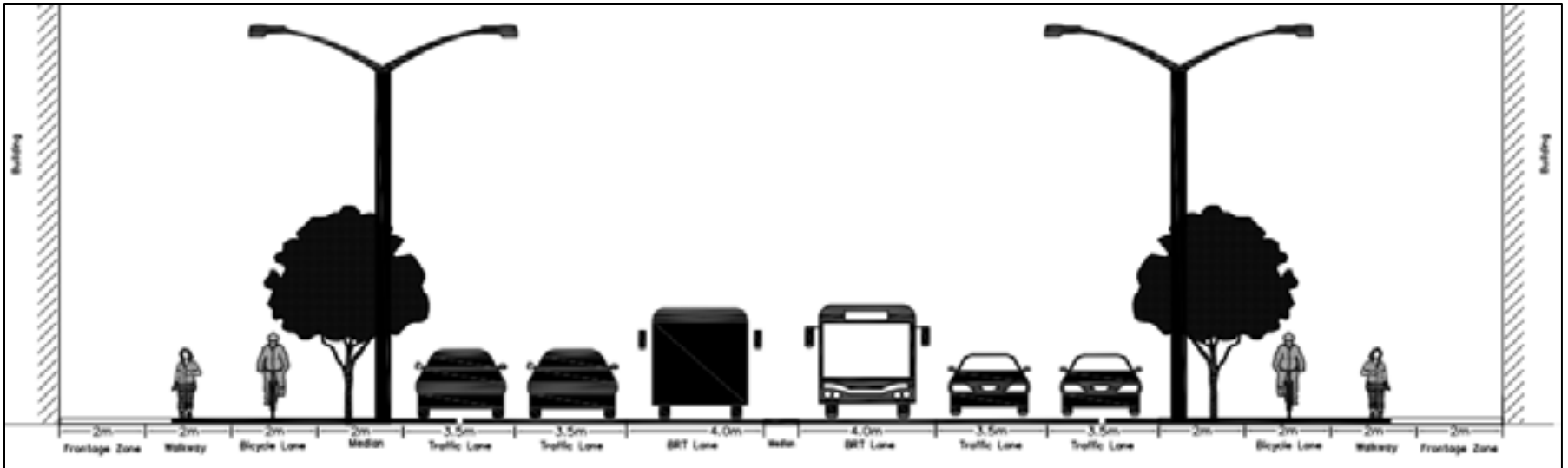


Figure 44: Type 2C: Urban Collector Road 40m ROW (With BRT Travel Lanes + 4-Lane Road)

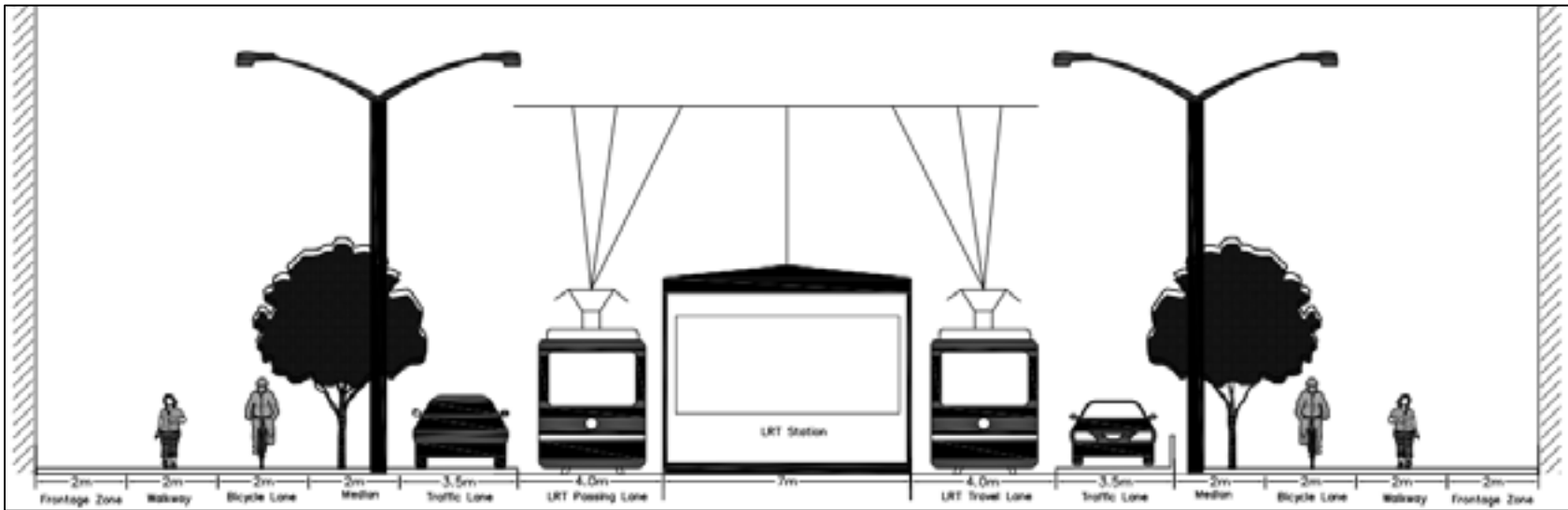


Figure 45: Type 2D: Urban Collector Road 40m ROW (With LRT Travel / Passing Lane + LRT Station)

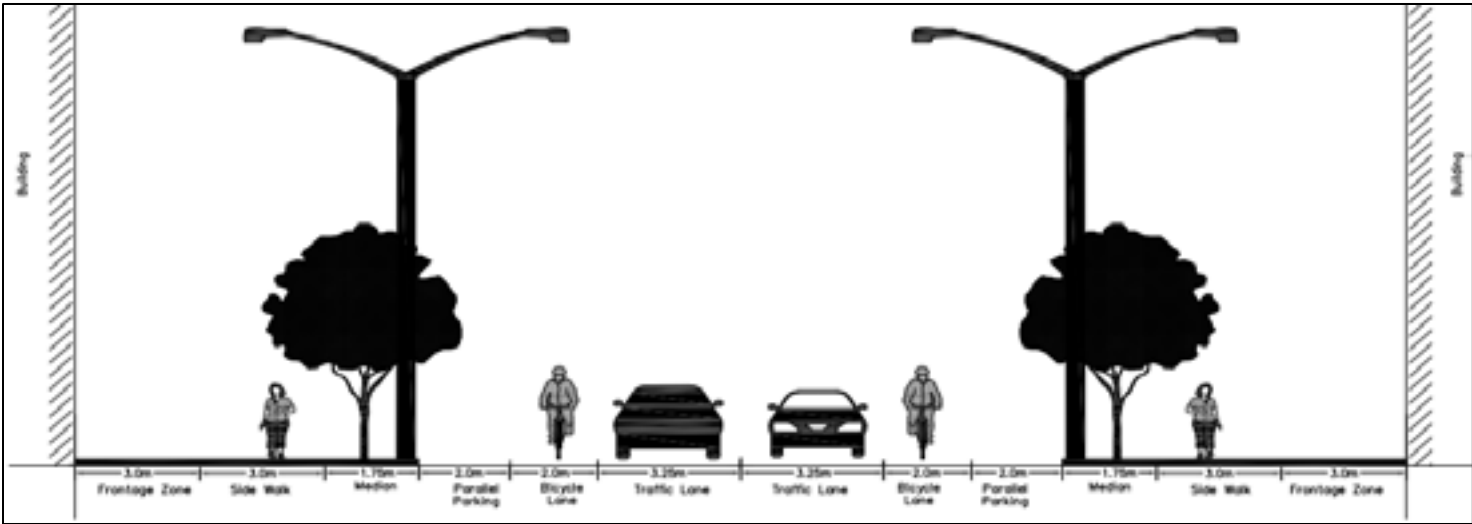


Figure 46: Type 3A: Local Access Road 30m ROW (High Intensity Commercial Zone)

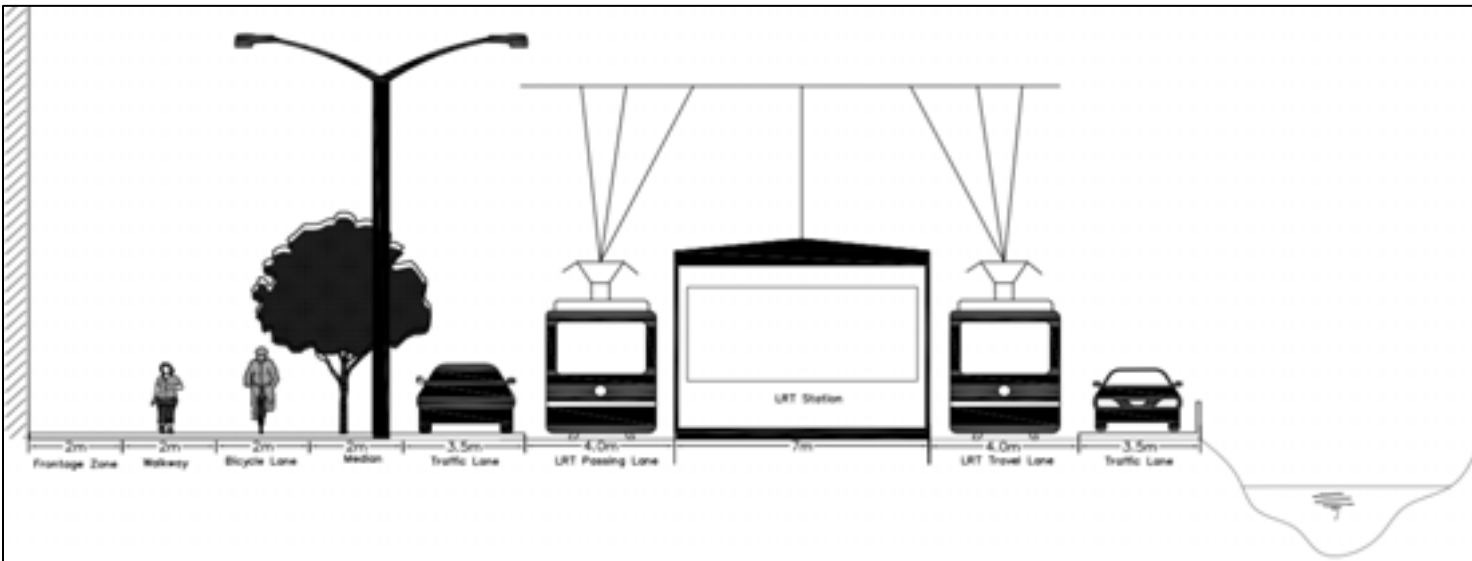


Figure 47: Type 3B: Nairobi Riverfront Road 30m ROW (With LRT Travel / Passing Lane + LRT Station)

## 5. Proposals along Jogoo-Landhies Road Corridor

### i. Road/Street Sections



Figure 48: Proposed Jogoo-Landhies Rd. Corridor

The Jogoo – Landhies road has been maintained as mobility corridor. Additional service lanes and frontage zones are proposed in sections where there is increased commercial roadside activities. The proposed ROW is 60m with a cross-section Type of 1A, Type 1B and Type 1C proposed for this corridor.

#### Major Intersections along Jogoo-Landhies Corridor

The following grade-separated junctions are proposed along the Jogoo road to enhance mobility and connectivity to the CBD, to Industrial area and to the airport: -

- Intersection of Likoni road / Eastleigh 1st Avenue - to include a viaduct between the two junctions for through traffic
- Jogoo rd. / Extension of Nile Road with viaduct into Industrial Area
- Landhies rd. / Ring rd. Pumwani / Haile Selassie Ave. roundabout –
- Jogoo rd. / Lusaka Rd. / Landhies rd. roundabout- Reconfiguration at City Stadium Roundabout



Figure 49: Proposed Interchanges and Viaducts along Jogoo Rd

### Public Transit

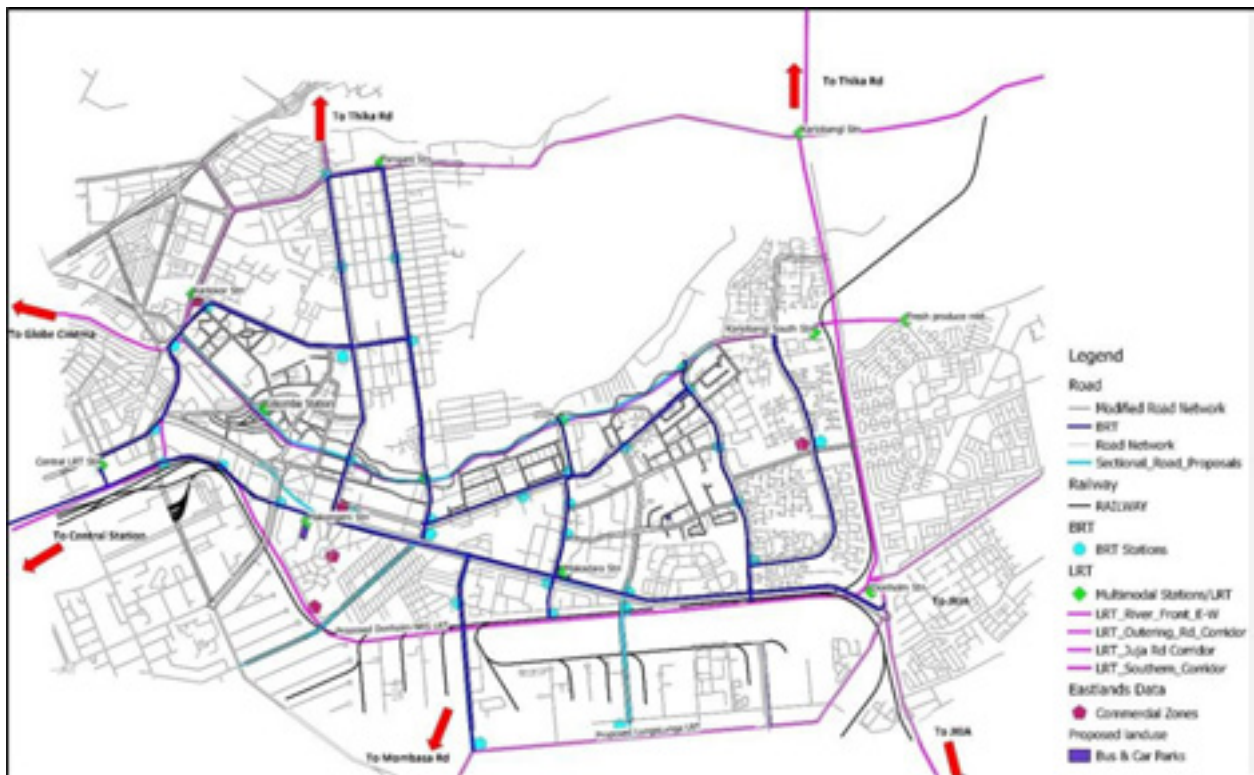


Figure 50: Overview of LRT and BRT System in Eastlands

The following public transit routes are proposed along the Jogoo Rd Corridor: -

#### Light Rail Transit and BRT Lines

1. Southern LRT line – Proposed South of the Jogoo Rd. Some sections lie within the existing Railway corridor and others within the Jogoo Rd corridor

2. Jogoo Rd. BRT - The proposed BRT line lies along the Jogoo road and Landhies road corridors.

### Major Terminals and Hubs

1. Makongeni – Major terminal with Freight / BRT / Park-and-Ride / Public bike-sharing system
2. Makadara - Major terminal with Freight / BRT / Park-and-Ride / Public bike-sharing system
3. Donholm - Major terminal with Freight / LRT /BRT / Park-and-Ride / Public bike-sharing system
4. Other BRT Stops - < 500m along the road / Public bike-sharing system

### NMT and Cyclists

As seen from the cross-sections above, segregated cycle lanes and walkways will be provided through the entire length of road. For the section between the City Stadium Round About and Bondo/Jogoo road a large open pedestrian only commercial zone that joins the Kaloleni and Shauri Moyo Estates has been created. A network of NMT corridors as shown below has been proposed

## 6. Proposed Nairobi Riverfront Corridor

### i. Road/Street Sections

The proposed alignment for the Nairobi Riverfront Corridor is shown in the figure below.

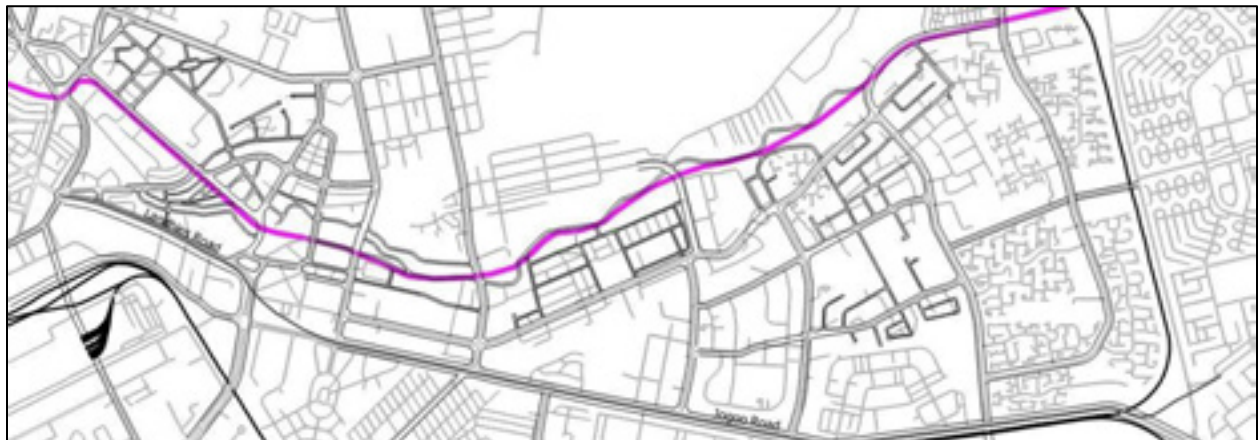


Figure 51: Proposed Nairobi Riverfront Corridor

The Nairobi Riverfront road is a new corridor created along the Nairobi River as a buffer between the river and a light commercial zone along it. The road joins Quarry road to the West and Rabai road to the East. A cross-section with varying widths of 15m and 25m at specific points (Type above) is proposed along the river

### ii. Major Intersections

The following major intersections are proposed along the corridor:

Table 27: Major intersections along the Nairobi Riverfront road corridor

No	Intersection Name	Proposed Treatment
1	Mumias South Rd	At-Grade junction
2	Rabai Rd	At-Grade junction
3	Eldoret Rd	At-Grade junction
4	Eastleigh First Avenue	Grade separated

### iii. Public Transit

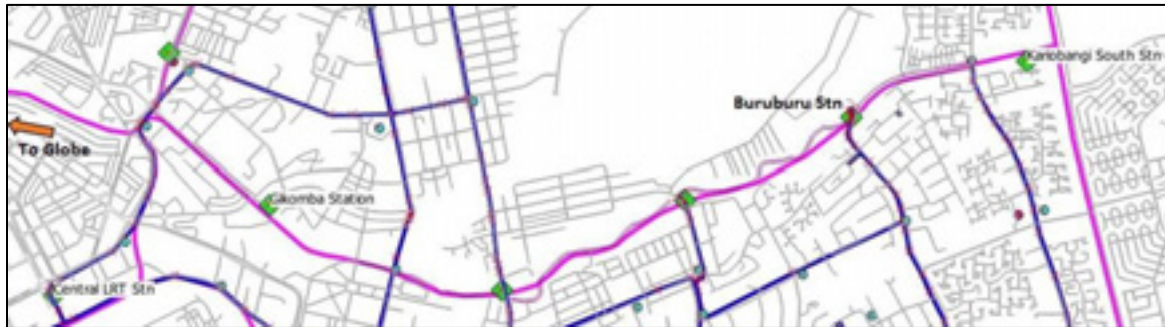


Figure 52: Nairobi Riverfront Road and LRT Corridor

The proposed LRT corridor is parallel to the road with multimodal stations at the following locations:

1. Kariobangi South – Major terminal with LRT / BRT / Park-and-Ride / Public bike-sharing system
2. Buruburu Station – along Rabai rd. - Major terminal with LRT / BRT / Park-and-Ride / Public bike-sharing system
3. Gikomba Station – Major terminal with Freight / BRT / Park-and-Ride / Public bike-sharing system
4. Other Stations at Eastleigh First Ave and Eldoret Rd. - Major terminal with LRT / BRT / Park-and-Ride / Public bike-sharing system

## 7. Ahero-Ambira-Wangu-Heshima-Buruburu Road Corridor

### i. Road/Street Sections

Ahero Road is proposed to be NMT only with motorized access allowed only for light delivery trucks and pick-ups at rear exits. The proposed cross-section Type 2A/2B.

### ii. Major Intersections

The following proposed intersection configurations are required to improve the operational performance of the corridor:

- Buruburu/ Nile/ Wangu I/S – converted to signal controlled cross-junction from the current staggered configuration
- Nyasa/ Eldoret/ Wangu I/S – converted to signal controlled cross-junction
- Ambira/ Eastleigh First Avenue/ Heshima I/S - converted to signal controlled cross-junction

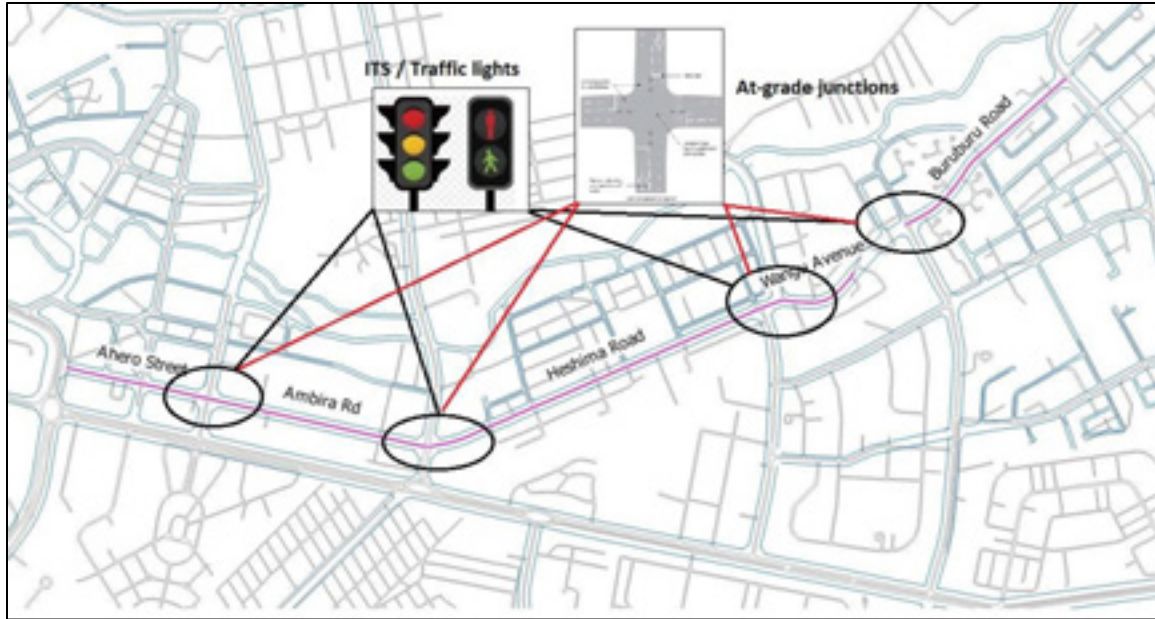


Figure 53: Intersection Configurations along the Ahero-Buruburu Corridor

**iii. Public Transit**

A BRT line with numerous BRT stops in the middle of the carriageway is proposed along this corridor as shown below:

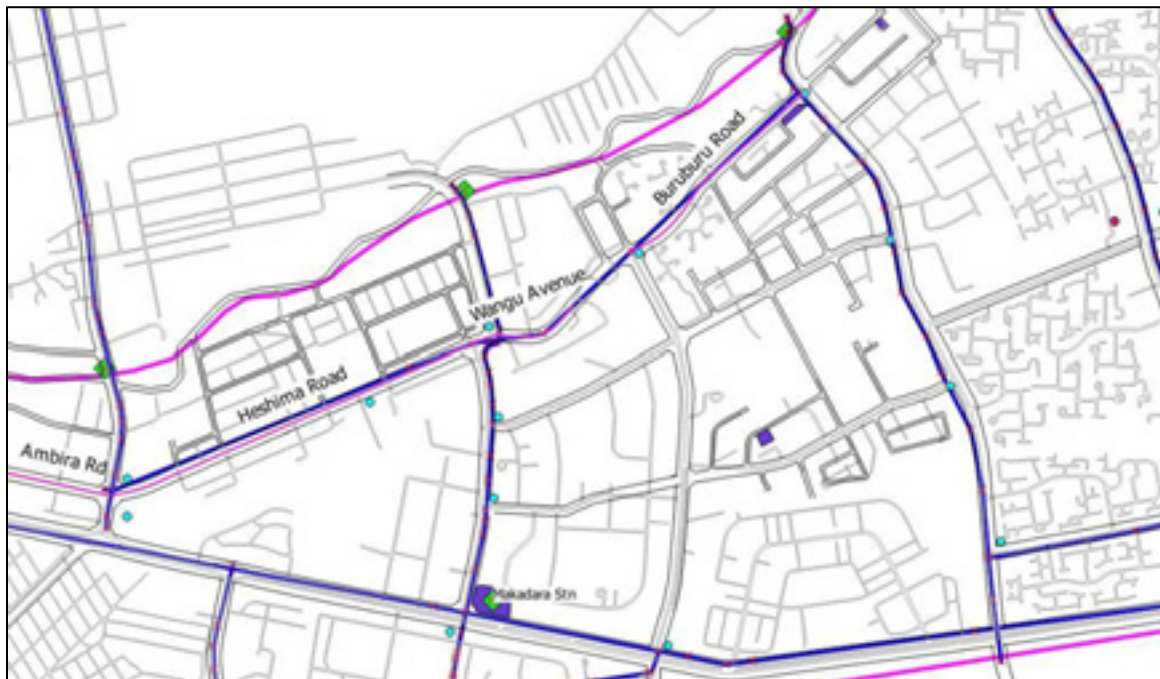


Figure 54: BRT Section along Ahero-Buruburu Corridor

#### **iv. NMT and Cyclists**

At least 2m wide pedestrian walkways, cyclist lanes and frontage zones are proposed on each side of the road as shown in the cross-section above.

#### **8. Proposals for Outer Ring Rd LRT Corridor**

Outer Ring rd. has recently been upgraded from a 2-lane road to 4-lane road with service roads and grade-separated intersections. Although a pedestrian walkway has been provided, there is no dedicated cycle lane, and no frontage zone allowed for in the design despite the high commercial activity on the road.

KURA has proposed a BRT along this road, which is ongoing, although a wide median has been allowed for in the middle of the road. In cognizance of the increased demand expected along this major road, the Consultant proposes an LRT on the road as a long-term proposal.

#### **9. Proposals for Ring Road Ngara LRT Corridor**

Racecourse road is currently a divided 2-lane road while Ring Road Ngara is a divided 3-lane arterial. All intersections are currently at-grade junctions. However, the Juja Rd. / Ring Rd. Ngara I/S has been proposed for grade separation in the future. Since a BRT line (and later upgraded to an LRT) has been proposed along this route, the existing cross-section will have to be widened to at least 40m.

#### **10. Proposals for Juja Rd LRT Corridor**

An MRTS line has been proposed along Juja Rd. in the MRTS Harmonization Plan (MOTI, 2014). NIUPLAN (NCC/JICA, 2014) proposes the same with an upgrade to LRT as a long-term strategy. Based on the forecasted traffic expected along the road, the Consultant has endorsed the proposal by NIUPLAN as being an adequate strategy. The proposed cross-section is Type 2D.

#### **Proposals for BRT Road Corridors**

The entire BRT network is shown in the figure below.

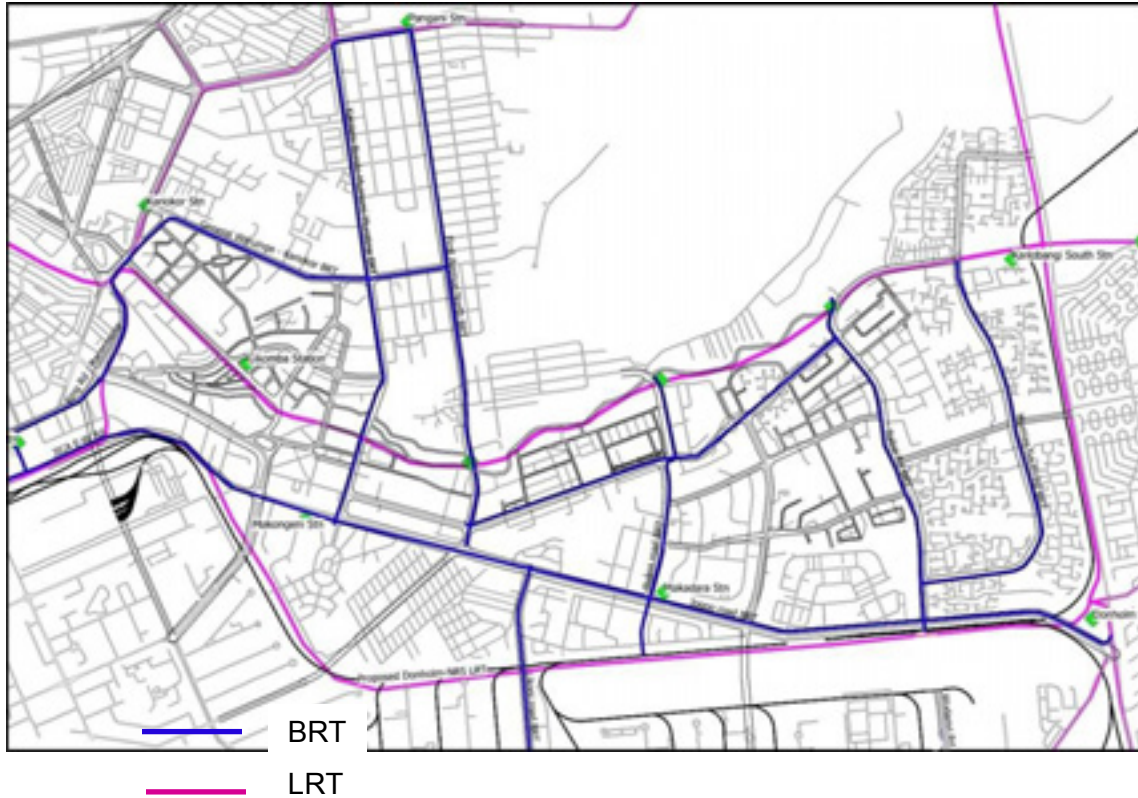


Figure 55: BRT Network for Eastlands Area

The proposed cross-sections for BRT corridors are given below. The corridors include:

- Mumias Rd
- Rabai Rd
- Nyasa Rd.
- Eastleigh 1st Avenue
- Muinami / Muratina Rd.
- Bondo Street
- General Waruinge
- Jogoo-Landhies Rd corridor
- Ambira-Buruburu Rd. Corridor
- Ring Rd Ngara

## 12. Proposals for Gikomba Market Roads

The figure shows proposed major motorized roads in Gikomba market.

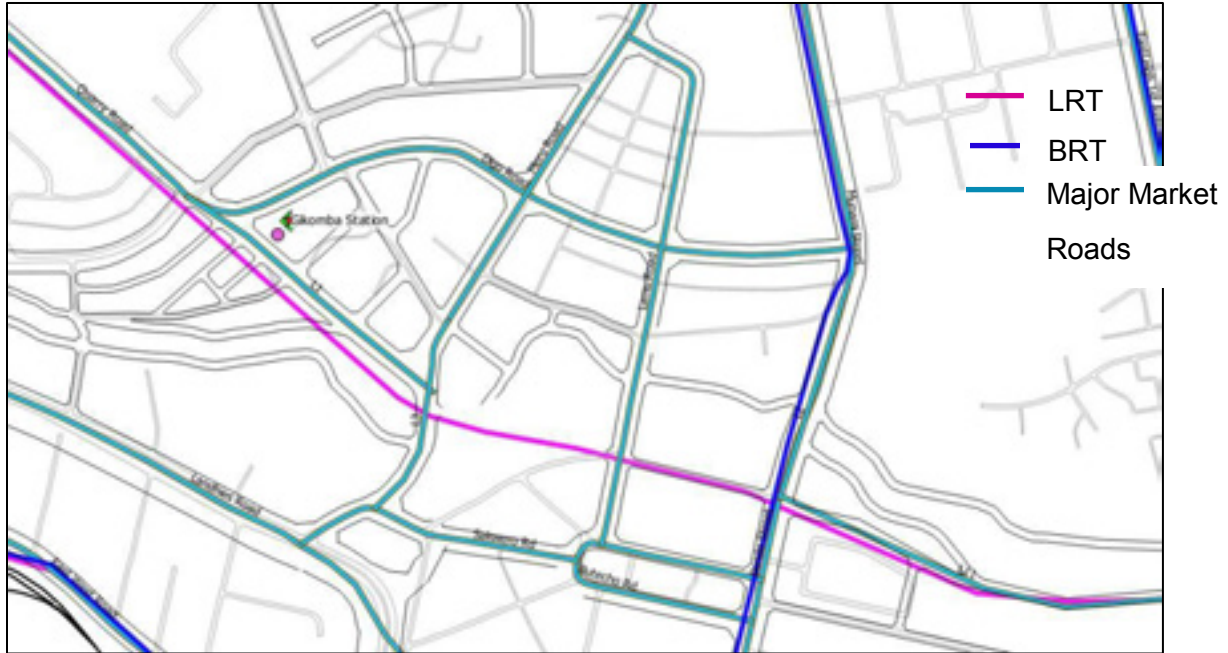


Figure 56: Proposed Roads in Gikomba Market

The proposed cross-section types shown below are proposed for the motorized and non-motorized routes:

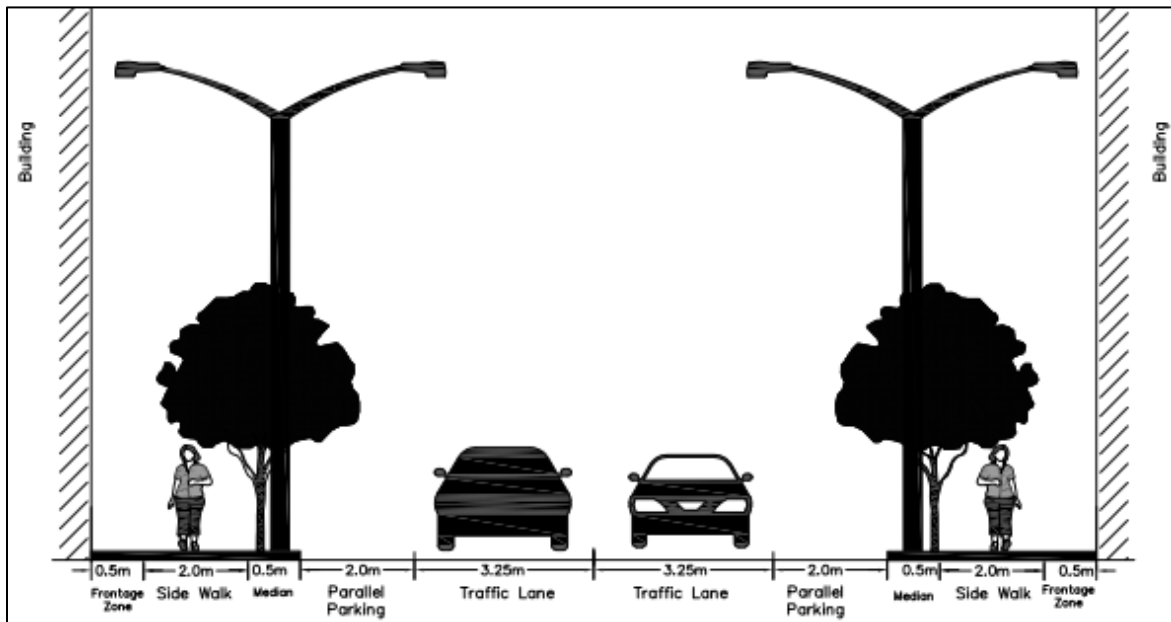


Figure 57: Residential Access Road 18m ROW

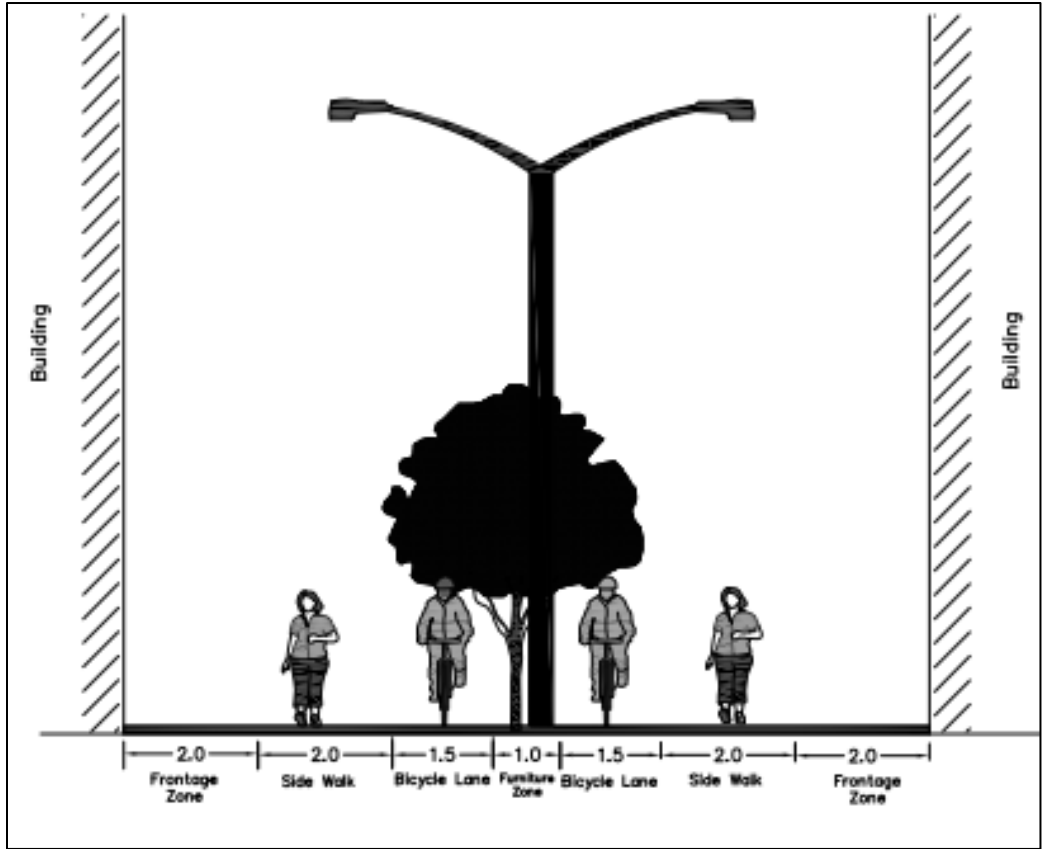


Figure 58: NMT Only Route 12m (High Intensity Zone)

**13. Summary of Road Reserve Requirements**

The table below summarizes the required widths for acquisition of the appropriate Road Reserve Requirements for implementation of the transport proposals discussed above. The roads are also mapped out in the subsequent page.

Table 28: Proposed Widening of Major Roads

Road Name	Proposed Cross-section Type	Existing Reserve (m)	Proposed Reserve (m)	Length (m)	Existing Road area (Ha)	Gross widening (m)	Proposed rd. area (Ha)	Net Gain (Ha)
Jogoo Road	Type 1A/1B/1C	55	60	5210	28.7	5	31.3	2.6
Landhies Road	Type 1A/1B/1C	35	40	1310	4.6	25	5.2	0.6
Lusaka Road	Type 2C	45	60	320	1.4	15	1.9	0.5
Ambira Rd	Type 2A/2B	25	40	750	1.9	15	3.0	1.1
Bondo Street	Type 2A/2B	25	40	500	1.3	15	2.0	0.8
Buruburu Road	Type 2A/2B	25	40	730	1.8	15	2.9	1.1
Eastleigh Avenue. 1st	Type 2C	30	40	3140	9.4	10	12.6	3.1
Eldoret Road	Type 3B	15	30	580	0.9	15	1.7	0.9
General Waruinge	Type 2C	30	40	1860	5.6	10	7.4	1.9
Heshima Road	Type 2A/2B	30	40	1280	3.8	10	5.1	1.3
Juja Rd	Type 2D	30	40	2000	6.0	10	8.0	2.0
Kinyanjui Street	Mod. Type 3A	12.5	40	960	1.2	27	3.8	2.6
Likoni Road	Type 2A/2B	25	40	600	1.5	15	2.4	0.9
Mumias South Rd.	Type 2A/2B	30	40	3570	10.7	10	14.3	3.6
Muinami Street	Type 2A/2B	30	40	650	2.0	10	2.6	0.7
Muratina Road	Type 2A/2B	20	40	1730	3.5	20	6.9	3.5
Nile Road	Type 2A/2B	30	40	1290	3.9	10	5.2	1.3
Nyasa Road	Type 2A/2B	30	40	850	2.6	10	3.4	0.9
Quarry Road	Type 3B	18	30	810	1.5	12	2.4	1.0
Rabai Rd.	Type 2A/2B	35	40	2820	9.9	5	11.3	1.4
Ring Road Ngara	Type 2C	40	40	1730	6.9	0	6.9	0.0
Wangu Avenue	Type 2A/2B	25	40	280	0.7	15	1.1	0.4

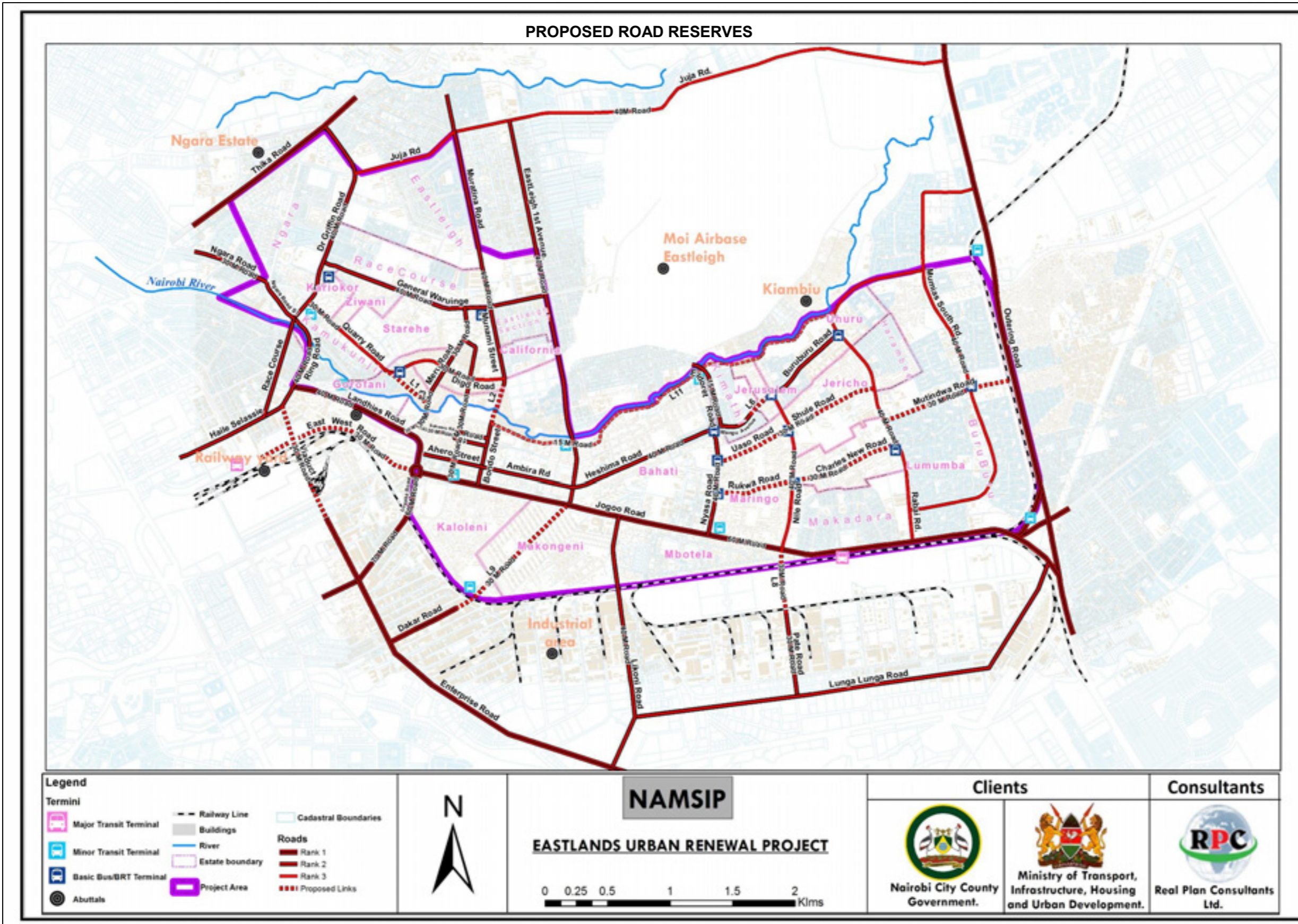


Figure 59: Proposed Reserves of Key Roads

#### 4.2.4 Proposed Terminals

Terminal facilities targeting movement of passengers and goods have been proposed as discussed below.

##### 1. Passenger Terminals

The minimum facilities that will be available at the various multimodal station are summarized in the table below.

Table 29: Multimodal station Types and Facilities Provided

		Passenger Boarding & Alighting	Pedestrian Facilities	Cyclist Parking	BRT/General PT Services	Enclosed waiting areas	Car & Taxi Parking Facilities	LRT Services	Commuter Rail Services	Freight	
1	<b>Major Transit Terminal</b>	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2	<b>Minor Transit Terminal</b>	✓	✓	✓	✓	✓	✗	✗	✗	✗	
3	<b>Basic Bus/BRT Terminal</b>	✓	✓	✓	✓	✗	✗	✗	✗	✗	
		✓	Minimum service provided								
		✗	This service will <u>not</u> be provided								

Major transit stations are proposed to be located at Nairobi Central Station, Gikomba Station, Country Bus Station and Makadara Station.

Transit stations are located within the study area such that the maximum walkable distance is approximately 500m. The TOD Standard proposes that transit stations be located within a 1 kilometre maximum walking distance to a high-capacity transit station, or within 500 meters walking distance to a direct service to a high-capacity transit line.

Given the crucial role that Machakos Bus Station plays in the countrywide transportation services, it is proposed that special attention be given to it. Its current state depicts congestion and operational chaos. To curb the congestion issues, satellite termini are proposed at strategic locations within various estates of the city so that not all travelers have to pick vehicles or alight at the station. It is also proposed that long term parking be discouraged at the station so that vehicles can come in and out in an orderly manner. Concerning the operational issues, it is recommended vehicle booking be incorporated into the operational structure in order to promote order at the station.

##### 2. Freight Terminals

Two freight terminals have been proposed: at Gikomba and at Makadara. Their locations are shown in the figures below:

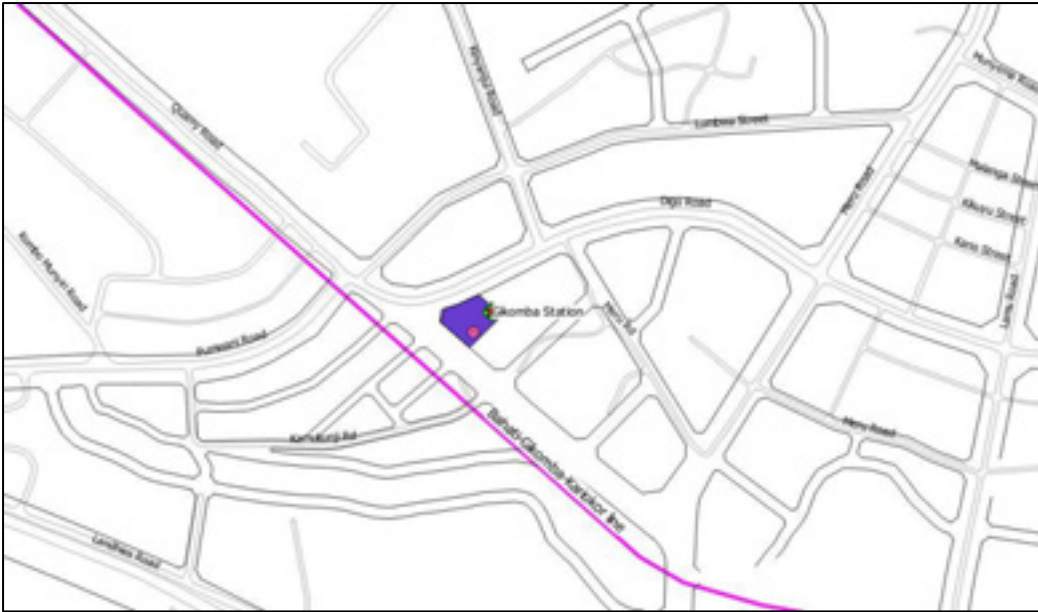


Figure 60: Proposed Location of Gikomba Freight Terminal

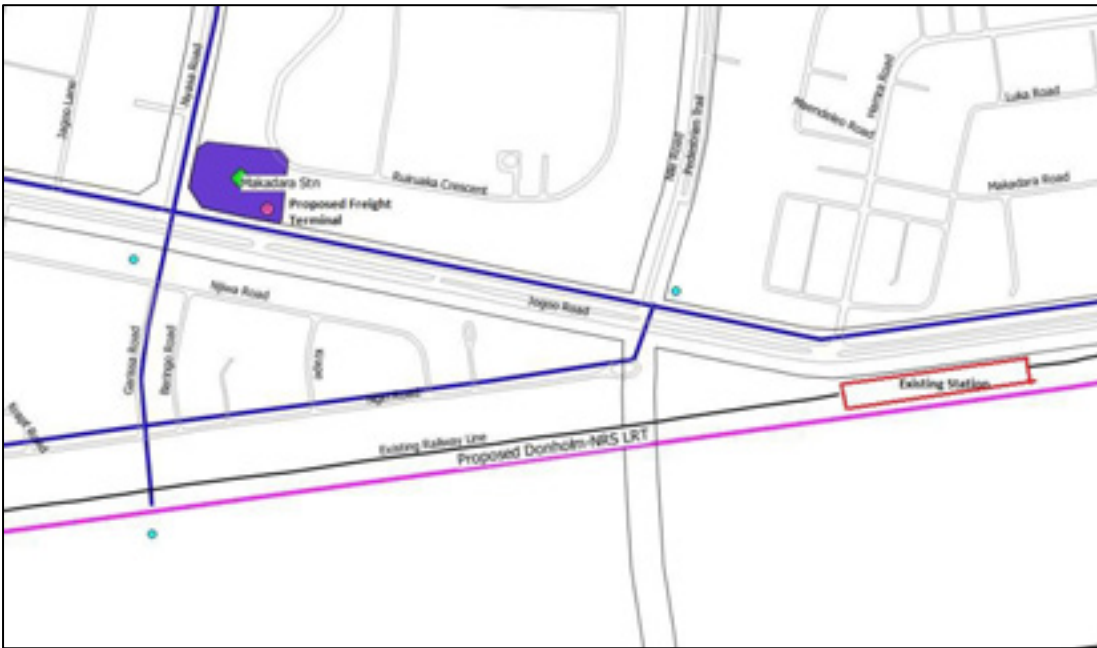


Figure 61: Proposed location of Makadara Freight Terminal

The locations indicated in above figure have been proposed, as they are major commercial nodes with multimodal stations. The freight terminals will have facilities to handle truck traffic over 7 tons. Smaller facilities for loading and off-loading are proposed at commercial zones and activity nodes to handle goods traffic below 7 tons.

### 3. Proposed Parking Facilities

The map below shows proposed location of parking facilities.

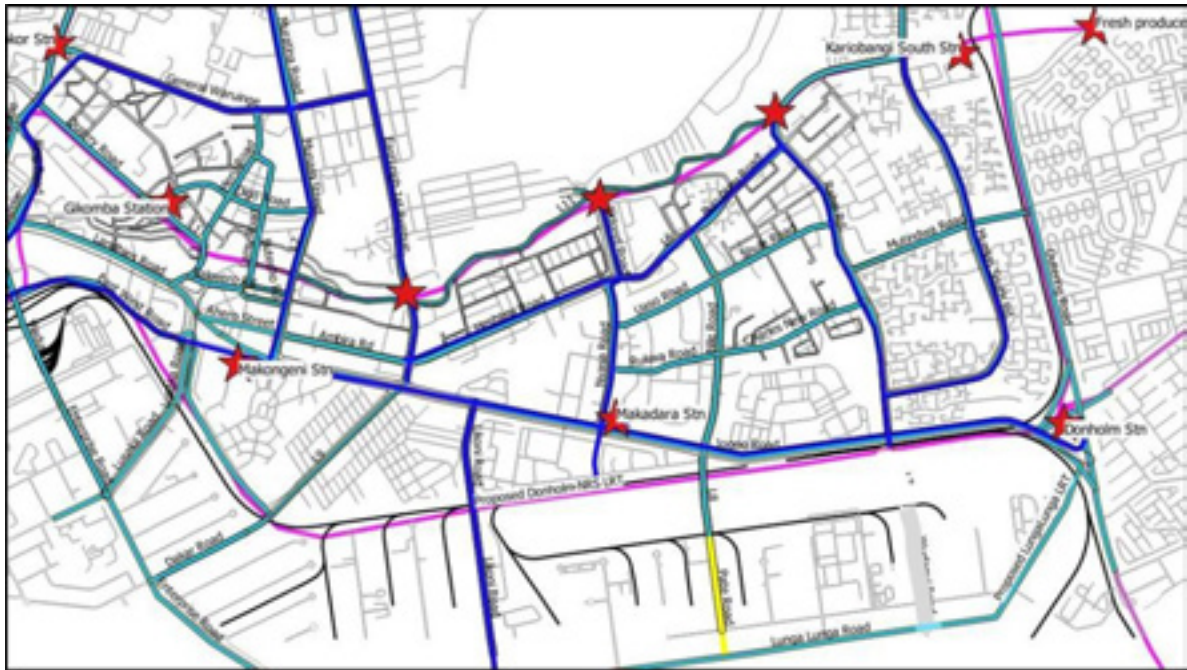


Figure 62: Proposed Parking Silos and Other Parking Facilities

The proposed parking facilities include park-and-ride facilities and silo parking.

### 7.2.5 Connectivity to Outer Network and Important Nodes

The proposed MRTS system links to the regional transport network through the various multimodal stations are shown in the figure below:

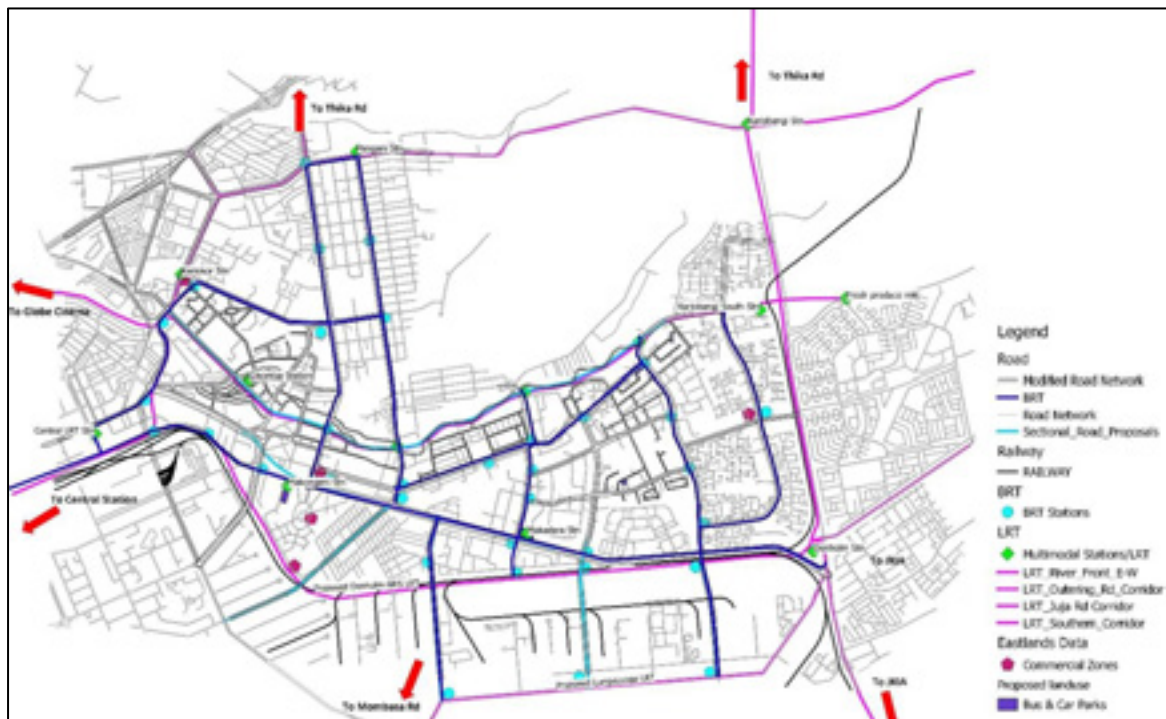


Figure 63: Connectivity to larger Transportation Network

In summary, the following points should be taken into account:

1. Jomo Kenyatta International Airport –

- i. The main connection to the airport will be through the proposed urban arterials such as the Jogoo-Outer Ring-Airport North/South road. The proposed LRT should also be extended to the Airport.
  - ii. There are plans by KRC to extend the commuter rail network from the Embakasi station to the airport. Makadara station would then be link point to the airport through the commuter rail network.
2. Nairobi- Mombasa Highway (Northern Corridor)
    - i. Road-based access would be through Likoni road, Lusaka road and Outer Ring road
    - ii. The proposed MRTS network in network includes a BRT line along Mombasa road (MOTI, 2014). This will be linked to the Eastlands planning area through multimodal stations such as the one in the Nairobi Railway Station and stations along Outering road.
  3. Thika Superhighway – Outer Ring road forms the main access to the Thika Superhighway for both road-based and MRTS networks.
  4. Nairobi CBD – Both the proposed road network and the MRTS network are directly linked to downtown Nairobi through the various interchanges and stations respectively.

### **4.3 STORM WATER MANAGEMENT**

The socio-economic survey revealed that the drainage system in Eastlands is in poor condition. The major challenge is the absence of an integrated storm water drainage network. This has led to a myriad of issues including unlined drains, open and blocked channels and lack of drains in some sections of the study area. The above challenges can be alleviated through the following strategies.

#### **4.3.1 Design Concepts**

The proposed Storm water management system consists of an integrated approach to control storm water runoff and in the process reduce the surface water flow rates and volumes, effects of flooding in urban areas, and effects of pollution of surface water quality. The approach involves provision of an integrated conveyance system of primary (major) and secondary (minor) channels, and detention and treatment facilities.

The figure below represents an idealized storm water management system for a typical urban area.

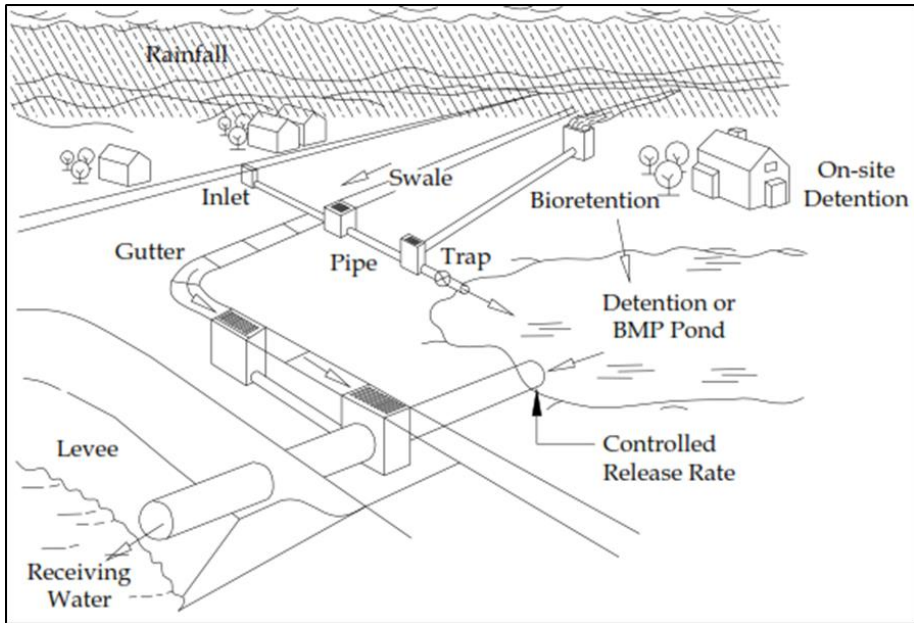


Figure 64: Typical Urban Drainage System (Conceptual)

Source: Kibler (1982) and DID (2012)

The system would typical consist of the following elements: -

1. **Secondary systems** that collect, store, treat and convey run-off from buildings and infrastructure to a discharge area, and consist of gutters, swales, pipes, on-site detention, bio-retention etc.
2. **Primary systems** designed to convey run-off collected from the secondary system and any excesses to larger downstream systems and water bodies. These include natural streams, channels, ponds, lakes, wetlands, large pipes and culverts.
3. **Storage facilities** designed to control/reduce peak discharges in order to control flooding. Based on international practise, the recommended facilities for storage include on-site detention (OSD) and detention ponds.
4. **Storm water quality control facilities**, which are important in reducing environmental impacts caused by non-point source pollution.

Ideally, implementation of the storm water drainage systems will be carried out at two levels:

1. **High (Community) Level** – These are proposals addressing the drainage of the entire planning area catchment while mitigating against excessive flow rates and effects of flooding.
2. **Low (Development or Estate) Level** – the proposals at this level are intended to mitigate against flooding and pollution at the development / estate level. Detailed designs will have to be carried out during the implementation phase of the particular estate and/or development.

### 4.3.2 Community Level Proposals

#### (a) Proposed Storm Water Systems

Based on the analyses of catchment characteristics, rainfall and storm events and the proposed land-uses as discussed previously, a summary of the primary storm water drainage network has been given in the table below.

Table 30: Proposed Primary Drainage System

Drainage Section Name	Drainage Section No.	Description of proposed drain	Remarks
Landhies Rd 1	B-1_B-2	2 no. x 0.8m wide x 0.8m deep concrete lined drain	Upgrade existing
Landhies Rd 2	B-4_B-2	Adequate drainage channels in place	Maintain existing
Jogoo Rd 1	B-4_B-7	2 no. x 1.2m wide x 1.2m deep concrete lined drain	Upgrade existing
Jogoo Rd 2	B-7_B-12	2 no. x 1.2m wide x 1.2m deep concrete lined drain	Upgrade existing
Muratina / Muinami	D-3_A-4	2 no. x 1.2m wide x 1.2m deep concrete lined drain	Upgrade existing
Eastleigh 1 <sup>st</sup> Avenue North	C-1_A-5	2 no. x 1.2m wide x 1.2m deep concrete lined drain	Upgrade existing
Eastleigh 1 <sup>st</sup> Avenue South	B-6_A-5	2 no. x 1.0m wide x 1.0m deep concrete lined drain	Upgrade existing
Nyasa Rd	B-9_A-8	2 no. x 1.2m wide x 1.2m deep concrete lined drain	Upgrade existing
Nile Rd	B-11_A-9	2 no. x 1.2m wide x 1.2m deep concrete lined drain	Upgrade existing
Rabai Rd	B-12_A-10	2 no. x 1.2m wide x 1.2m deep concrete lined drain	Upgrade existing
Mumias South Rd	M-1_N-6	2 no. x 1.2m wide x 1.2m deep concrete lined drain	Upgrade existing
Geoffrey Griffin Rd	E-1_E-2	Adequate drainage channels in place; section between Kariokor & Nairobi river requires upgrade	Maintain existing + upgrade section
Meru Rd	H-2_A-2	2 no. x 0.9m wide x 0.9m deep concrete lined drain	Upgrade existing
Quarry Rd	E-3_A-2	2 no. x 1.0m wide x 1.0m deep concrete lined drain	Upgrade existing
General Waruinge	E-2_D-3	Adequate drainage channels in place	Maintain existing
Park Rd	P-1_F-2	2 no. x 1.2m wide x 1.2m deep concrete lined drain	Upgrade existing
Ngara Rd	F-1_B-14	2 no. x 0.7m wide x 0.7m deep concrete lined drain	Upgrade existing

The proposed drainage network consisting of both primary and secondary network is shown in the map below. A typical cross-section of a primary drain is given in the figure thereafter.

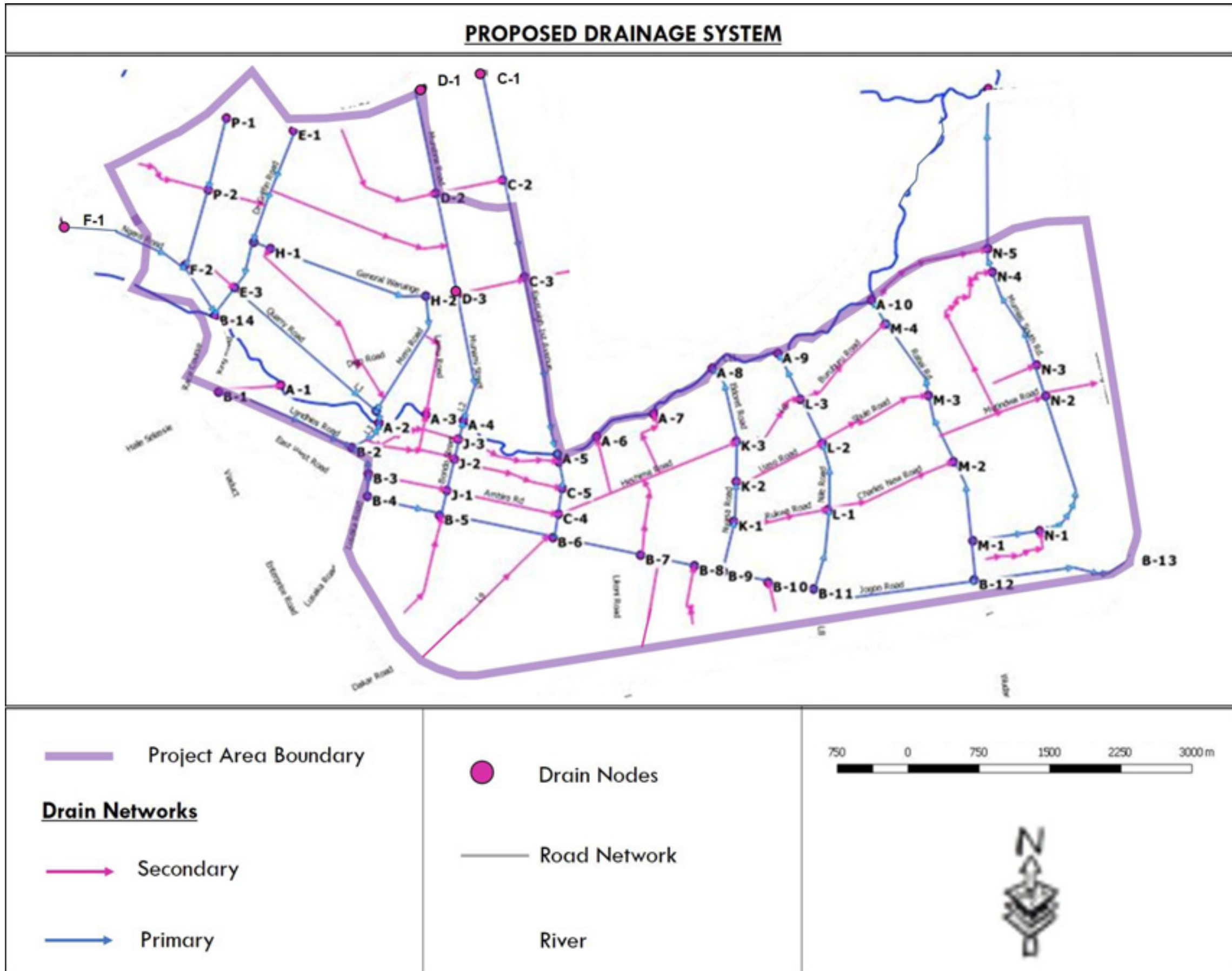


Figure 65: Proposed Drainage System

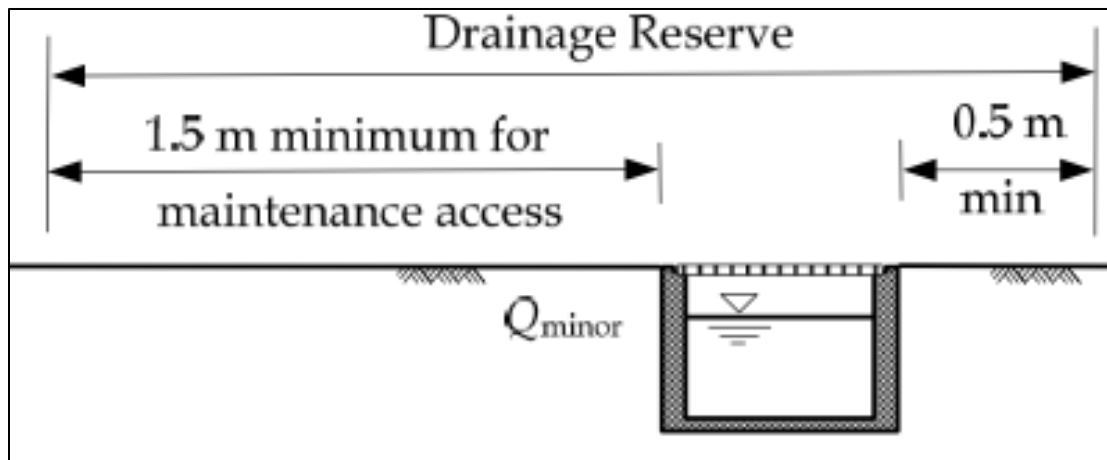


Figure 66: Typical Cross-Section for the Primary Storm Water Drains  
Source: DID (2012)

### (b) Detention Ponds and Infiltration Basins

Four (4) locations have been identified for construction of detention ponds as shown in the table below.

Table 31: Proposed Off-Line Detention Ponds

No.	Proposed Location	Actual site	Proposed Storage Type	Required Pond Size (Ha)	Required Storage (m <sup>3</sup> )
1.	Shauri Moyo / Bahati	Kamukunji Ground	Off-line	1.28	16,042
2.	Makadara	Within the Public Park	Off-line	1.54	19,188
3.	Eastleigh / Moi Airbase	Open ground near Biafra	Off-line	2.51	26,333
4.	Uhuru / Jerusalem	Along Riparian reserve	Off-line	1.60	20,048

All the detention ponds shall have treatment facilities at the inlet to ensure that pollution of the pond is kept at a minimum. A typical design for a detention ponds is shown in the figure below.

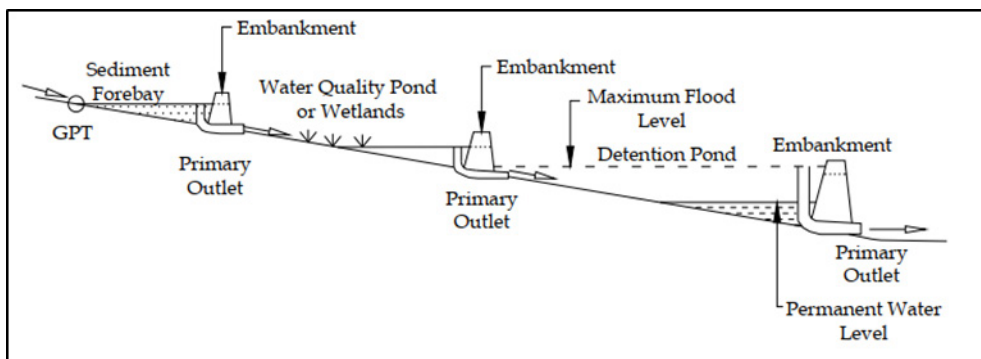


Figure 67: Typical Design of a Detention Pond  
Source: DID (2012)

Infiltration basins at the inlet of detention ponds serve to remove associated pollutants in the storage water, while also helping to reduce the quantity of discharge flow.

### 4.3.3 Development Level Proposals

#### (a) On-Site Detention (OSD) Facilities

OSD facilities may be provided above or below ground, or a combination, but within the specific development being designed or constructed. The figure below shows a typical design for various types of OSD facilities.

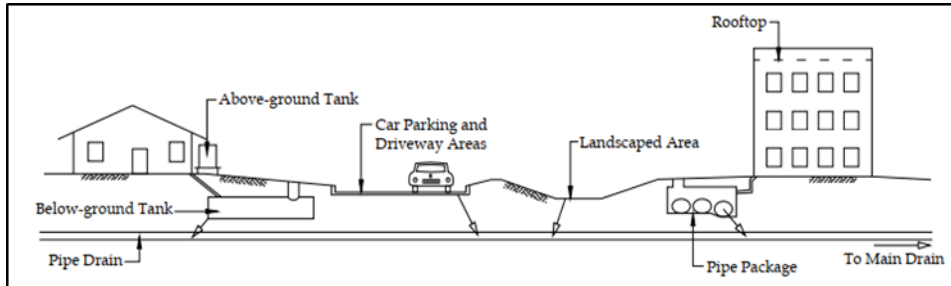


Figure 68: Typical OSD Storage Facilities

Source: DID (2012)

It has been proposed that a combined system will be provided in each of the estate courts which will be integrated with the proposed rainwater harvesting system.

#### (b) Swales

Swales are designed to store and/or convey storm water at low non-erosive velocities. They also enhance water quality through infiltration, sedimentation and filtration. Grassed swales have been proposed at public recreational parks.



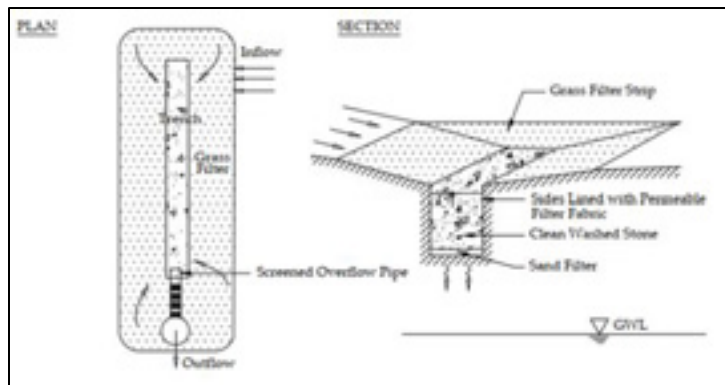
Figure 69: Example of a Swale at a Parking Area

#### (c) Rainwater Harvesting

Rainwater harvesting is a way of reducing the amount of storm water that ends up on the ground. It is thus advocated for as a way of storm water management and should be incorporated into the design of OSDs.

#### (d) Establishment of Infiltration Trenches

Infiltration trenches have been proposed at the edges of parking areas. In addition to helping reduce the peak discharge to the primary drainage network, they also help to remove associated pollutants in the storm water. The figures below show a typical design of infiltration trench at a parking lot.



(a) Typical Infiltration Trench Design



(b) Example infiltration trench in a parking area

Figure 70: Illustration of an Infiltration Trench  
Source: DID (2012)

## 4.4 WATER SUPPLY

The situational analysis findings indicate inadequate supply and old pipe network as the principle limitations to water supply services in the project area. In a bid to rectify this situation, the Northern collector project has been initiated. This project is currently under construction and is estimated at 50% completion at this time. The completion of this project will enable an additional 140,000 m<sup>3</sup> of water per day to be delivered into the City of Nairobi. With this increase amount of water, the project area supply shortfalls are expected to reduce significantly in the short and medium terms from the injection of additional water into the project area.

In addition, there are remedies proposed in this plan, particularly to improve water supply within the project area. The specific proposals include:

- Supply shortfall mitigation measures
- Remedies for local distribution networks
- Conservation measures at development control level

### 4.4.1 Supply Shortfall Mitigation Measures

#### Surface Water Resource

The Northern collector project is currently under construction and is estimated at 50% completion at this time. The completion of this project will enable an additional 100,000 m<sup>3</sup> of water to be delivered into the City of Nairobi. With this increase amount of water, the project area supply shortfalls are expected to reduce significantly in the short and medium terms from the injection of additional water into the project area.

To supplement the supply from the above project, storm water harvesting is recommended. This will involve treatment of water from the proposed storm water Retention and Detention basins and bio-filters before it is channeled to the to the consumer destinations. This water should be targeted for secondary use such as disaster management and irrigation of open spaces during dry seasons

#### Ground Water Resource

A study had also previously considered the need to exploit the development of ground water sources and Kiunyu and Ruiru area were considered for development of wellfields.

Ground water in the project area was also considered but was ruled out based on the fact that the exploitation is to be preceded by extensive hydrogeological survey which could prove futile

since the ground water depth in the project area is between 300-350 ft. and the yields could be insufficient to meet the water demand of the project area.

Caution should therefore be taken when considering ground water as a resource in the project area since the water quality is deteriorating due to contamination and could result to being below the set standards by WRMA and NEMA for drinking water.

#### **4.4.2 Remedies for Local Distribution Networks**

The existence of dilapidated network required considerable remedial works. Due to the current population status and projections, the pipe sizes are currently undersized to convey required demand at local level at the present time and in future

The undersized network pipes will need to be upgraded and/or replaced. Additional storage facilities are also proposed at strategic service locations.

There is need for the project management to liaise with the water service provider to fast track on the injection of water into the proposed water pipe network once construction is complete.

The proposed water supply network is denser and serves each of the public estates. The new networks are shown in dotted blue lines on the map overleaf. There are also the proposed elevated water tanks which should help with water storage. They are located in Shauri Moyo, Bahati, Kaloleni, Makongeni-Kaloleni border, Makongeni, Maringo, Jerusalem, Starehe and Ziwani/Kariokor border.

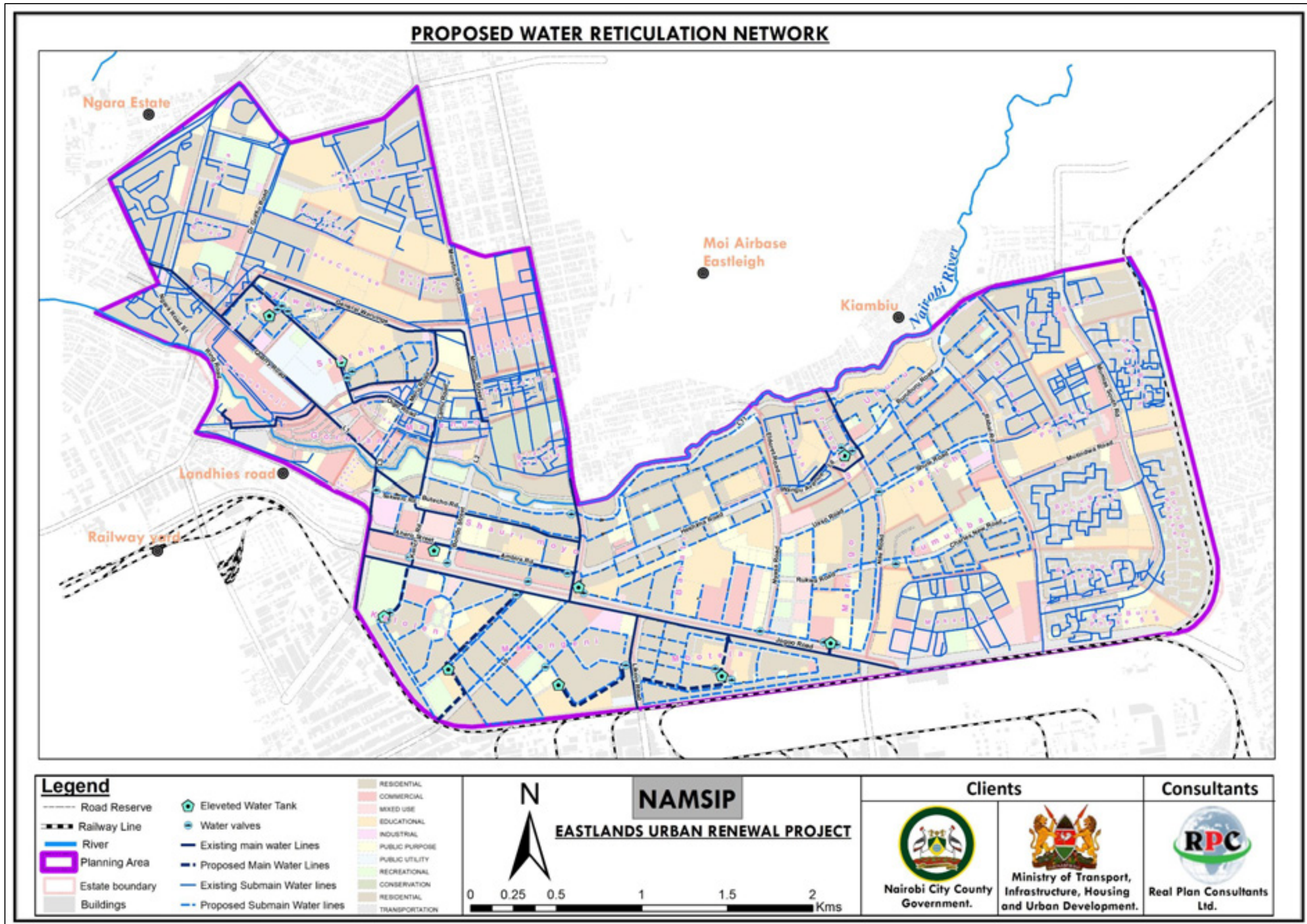


Figure 71: Proposed Water Supply Network

The estate specific proposals for improving water supply networks are covered in the Action Area Plans.

#### 4.4.3 Conservation Measures at Development Control Level

These include including:

- ✓ Mandatory requirement for rain water harvesting and storage facilities at property level
- ✓ Placement of a correctly sized roof tank at each storey building
- ✓ The water service provider to give a guideline on the maximum pressure level at the household level e.g. up to the 3rd storey roof tank at each household development. Thereafter the property owner to be required to provide additional pressure boosting facility to suit the development needs.
- ✓ Embedding water conservation measures and devices at household level
- ✓ Installation of water meters and fixing and repairing drips and leakages.

### 4.5 SEWERAGE AND SANITATION

#### 4.5.1 Sewerage

The major challenges identified from the situational analysis point to

- Old and dilapidated pipelines resulting in blockages and bursts
- Infrastructural inability to accommodate the excess waste flow caused by the influx in population

The above shortcomings are to be alleviated as follows.

##### a. Manholes

Manholes have been proposed to be done in reinforced concrete rings for depths up to 3m, and in-situ reinforced concrete for depths beyond 3m. Manhole covers have also been proposed to be medium duty within areas with no vehicular traffic, and heavy duty in areas with vehicular traffic. Drop inlets are proposed where the inlet/outlet pipe elevation differences are greater than 600mm.

As per WHO Sectorial Study Report No 9, the recommended spacing of manholes is provided on the designed sewers at all changes in direction, change in sewer level or gradient, change of size and at all junctions. For a straight alignment, to allow for ease of cleaning and/or unblocking, the recommended maximum spacing of manholes is as summarized in the table below.

Table 32: Recommended Maximum Spacing of Sewer Manholes

Sewer Diameter		Manhole Spacing	
Millimetres	Inches	Metres	Feet
100 to 200	4 to 8	40	130
225 to 450	9 to 18	60	200
525 to 825	21 to 33	90	300
900 and above	36 and above	120	400

##### b. Plot Connections

The proposed sewer costing hasnot been included for individual plot connections. It is assumed that these will be the responsibility of the resident water and sewerage service provider (Nairobi City Water and Sewerage Company).

It is proposed that property drains be constructed using either concrete or PVC pipes. Property drains should be the same standards as public sewers; beddings and protection should be used where necessary. Pitch fibre and Upvc pipes should be bedded and backfilled with granular material.

**c. Upgrading of Trunk and Secondary Sewers**

The proposed pipelines are to convey sewerage directly into the trunk main especially from the estates. The DN 1200 existing trunk main running parallel to Nairobi river is proposed to be replaced with a DN 1200 pipeline from Ngara road to Uhuru estate. Primary trunk mains of minimum DN 450 have been proposed along the roads traversing the estates in the project area.

The following key trunk mains are proposed for upgrading

- General Waruinge road - Muinami road – Pretreatment site – DN1200 trunk main
- Kaloleni estate – Bondo street – Trunk main
- Dakar road – Heshima road – Pretreatment site – Trunk main
- Likoni road – Nyasa road – Eldoret road -Trunk main
- Nile road – Buruburu road – Rabai road – Trunk main
- First Avenue Eastleigh – Pretreatment site – Trunk main

This is as indicated in the figure below.

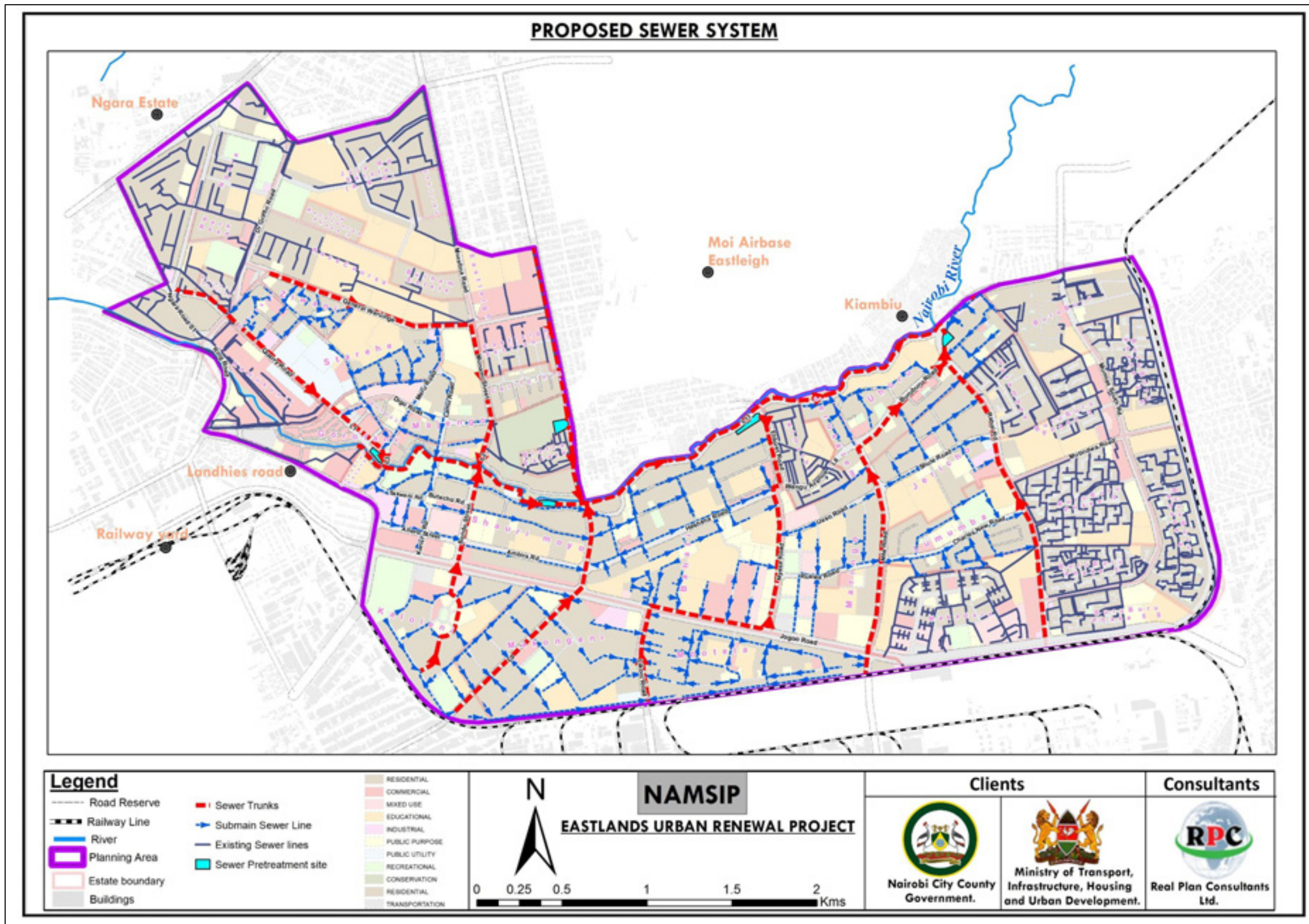


Figure 72: Proposed Sewer Network

#### **d. Pre-Treatment Sites**

These are proposed to be in two levels.

##### **Plot Level Pretreatment**

High-density developments will result from the proposed urban renewal in the project area. Housing units of more than 10 levels are proposed to have pretreatment sites to reduce the load before the waste is allowed into the primary trunk mains.

##### **Secondary Pretreatment Sites**

These are proposed near the trunk main. Sewer pipelines that pass through the light industrial area and the industrial area first discharge into pretreatment site proposed to be sited close to the trunk main before the effluent is allowed into the trunk main.

Six secondary pretreatment sites have been proposed as shown below.

- Close to Kamukunji ground
- Proposed primary school close to Jua kali artisan site
- In California at the flight path
- In Bahati estate close to Heshima road primary school
- In Kimathi estate close to Eldoret road
- Close to Uhuru primary school.

#### **e. Resource Recovery Options**

These are planned for incorporation into the pretreatment sites and target the arising sludge from processed pretreated sewage. Resource recovery from faecal sludge can take place in different ways:

- Processing of sludge to soil conditioner for use in the in the city Parks
- The reuse and further treatment of the biomass produced in wetlands or ponds (e.g. composting, energy production, production of building materials, animal feed and fibres)

#### **f. Public Toilets**

Public toilets should be located at strategic sites such as bus stations and markets for the general use by all visitors and inhabitants. The type of toilets will be chosen in consideration of the local usage habits and needs. For market places within the project area, public toilets will be equipped with flushing facilities.

Public toilets will need to be connected to the sewerage system. Where this is not possible, septic tanks with cesspits will be required. The structures should be easy to clean and maintain. They will need to be designed in such a way that blockage, odour and nuisance can be avoided. It is also proposed that one caretaker be employed per unit.

The sizing of the toilet units will be based on the formula that for 1,000 users, 8 slabs and 4 urinals should be provided for men and 10 slabs for females. In terms of building materials, it is recommended that local block work materials which are considered to be cost effective and durable be used. It is envisaged that public toilets will be required in the following sites and with the following designs.

Table 33: Envisaged Public Toilet Sites

Site	Size
Gikomba node	8 doors and urinal
Shauri-Moyo-Kaloleni node	8 doors and urinal
Makadara node	8 doors and urinal
Kamukunji jua kali node	8 doors and urinal
Bus termini	4 doors and a urinal

#### g. Conservation Measures at Development Control Level

The following additional measures are recommended for implementation at development control and planning level

- Embracing and demonstration of the reduce, reuse and recycle concept in planning and implementation
- On property wastewater pre-treatment to predetermined levels for
  - Flats and residences housing a certain number of persons per block
  - Industrial facilities producing sewerage waste strength exceeding the domestic waste strength as defined by NEMA

#### 4.5.2 Solid Waste Management Strategy

Solid waste in Eastlands area is mainly collected by private entities (52%) comprising of majorly youth groups. The County Government accounts for 6.8% of the households while 5.1% of the households dump on open grounds. The state of solid waste management in the project area is generally poor. Some of the issues include

- Open dumping
- Dumping on riparian reserve
- Insufficient solid waste management infrastructure

It is thus important to provide guidelines on the manner in which the situation can be rectified.

The solid waste management strategy is meant to:

- Reduce environmental degradation caused by poor solid waste management
- Identify appropriate waste disposal sites
- Develop an efficient and functional solid waste management system.
- Promote harnessing of energy from waste.
- Increase human resource capacity in handling of waste
- Promote employment creation in waste management

The proposals made are informed by the concept of waste management hierarchy, which outlines the ranks of the various waste management options as illustrated below.

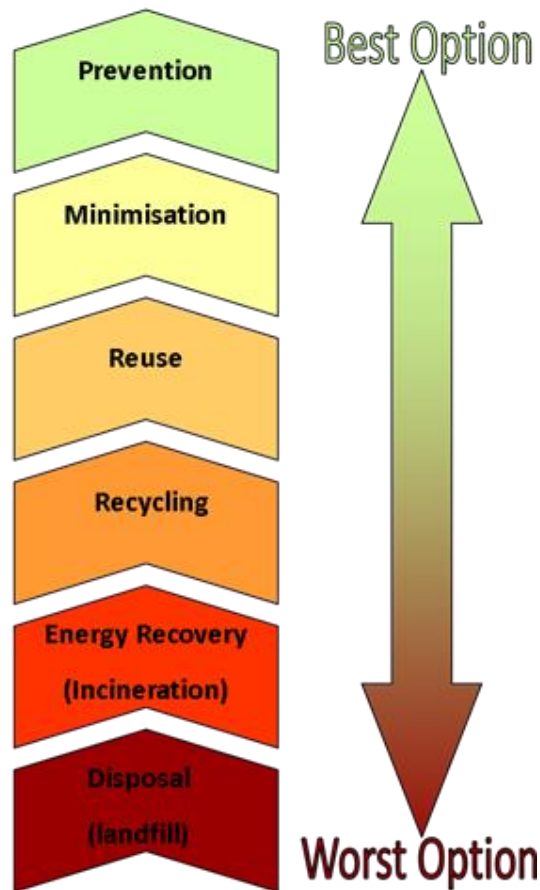


Figure 73: Hierarchy of Waste Management Options

Considerations are also made for the projected amount of waste to be generated per estate (see the table below). The expected number of households in the public estates by 2036 is about 125508, which is equivalent to the estimated number of achievable housing units. The calculation of amount of waste to be generated is based on the UNEP’s estimate of per capita generation 0.7kg per day and the average household size of 5 in Eastlands.

Table 34: Solid Waste Generation by Estate

Estate	Households (2036)	Waste Generated		
		Per Week (Kg)	Per Month (Kg)	Per Year (Kg)
Bahati	16,368	401016	1604064	19248768
Kaloleni	9,328	228536	914144	10969728
Mbotela	7,232	177184	708736	8504832
Makongeni	20,994	514353	2057412	24688944
Shauri Moyo	3,708	90846	363384	4360608
Bondeni	704	17248	68992	827904
Gorofani	832	20384	81536	978432
Kariokor	2,912	71344	285376	3424512
Ziwani	3,600	88200	352800	4233600
Starehe	4,048	99176	396704	4760448
Maringo	14,072	344764	1379056	16548672
Jerusalem	4,288	105056	420224	5042688
Lumumba	12,512	306544	1226176	14714112

Jericho	15,584	381808	1527232	18326784
Uhuru	8,416	206192	824768	9897216
New Pumwani	70	1715	6860	82320
Makadara RH	840	20580	82320	987840
<b>Total</b>	<b>125,508</b>	<b>30,74,946</b>	<b>12,299,784</b>	<b>147,597,408</b>

## Proposals

### a. Collection and Storage

In terms of waste collection and storage, the following are recommended

- Provision of bin containers for waste separation and collection at source point. The waste bins can be categorised by a colour i.e., green for organic waste, brown for waste paper and blue for glass, plastic and Metal. The total number of bins to be provided in the government estates is estimated at 154. Each of the bins should have a carrying capacity of 20 tons of waste.
- Creation of trash chutes at every floor of the building. The trash chutes will provide an easier way to dump the trash into waste bins in the multi-level buildings. A picture of the chute is shown below.

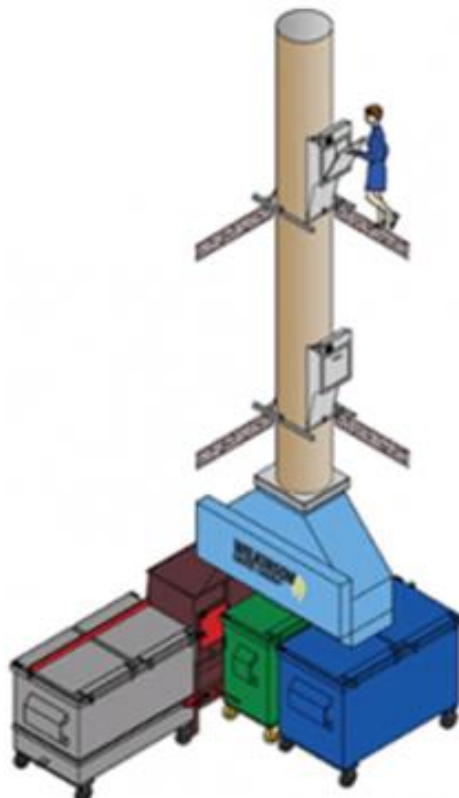


Figure 74: Trash Chute

- Storage of glass and metal waste in separate robust containers because of their bulky and hazardous nature.

- Provision of solid waste collection and transfer points. Three sites have been proposed. One is located in Shauri Moyo and the other two in Starehe and Jericho respectively. Each is proposed to be 0.4Ha and the estates they will serve are tabulated herein after.

Table 35: Proposed Solid Waste Collection and Transfer Points

Proposed Site	Area (Ha)	Areas served
Shauri Moyo	0.4	Shauri Moyo, Mbotela, Biafra, Gorofani, Bondeni, Majengo, Pumwani, Makongeni and Jogoo road market
Starehe	0.4	Ziwani, Starehe, Kariokor, Bachelor Quarters, Gorofani, Bondeni, Kamukunji, Landhies, Racecourse, Juja road and Ushirika estates
Jericho	0.4	Jericho, Mbotela, Maringo, Makadara, Lumumba, Uhuru, Buruburu, Harambee, Jerusalem and Kimathi
<b>Total</b>	<b>1.2</b>	-

### b. Transportation

Transportation entails the movement of the solid waste from the source point to a designated disposal destination. The strategies proposed include:

- Use of wheeled trash bins to ease transportation of heavy loads
- Use of different pick up tracks for different types of waste
- Use of different pick up schedules for the different types of waste. Organic waste should be picked more frequently.

### c. Processing

The following are proposed.

- Establishment of a material recovery facility for plastics, e-waste, glass and metals. The facility can be located within the proposed light industrial zone in Shauri Moyo, given the high amount of metallic waste expected there.
- Establishment of biogas processing plant and a slurry factory where the biogas by-products can be used for processing animal feeds and fertilizers. A feasibility study may be done to establish a suitable location of the plant and factory, preferably in the industrial area.
- Encouraging urban horticulture so that some of the organic waste can be used as manure.

### d. Disposal

- Encourage the incineration of waste materials to produce energy through gasification.
- Waste that cannot be reclaimed to be disposed in a landfill which serves the entire city

## 4.6 ENERGY

The main energy sector challenges include frequent electricity interruptions, vandalism of electricity transformers and power lines, poor and illegal connections of electricity, high cost of electricity connectivity and use of biomass fuels (charcoal and kerosene).

The energy proposals thus cover matters of conservation, management and sourcing for newer cleaner forms of energy for lighting and heating. The aim is to achieve sustainable energy usage and reduce overreliance on biomass-generated energy and electricity from the national grid.

The plan focuses on the forms of energy that are most utilized in lighting, cooking, heating and industrial production within the project area. The main proposals include upgrade of electricity network, use of solar and wind power generated energy, adoption of green building technologies and carbon reduction from fossil fuels.

### **A. Upgrade of Electricity Network**

Given that the annual demand for electricity in the project area is expected to triple by 2036, there is need to upgrade the electricity network. This may involve initiatives that will range from developing additional facilities (such as transformers and power sub-stations) to extending networks to unserved areas and stepping up the loads on the transmission lines. This plan provides for adequate space on the road reserves where power transmission lines can be laid. In the case of power sub-stations, some of the potential locations for new ones are within the government owned land where Kenya Power can either be granted leases or sub-leases. An example of such a place is Makadara Hamza area.

It will be necessary for Kenya Power to carry out an electricity needs assessment, both presently and in the post redevelopment period, in order to establish the actual areas of intervention and the best course of action. This will need to be done in consideration for the proposals made in this plan, which are bound to lead to increased usage of both domestic and non-domestic power.

It is also recommended that Kenya Power, KenGen and other power suppliers explore alternative options of generating electricity such as wind and solar power generation. Other measures that may be necessary are managerial, including control of illegal connections and vandalism. Finally, exploring strategies for conversion of the transmission and service lines from overhead to underground is recommended.

### **B. Use of Solar Energy**

Solar energy is a sustainable, cheaper and a readily available form of energy that can be harnessed to improve the energy use for the proposed buildings. Solar energy will be harvested using solar panels that will be installed on the buildings.

The proposed buildings have an average of 290m<sup>2</sup> of roof area. A standard solar panel has an area of 1.2m<sup>2</sup> making a total of approximately 240 solar panels on the roof. Each standard solar panel produces 265 watts of power when exposed to sunlight. All panels on one roof will generate 63 kilowatts of power when exposed to sunlight. Nairobi receives an average of 8hrs of sunlight a day giving a total of 504 kilowatts of power produced daily per building.

Considering the annual per capita electricity consumption of 167 kWh, exploration of solar energy is ideal and cheaper. The figure below shows prototypes of solar powered buildings



Figure 75: Prototypes of Solar Powered Buildings

The solar energy is proposed to be used as follows.

### **1. Solar Water Heating**

Since electricity heated water is expensive for the households to maintain and run them on a daily basis. Solar water panels are a cheaper long-term solution proposed for cheaper heating. This will involve installation of water-heating panels on the rooftops of the proposed buildings.

### **2. Lighting**

This is the most used form of energy that is dependent on electricity. It is proposed that to solar energy be utilized in lighting of secondary equipment in the buildings such as corridors, security and lights. This will reduce the overall energy costs and maintenance.

In addition, the building designs adopted in this plan promote natural lighting of the rooms to reduce use of electricity. These designs manifest bigger windows and well-lit corridors inside the building. The use of newer technologies such as Led light bulbs and light strips are also recommended since they consume less energy.

### **3. Individual Solar Lighting**

Some flats with fewer units are recommended to be fully powered by solar panels. High power solar panels generating higher voltage should be installed to meet the demand for the required voltage from each household.

### **4. Heating and Pumping**

Water heating in the planning area is dependent on electricity heaters and kettles. Solar water heating systems such as solar heaters heat water using the sun's thermal energy and store them in storage tanks. These are proposed on the buildings as a necessary design system to reduce the energy costs, maintenance and minimize electricity bills.

Hot water is mainly used for washing and bathing in the project area. This translates to about 50-60 litres of daily water usage in a day. A large capacity solar heater and insulation tank holds a capacity of up to 5000 liters making it adequate for daily usage. Water pumps can also be powered using solar energy to reduce on costs. This can be incorporated within every building with the solar heater systems.

## 5. Street Lighting

Street lighting is an energy consuming activity in the project area. It is an important factor which improves security and movement during nighttime. The street lights currently installed is powered by electricity supplied from the national grid.

The proposed circulation paths and open spaces are proposed to be lit by solar energy. Solar powered streetlights are preferred over electricity because of lower maintenance costs, low energy consumption and reliability.

### C. Wind Power Generation

This is emerging trend in some countries which have developed buildings with own wind power generating systems that are self-reliant. This can be adopted in Eastlands as a way of providing additional energy both for domestic and industrial use.

Given that there is no viable site for large scale production of wind energy within the project area, small scale wind turbines can be installed on selected building rooftops as shown in the figure below.



Figure 76: Rooftop wind turbines

Others are pole mounted street turbines which can be used to generate electricity for lighting along major roads, streets and inside the estates. The different types of wind power generation systems that are viable in Eastlands are tabulated below.

Table 36: Potential Wind Power Generation Systems In Eastlands

System Size	Approx. Yearly System Output (kWh)	Approx. Indicative System Cost (Ksh)
1kW (Roof-mounted)	1,750	300,000
1.5kW (Pole-mounted)	2,600	900,000
2.5kW (Pole-mounted)	4,400	1,700,000
5kW (Pole-mounted)	8,900	3,200,000
10kW (Pole-mounted)	21,500	6,400,000
15kW (Pole-mounted)	36,000	10,000,000

It is noteworthy that these installations require special environmental conditions. For instance, they operate best in places where there are strong wind currents that can sustain turbine rotation for a long period. Secondly, the potential electricity output generated through wind turbines is marginally small as it can only be used in supplementary electrical activities such as lighting

#### **D. Adoption of Green Buildings.**

These are buildings that radiate less fuel and are resource efficient in construction and maintenance in lighting and heating. Such technology is recommended for major mixed-use buildings, those that will be developed at Makadara node.

#### **E. Carbon Reduction from Fossil Fuels**

Carbon emissions arise from use of fossil fuels in the transportation sector and within the domestic and industrial circles. The energy used in transport comprise petrol and diesel for motorized vehicles. They generate carbon gases along the transportation corridors and adjacent areas. In the domestic circles, carbon emissions are propagated by use of kerosene, charcoal and firewood.

The energy use and carbon emissions in the transport sector can be reduced by emphasizing the use of BRT systems, Light Rail Train Services and encouraging carpooling among residents. At the household level, it is proposed that regulations that deter use of charcoal, wood and kerosene fuels for cooking and heating be adopted. As an alternative, safer charcoal such as briquette (made from waste coffee husks and saw dust sourced from local industries) can be encouraged.

### **4.7 EDUCATION**

This section details out interventions for the development of Early Childhood Development and Education Centers (ECDE), primary schools, secondary schools and tertiary institutions. The institutions are evenly distributed given that the primary schools are averagely located within 500m and secondary schools within 1 km radius from residences.

The analysis on demand for schools based on the projected catchment population in the project area indicates that there shall be a deficit of 39 primary and 22 secondary schools in 2019. These deficits denote the extent to which educational facilities are overstretched, a situation that has led to emergence of informal and private schools. Some schools are also under-enrolled due to performance differences and parents' preferences of schools that are far from their residences.

Considering the projection of school age population, it is noted that additional 73,420 and 40,020 students will need to be accommodated in primary and secondary schools respectively by 2036. On a positive note, it has been established that the existing schools have room for a significant proportion of the additional population. The primary and secondary schools have an aggregate surplus of about 48 Ha and 43 Ha of land respectively, where additional streams can be developed.

However, most schools currently sit on unregistered land hence the rampant cases of encroachment and land grabbing. Other schools are inadequately equipped with sanitation blocks, classrooms, playgrounds and administration blocks hence the need to intervene.

In consideration of the above, the following strategies are recommended for the education sector.

1. Retaining the existing institutions
2. Optimization of use of existing space by densification (high-rise development of up to 4 levels) and stream increment
3. Expanding of land area of existing facilities
4. Provision of new schools
5. Integrating nursery schools within primary schools

6. Encourage sharing of amenities such as playfields
7. Surveying and registration of land covered by schools

The strategies are discussed in details below:

#### a. Retention of All Existing Schools

Taking into account the high investment by the government in the existing public schools, retention of all of them is recommended. Upgrading of these facilities has further been proposed to increase capacities and effective service delivery. The table below shows the list of facilities retained and their respective land areas.

Table 37: Retained Educational Facilities

Name	Current Gross Area (Ha)	Net Proposed Area (Ha)	Location
<b>Primary Schools</b>			
Canon Apollo Pri	1.73	1.73	Mbotela
St Pauls Pri	2.11	2.11	Mbotela
Mary Immaculate Education Centre	2.17	2.17	Bahati
Church Arm Academy	1.81	1.81	Bahati
Rabai Road Pri	2.81	2.81	Lumumba
St Michael Pri	2.40	2.40	Makadara
Jogoo Rd Pri	1.16	1.16	Makadara
Martin Luther Pri	1.46	1.46	Makadara
Kimathi Pri	3.84	3.84	Kimathi
Uhuru Pri	3.20	3.20	Uhuru
Makongeni Pri	1.12	1.12	Makongeni
St. Joseph Apudo Pri	2.89	2.89	Makongeni
Heshima Pri	1.25	1.25	Shauri Moyo
Ainsworth Pri	2.40	2.40	Eastleigh
New Eastleigh Pri	4.86	4.86	Eastleigh
Pangani Pri	7.08	7.08	Eastleigh
Race Course Pri	4.65	4.65	Eastleigh
Juja Road Pri	3.77	3.77	Eastleigh
Muthurwa Pri	2.15	2.15	Landhies
Baraka Pri	3.00	3.00	Buruburu
Blessed Sacrament Church	1.97	1.97	Buruburu
Harambee Pri	4.18	4.18	Buruburu
Bidii Prim	3.67	3.67	Buruburu
Doctor Aggreys Pri	0.91	0.91	Race course
St. Bridged Pri	1.12	1.12	Race course
Muslim Pri	3.90	3.90	Race course
Park Road Pri	1.33	1.33	Ngara
New Pumwani Estate Prim	0.85	0.85	New Pumwani
<b>Secondary Schools</b>			
Huruma Girls	3.36	3.36	Bahati
Eastleigh High School	4.86	4.86	Eastleigh
Aquinas Boys School	6.66	6.66	Bahati
St. Anne's Girl Sec	2.86	2.86	Bahati
Kamukunji Sec	0.59	0.59	Landhies
Our Lady of Mercy Pri & Sec	2.37	2.37	Shauri Moyo
Ofafa Jericho Education Complex	9.35	9.35	Jericho
Nile Road Special Sec School	1.81	1.81	Lumumba
Muslim Boys Sec	1.87	1.87	Ngara
Buruburu Sec	5.68	5.68	Buruburu
Pumwani Boys High	3.24	3.24	Starehe
Pangani Girls	7.08	7.08	Eastleigh
Starehe Boy Centre	16.73	16.73	Starehe

Uhuru sec	4.8	4.8	Uhuru
<b>Tertiary institutions</b>			
Nairobi Tech Institute	1.81	1.81	Ngara
Institute of fine art	1.03	1.03	Buruburu
S.O.S Technical Institute	2.29	2.29	Buruburu
YMCA	1.16	1.16	Shauri Moyo
CIT College	2.95	2.95	Majengo
KAG University	3.11	3.11	Buruburu
<b>Total</b>	<b>157.4</b>	<b>157.4</b>	

### b. Expanding Land Area of Existing Facilities

This strategy applies for existing schools earmarked for upgrading and densification but whose current land areas are not adequate for such proposals. The facilities include St. Patrick, Dr. Kraft and St. John Primary Schools. The table below shows the proposal details.

Table 38: Expanded Schools

Name	Current Gross Area (Ha)	Net Proposed Area (Ha)	Net Gain (Ha)	Location
St Patrick Pri	1.75	3.54	1.79	Maringo
Dr. Kraft Pri	2.58	3.87	1.29	Maringo
St. John Pri	1.68	2.26	0.58	Kaloleni
Morrison Pri	1.61	2.30	0.69	Bahati
Bahati Pri	2.00	2.65	0.65	Bahati
Pumwani Pri	2.70	3.74	1.04	Race course
Race Course	2.83	4.83	2	Race course
Kaloleni Pri	1.10	1.58	0.48	Kaloleni
<b>Total</b>	<b>16.25</b>	<b>24.77</b>	<b>8.52</b>	<b>-</b>

### c. Optimizing Use of Existing Space

This entails maximizing use of existing school spaces by densification. This can be achieved by increasing streams in selected institutions and encouraging high-rise development. Analysis at individual institutional level indicate that most of the schools are suitable for densification and subsequent stream increment.

In the primary schools, there are 720 streams cumulatively. The streams per class range between 1 and 5 depending on the school capacity. In order to narrow the gap between the demand and supply for education, 552 additional streams have been proposed. This accounts for 76% stream increment as illustrated in the table below.

Table 39: Stream Increment Proposals in Primary Schools

No.	School	2017 Enrolment	No. of classes	Existing streams		Proposed streams	
				Per class	Total	Per class	Total
1.	Bidii	1736	8	5	40	5	40
2.	Canon Apollo	448	8	1	8	4	32
3.	Our Lady Of Mercy	1153	8	4	32	4	32
4.	Harambee	1479	8	5	40	5	40
5.	St Michaels	1262	8	4	32	4	32
6.	Baraka	473	8	1	8	4	32
7.	St Pauls	278	8	1	8	4	32
8.	St Johns	949	8	3	24	4	32
9.	Kaloleni	781	8	2	16	4	32
10.	Rabai Road	1407	8	4	32	4	32

11.	St Annes	915	8	3	24	4	32
12.	Martin Luther	683	8	2	16	4	32
13.	Joseph Apudo	496	8	2	16	4	32
14.	St Patricks	349	8	1	8	4	32
15.	Dr Krapf	449	8	1	8	4	32
16.	Jogoo Road	335	8	1	8	4	32
17.	Ofafa Jericho	514	8	2	16	4	32
18.	Makongeni	428	8	1	8	4	32
19.	Nile Road Special	280	8	1	8	4	32
20.	Our Lady of Mercy	659	8	2	16	4	32
21.	Dr. Livingstone	1030	8	3	24	4	32
22.	Kimathi	2177	8	7	56	7	56
23.	Uhuru	1024	8	3	24	4	32
24.	New Pumwani	900	8	3	24	4	32
25.	Morrison	347	8	1	8	4	32
26.	Heshima	768	8	2	16	4	32
27.	Buruburu	1893	8	6	48	6	48
28.	Bahati	764	8	2	16	4	32
29.	Muthurwa	715	8	2	16	4	32
30.	Ainsworth	1138	8	4	32	4	32
31.	Dr. Aggrey	576	8	2	16	4	32
32.	Islamia	576	8	2	16	4	32
33.	Juja Rd	551	8	2	16	4	32
34.	Muslim Pri	313	8	1	8	4	32
35.	Parklands Pri	249	8	1	8	4	32
36.	Park Road	246	8	1	8	4	32
37.	Racecourse	174	8	1	8	4	32
38.	St. Brigids	119	8	1	8	4	32
	<b>Total</b>	<b>28,634</b>	<b>304</b>	<b>90</b>	<b>720</b>	<b>159</b>	<b>1,272</b>

Considering that the current population is at 28,634, and that this proposal will lead to accommodation of 50,880 primary students, the additional primary student population to be catered for is 22,246.

Secondary schools on the other hand have 296 streams, which have been increased to 412 streams, accounting for 39% increase. Therefore, an additional 116 streams have been proposed as shown in the table below.

Table 40: Stream Increment Proposals in Secondary Schools

No.	School	2017 Enrolment	No. of classes	Existing streams		Proposed streams	
				Per class	Total	Per class	Total
1.	Aquinas High School	1090	4	7	28	7	28
2.	Buruburu Girls	952	4	6	24	6	24
3.	Huruma Girls Secondary	538	4	3	12	5	20
4.	Makongeni Secondary	403	4	3	12	5	20
5.	Nile Road Girls	385	4	2	8	5	20
6.	Ofafa Jericho	731	4	5	20	5	20
7.	Our Lady Of Mercy	527	4	3	12	5	20
8.	St. Annes Girls	434	4	3	12	5	20
9.	St. Patricks Mixed	362	4	2	8	5	20
10.	St. Michael Secondary	335	4	2	8	5	20
11.	St Teresa's Boys	428	4	3	12	5	20
12.	Eastleigh High School	888	4	6	24	6	24
13.	Uhuru	257	4	2	8	5	20
14.	Kamukunji Sec	449	4	3	12	5	20

15.	OLM Girls Shauri Moyo	522	4	3	12	5	20
16.	Starehe Centre	1040	4	7	28	7	28
17.	Pangani Girls	2276	4	8	32	8	32
18.	Pumwani Boys	652	4	4	16	4	16
19.	Pumwani Girls	295	4	2	8	5	20
	<b>Total</b>	<b>12,564</b>	<b>76</b>	<b>74</b>	<b>296</b>	<b>103</b>	<b>412</b>

#### d. Integrating ECDCs with Primary Schools

It also is recommended that nursery schools be integrated within primary schools. This will facilitate sharing of common facilities such as playgrounds. It is worth noting that the Constitution separates the management of the ECDEs and Primary Schools. Therefore, despite the spatial integration, the two facilities will be managed and administered separately.

#### e. Provision of New Facilities

New schools have been proposed to respond to the deficit as shown in the table below:

Table 41: Newly Proposed Schools

Name	Net Proposed Area (Ha)	Net Gain (Ha)	Location
TVET College	1.19	1.19	Maringo
Nursery School	0.2	0.2	Maringo
Nursery school	0.27	0.27	Uhuru
Pri School	1.04	1.04	Gorofani
<b>Total</b>	<b>2.71</b>	<b>2.71</b>	

The plan further proposes the Introduction of ECDE facilities at court level, within the mezzanine floors of residential blocks. In this case, ECDEs are expected to use open spaces proposed within the courts.

#### f. Registration of Land

In an effort to address concerns of encroachment into school land, surveying, registration and obtaining of ownership documents is recommended for all public schools. This will reaffirm the security of tenure for such institutions. The proposed educational facilities are further shown in the figure overleaf.

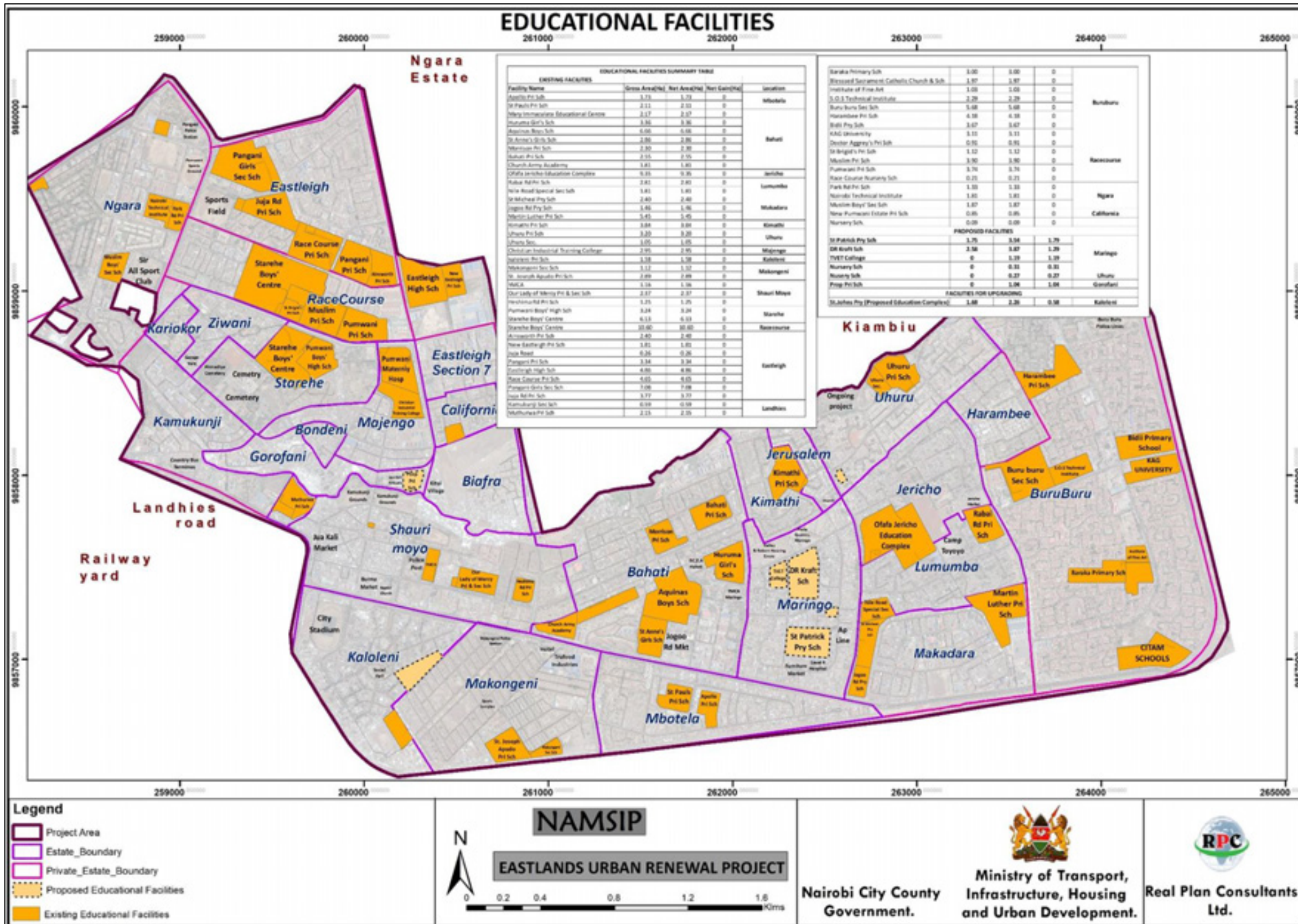


Figure 77: Educational Facility Proposals

## 4.8 HEALTH

Eastlands is served by a range of health facilities distributed as follows: 4 hospitals, 11 health centers, 7 dispensaries, 2 nursing homes and 2 clinics. Key challenges facing health facilities are:

1. Inadequately equipped hospitals, health centres and dispensaries
2. Poor maintenance of the health facilities in terms of equipment and drugs.
3. Understaffed health facilities.

The distribution of health centers within an area is determined by different factors: i.e. land availability, human settlements and population. According to the Health Standards (2006), the serving population for a Health Centre and a level 4 hospital are 40,000, and 330,000 respectively. The table below shows a deficit analysis based on the projected population to the year 2035.

Table 42: Surplus/ Deficit analysis of Health Facilities

Health Facility	Population (2035)	Existing	Surplus (+) Deficit (-)
Health centers	563,618	10	-3
Level 4 (Primary) Hospital		0	1

In consideration of the above and the vision of a renewed Eastland, the following are proposed:

### 1. Retention of Existing Facilities

The following facilities are proposed for retention taking into account the high public investment and the fact that these facilities are already established.

Table 43: Retained Health Facilities

No.	Name	Area (Ha)	Location
1.	Pumwani Maternity		Majengo
2.	Jericho Antenatal		Jericho
<b>Public Health centres</b>			
1.	Kaloleni HC	0.24	Kaloleni
2.	Makongeni HC		Makongeni
3.	Mbotela HC		Mbotela
4.	Bahati HC	0.41	Maringo
5.	Jericho HC	0.46	Lumumba
6.	Pumwani HC	0.22	Pumwani
7.	Jerusalem HC	0.55	Uhuru
8.	Ofafa Clinic	0.15	Maringo
9.	Makadara HC	0.37	Makadara
10.	NCCG Clinic Pangani	0.16	Pangani
<b>Private</b>			
1.	Metropolitan Hospital	1.96	Buruburu
2.	Jamaa Mission Hospital	0.52	Uhuru
3.	Guru Nanak Hospital	0.31	Ngara
4.	Mary Immaculate H.C	0.69	Bahati
5.	Mercy Sisters Dispensary	1.26	Bahati

### 2. Upgrading of Existing Facilities

The deficit analysis above indicates shortage of 3 health centres and a hospital by 2035 due to the expected increase in population. However, taking into account the scarcity of land against the many competing land use there is minimal space available for introduction of new

facilities. Therefore, expansion, upgrading and equipping of existing facilities is recommended as shown in the table below. All public clinics, dispensaries and health centres will be equipped to fit the status of a health centre while the Ofafa Clinic conferred the status of a level 4 hospital.

Table 44: Upgraded Health Facilities

Health Facility	Requirements
1. Jericho Health Centre 2. Makongeni Clinic 3. Mbotela Clinic 4. Bahati HC 5. Makongeni 6. Pumwani HC 7. NCCG Clinic Pangani 8. Makadara HC 9. Jerusalem HC	Equip to fit status of Health Centre <ul style="list-style-type: none"> <li>• 125 hospital personnel</li> <li>• Placenta pit/ composite pit</li> <li>• Labor ward</li> <li>• 16 in-patient beds</li> <li>• 2 staff houses</li> <li>• Water storage tanks</li> </ul>
10. Ofafa Clinic	Upgrade to a Level 4 Hospital with the following facilities: <ul style="list-style-type: none"> <li>• 125 health personnel</li> <li>• Placenta pit/composite pit</li> <li>• Labor ward</li> <li>• 16 in-patient beds</li> <li>• 2 staff houses</li> </ul>

### 3. Expansion of land areas

In line with the proposed upgrading of the health facilities additional space will be required and has been provided for as tabulated in the table below.

Table 45: Land Expansion for Upgraded Health Facilities

Name	Current Gross Area (Ha)	Proposed Net Area (Ha)	Net Gain (Ha)	Location
1. Jericho HC	0.46	0.86	0.4	Jericho
2. Pumwani HC	0.22	0.39	0.17	Bonden
3. Mbotela HC	0.05	0.21	0.16	
4. Maringo HC (Upgraded to Level 4 Hospital)	0.15	3.35	3.2	Maringo
<b>Total</b>	<b>0.88</b>	<b>4.81</b>	<b>3.93</b>	

### 4. Registration of Land

Land grabbing and conflict are a common occurrence in Eastlands and Kenya at large which has consequently hindered growth at all levels. In this light, surveying, registration and obtaining of ownership document for all public health facilities is recommended.

The facilities are further mapped out overleaf.

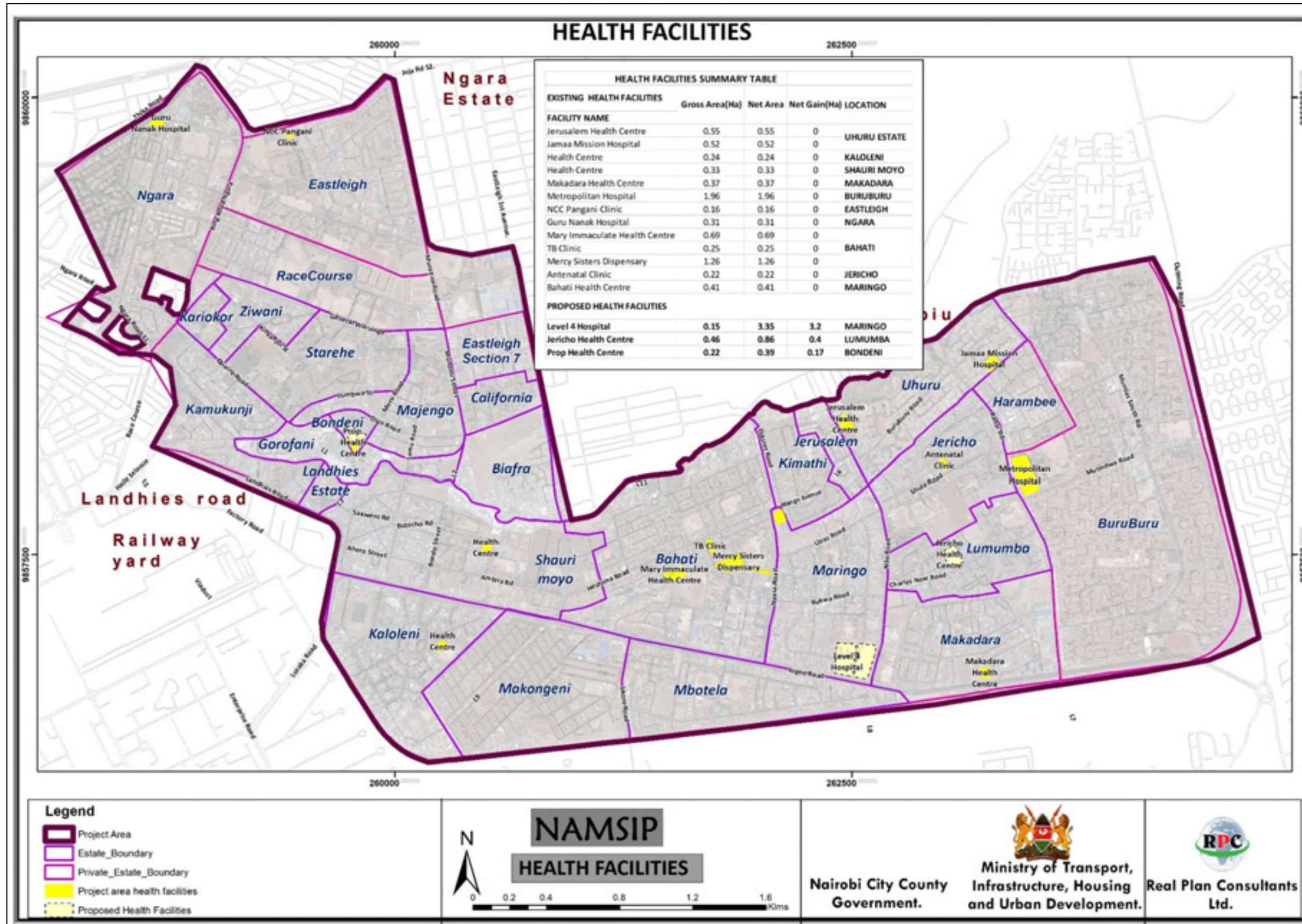


Figure 78: Health Facility Proposals

## 4.9 SOCIAL HALLS

The Key challenges identified in the social halls are:

- a. Physical dilapidation of structures due to old age and negligence
- b. Failure of the facilities to meet the emerging needs of the changing modern population. The blight can be attributed to low uptake of technology and minimal diversification in terms services available.
- c. Most facilities cannot accommodate large numbers due to their small capacities
- d. The social halls are inadequately equipped
- e. The facility in Maringo has been converted to a nursery school
- f. Estates such as Shauri Moyo, and Maringo lack public social halls
- g. Uhuru social hall construction was derailed due to land conflicts

The main objective is to revamp the areas by redefining the functions of the social halls to promote efficiency, attract investments, draw more users and maximize socio-economic benefits. In line with this, four strategies have been employed:

1. Retaining the existing facilities
2. Expanding land areas for selected facilities
3. Provision of new facilities
4. Upgrading social halls to Community Resource and Empowerment (CORE) centres

The strategies are detailed out below.

### 1. Retention of Existing Facilities

Like other existing public facilities, retaining of already established social halls is recommended. They are listed below:

No.	Name	Area (Ha)	Location
1.	Pumwani	0.53	Gikomba
2.	New Pumwani Resource Centre	0.14	New Pumwani/California
3.	Kaloleni	0.73	Kaloleni
4.	Bahati	0.96	Bahati
5.	Lumumba	0.35	Lumumba
6.	Tom Mboya	0.41	Buruburu
7.	Jericho	0.40	Jericho
8.	Mbotela	0.60	Mbotela
9.	Kariokor	0.40	Kariokor
10.	Uhuru	0.40	Uhuru

- NB:
1. The land set aside for Uhuru Social Hall is contested which has consequently derailed its construction.
  2. Space for construction of a social hall in Maringo has been earmarked but implementation has not commenced.

### 2. Expanding Land Areas

This entails increasing land currently designated for Lumumba Social Hall from 0.35 ha to 0.57 ha to meet the requirements of proposed expansion and upgrading.

### 3. Provision of New Facilities

This will be undertaken in Makongeni estate which is currently not served by a social hall. Land measuring 0.61 ha has been earmarked for the purpose of establishing a social hall.

#### 4. Upgrading to CORE centres

The proposal alludes to the transformation of social halls (existing and newly proposed) to Community Resource and Empowerment Centres also known as CORE centres. The main objective is to improve the quality of life by providing facilities for empowering the community's (especially the youth's) social and economic development. Core centres are envisioned to promote talent development; social integration and cohesion; youth empowerment; youth employability; and skill development.

CORE centres will comprise a combination of readily accessible public informal and flexible spaces; group meeting rooms, IT rooms, social areas, restaurants, advice centres, dance studios, conference rooms, sport halls, changing facilities, theatre, music room, recording studios, business enterprise units, gyms, libraries, homework centre, civic and intervention services.

Notably, some of the existing social halls such as Kaloleni, Kariokor and Jericho social hall have already developed the CORE centre concept. However, there is need to modernize and facilitate uptake of technology to enhance efficiency and capacity to respond to emerging needs.

Taking into account the scarcity of land in the project area, it is important to note that each centre is not expected to accommodate all the functions. The number of functions will be influenced by the achievable land capacity.



*This is a case study of a CORE centre, The Lighthouse Young Peoples Centre in Birmingham. The facility for 13 – 19 year olds is a combination of flexible public spaces: café, IT rooms, meeting room and advice centres at ground level. More specialist and cellular accommodation is located on the upper floor, including a 4-court sport hall incorporating performance and conference uses, dance studio, changing facilities, music rooms including a recording studio.*

#### 4.10 SECURITY

Enhancement of law and order is partly by achieved by the presence of a Law Court, Deputy and Assistant County Commissioners offices, police stations, police posts and chiefs' camps in the area. However, cases of insecurity in the project area continue to emerge with the growing population. Therefore, a fully functional police service is vital for maintenance of peace, provision of security, and enforcement of the law. Pursuant to this, the following is proposed:

## 1. Retain Existing Facilities

The following facilities will be retained and upgraded to improve their capacity and effectiveness:

Table 46: Retained Security Facilities

Facility	Name	Location
Police Stations	1. Jogoo road Police Station	Makadara
	2. Makongeni Police Station	Makongeni
	3. Shauri Moyo Police Station	Shauri Moyo
	4. Pangani Police Station	Pangani
	5. New Pumwani Police station	New Pumwani
	6. Buruburu Police Station	Buruburu
Chief's camps/offices	1. Shauri Moyo Chief's camp	Shauri Moyo
	2. Makadara chief's office	Makadara
	3. Mbotela chief's office	Mbotela
	4. Gorofani/Bondeni Ass. chief's office	Majengo
	5. Kaloleni chief's camp	Kaloleni
	6. New Pumwani chief's office	Biafra
	7. Harambee Chiefs Camp	Harambee
	8. Lumumba chief's office	Lumumba
Law courts	Makadara law courts	Makadara

## 2. Provision of New Facilities

To enhance enforcement of law and order and accessibility of security services by all residents the new police posts are to be established in Mbotela and Bahati as shown in the table.

Table 47: Newly Proposed Police Posts

Estate	Proposals	Remarks
Mbotela	Establish a Police Post	To occupy 0.14 Ha
Bondeni	Establish a police post at the Chief's Camp	

## 3. Expansion of Land Area

This proposal has affected Jogoo Road Police Station located at Makadara secondary node. The new status and functions of the node has necessitated the expansion of the facility to befit the status of the node. However, the current location offers no room for expansion hence a new location (1 Ha) within the node has been designated to serve as an extension of Jogoo Road Police Station.

## 4. Adoption of ICT technology in the police department

This is meant to enhance efficiency in crime detection and response. This will involve installation of CCTV cameras at strategic points along the streets.

## 5. Upgrade all police stations, Chief/AP Posts to Police Posts with adequate personnel and equipment.

The facilities to be provided and upgraded are tabulated below and mapped out overleaf

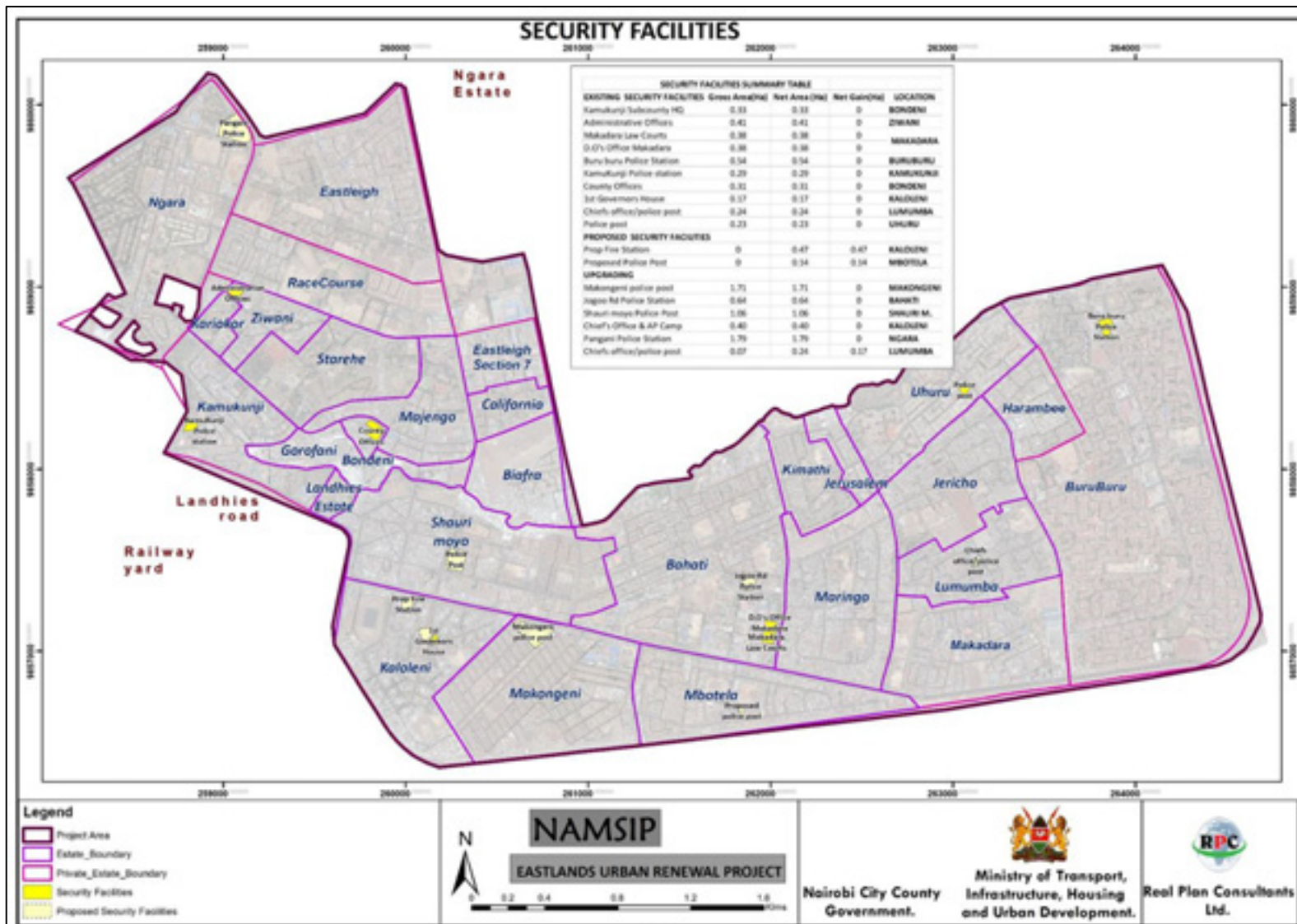


Figure 79: Location of Proposed Security Facilities

## 4.11 FIRE SERVICES

Presently, the City is served by two fire stations located in the CBD and Industrial Area. The City Centre station is the most relied upon since it is better equipped. In effort to bridge the gap, two more fire stations are under construction in Waithaka and Kangundo road. However, with anticipated increase in population in the project area and the larger Nairobi, these facilities are inadequate.

Other challenges identified include:

1. Frequent fire breakouts in the markets especially Gikomba and Uhuru Markets
2. Inadequately equipped facilities in terms of personnel, fire engines and response among others.
3. Poor maintenance of the present fire equipment
4. Inaccessibility due to narrow roads, encroachment and heavy traffic

The following is proposed

### 1. Upgrade the CBD Station

It is proposed that the facility located in the City Centre be upgraded to a National Fire Agency composed of the numerous departments: planning, disaster management, hazardous aerial management, disaster rescue, emergency medical service, civilian coordination, rescue command, secretariat, personnel, fire investigation, training and education. The National Fire Agency will support and coordinate other facilities nationwide.

The figure below shows an example of a standard fire station design. The newly constructed station should accommodate such facilities to ensure adequate disaster preparedness.

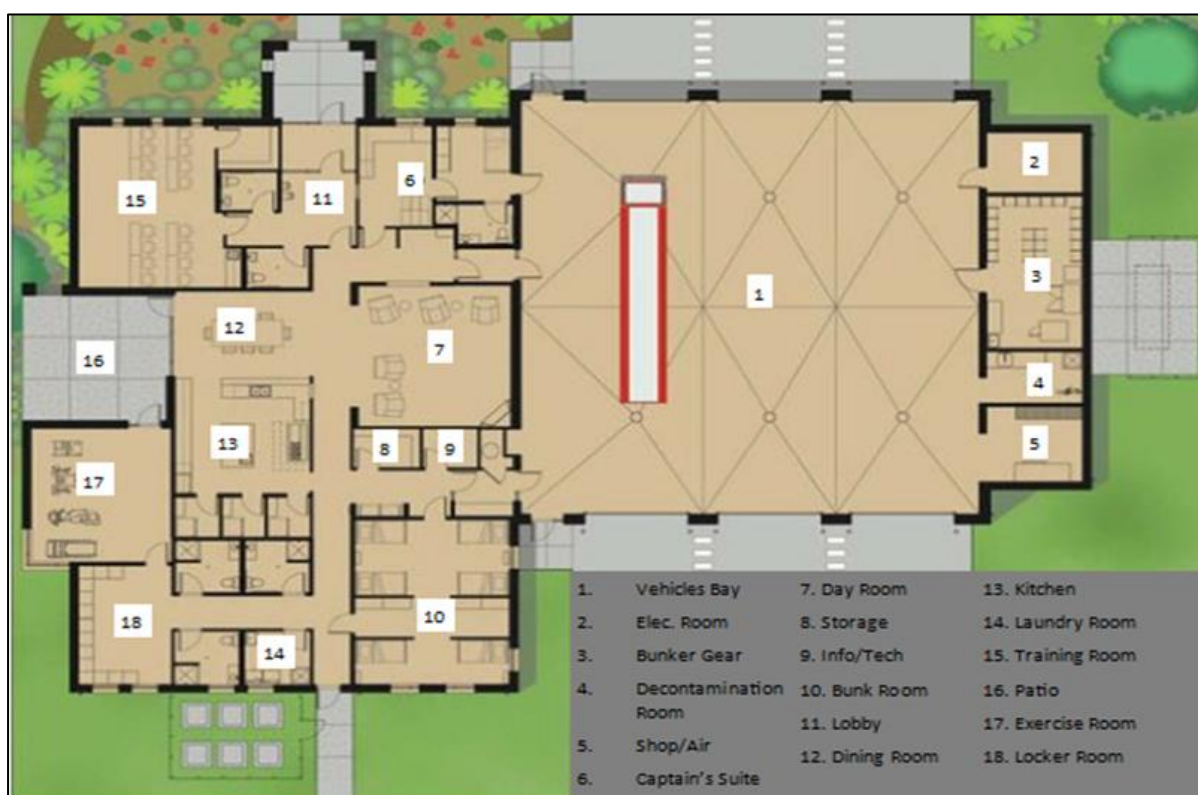


Figure 80: Layout of a Standard Fire Station

2. Provide a new facility - It is proposed that a new fire station is established in Kaloleni along Jogoo Road to counter the frequent fire outbreaks in the project area.

3. Installation of fire hydrants and engines within sub-county offices in Bondeni and Maringo.
4. Encourage installation of firefighting tools (fire extinguishers) in public places such as offices, schools, churches.
5. Increasing accessibility in fire prone areas such as Gikomba through road widening and establishment of missing links.
6. Promotion of awareness and sensitization programs on risks of fires, mitigation and preparedness measures.

## 4.12 RECREATION

A recreational facility is an area of natural, semi-natural or planted space set aside for human enjoyment or for the protection of wildlife or natural habitat. The project area has a few open spaces most of which are not properly maintained.

City Stadium is the only stadium in Eastlands. It has a seating capacity of 15,000 people. It is under Kenya Football Federation as it hosts various national and international football tournaments. Because of its current state, there is need for upgrade. Various improvements have been made for the rest of the recreational facilities as well.

### Proposals

#### a) Retention of Existing Facilities

Given the scarcity of recreational spaces, a general strategy applied is to retain as many of the existing facilities as possible. This applies to facilities that are currently developed and under active use. Some of the existing facilities have for long been protected from grabbing by the public. Others are remnants of once bigger spaces hence the need to retain them and expand them where possible. The playgrounds to be retained are shown the table below.

Table 48: Playgrounds in Eastlands

Playground/Stadia/Recreational facility	Estate	Area Ha
Kamukunji ground	Shauri Moyo	3.5
Camp Toyoyo	Lumumba	3.5
Uhuru Playfield	Uhuru	0.7
Bahati Playfield	Bahati	0.5
Ziwani Playfield	Ziwani	0.9
City Stadium	Kaloleni	5.0
Sir Ali Sport Club	Ngara	3.9
Nairobi Technical Grounds	Pangani	4.4
Kamukunji Grounds	Shauri Moyo	3.4
Pumwani Sports Grounds	Ngara	2.7
Goa Institute Grounds	Ngara	2.6
Majimbo Playground	Kaloleni	1.8
Makadara Grounds	Makadara	1.7
Sports Complex	Makongeni	1.5
Ziwani Soccer field	Ziwani	0.8
Bahati Playground	Bahati	0.6
Uhuru Social ground	Uhuru	0.5
Kaloleni basketball Court	Kaloleni	0.4
Desa Ground	New Pumwani	0.2
Playground	Kimathi	0.8
San Siro Grounds	Majengo	0.5
<b>Total</b>		<b>39.9</b>

### b) Expansion of Existing Facilities.

Following the replanning of the nearby housing land, land has been availed for the expansion of some of the major facilities as shown in the table below.

Table 49: Recreational Facilities Proposed for Expansion

Estate	Recreational Facility	Existing Area	Proposed Area	Area Gained
Kaloleni	City Stadium	5.02	7.38	2.64
Shauri Moyo	Kamukunji Grounds	3.40	4.51	1.11
Lumumba	Camp Toyoyo	1.41	3.50	2.09
Kaloleni	Majimbo Playground	1.80	2.9	1.1

### c) Newly Proposed Facilities

The newly proposed recreational facilities are tabulated below.

Table 50: Newly Proposed Recreational Facilities

Estate	Proposals	Strategies	Allocated Area
Makongeni	Establish Makongeni Sports Complex	<ul style="list-style-type: none"> <li>✓ Standard playfield of dimension 90 m x 45 m with shades</li> <li>✓ Introduce indoor games; table tennis, boxing, judo, taekwondo, gymnastics, skating and creative arts</li> </ul>	1.54
Maringo	<ul style="list-style-type: none"> <li>Establish two public parks</li> <li>Establish a recreational park within the secondary CBD</li> </ul>	<ul style="list-style-type: none"> <li>✓ Introduce outdoor games</li> <li>✓ Place benches and encourage tree planting with the park</li> <li>✓ Introduction of outdoor and indoor activities</li> <li>✓ To include playfields</li> </ul>	<ul style="list-style-type: none"> <li>1.09</li> <li>0.98</li> </ul>
<b>Total</b>			<b>3.61</b>

### d) Improvement of Existing Facilities

Other than the allocation of additional land, upgrade of some existing facilities is proposed. Improvements by way of upgrade of ten existing facilities is proposed as tabulated below

Table 51: Recreational Facilities Proposed for Improvement

Estate	Proposals	Strategies
Kaloleni	Modernize City stadium	✓ Increase the capacity from 15,000 (current) to 60,000.
	Establish a Sports Academy	✓ Nurturing local talent in football
Bahati	Establish a convertible playfield	✓ Expand the existing
California	Upgrade existing playground	✓ Fencing, lighting and acquisition of artificial turf
Kariokor	Establish a playfield	✓ Establish a football pitch with shades
Ziwani	Upgrade Ziwani Playfield	✓ Renovation of the pitch
Makadara	Establish a sport academy	✓ Training of volleyball and indoor games such as chess and skating.
Lumumba	Upgrade Camp Toyoyo Stadium to a standard stadium	<ul style="list-style-type: none"> <li>✓ Seating and increase pitch size</li> <li>✓ 15,000 seating capacity</li> </ul>

		✓ Establish a football playfield
Uhuru	Upgrade Uhuru Basketball Pitch	✓ Renovation of the pitch ✓ Addition of shades
Kaloleni	Establish a monumental park	✓ Construct a monument for the first parliamentary meeting ✓ Additional facilities such as cafes and curio shops
Shauri Moyo	Rehabilitation of Kamukunji Grounds	✓ Establish a Sabasaba monument ✓ Clean and fence the premises

The city stadium is proposed to be upgraded to a level that it has a football pitch, expanded seating arena, safety, security facilities (CCTVs), circulation networks and parking, player and referees changing rooms, lighting, spectator facilities, canteen, media centers, medical facilities and a Sports Academy.

The figures below show samples modern stadia to whose standards City Stadium should be



Figure 81: A Model Stadium

The above-pictured stadium was upgraded to a capacity of 94,736. The upgrade included an extended upper tier around the stadium, additional two executive suites, an encircling roof, new changing room facilities and new floodlights. Currently, it is the biggest stadium in Africa. It has the following features: field size of 105 m x 68 m, grass surface and a 10,246-reserved seating capacity for the press and VIPs.

The proposed Sports Academy at City Stadium should provide for living expenses (transport to training sessions, meals), coaching, medical assessments, screening and interventions, life skills and career counselling and guidance, information services, international exposure (training camps, competitions, exchange programmes) and talent identification, development and nurturing

Other proposals suggested include:

- Introduction of new sports such as rugby, volleyball, skating, chess and high jump, which will lead to employment opportunities for the youth.
- Hiring of the grounds for private events to generate revenue for the County Government.
- Introduction of both indoor and outdoor tourist activities e.g. horseback riding, cycling, running, painting, photography, boxing, table tennis, bowling, swimming and archaeological and historical research.



Figure 82: A Sample Neighborhood with an Open Space

The major recreational facilities are shown in map below.

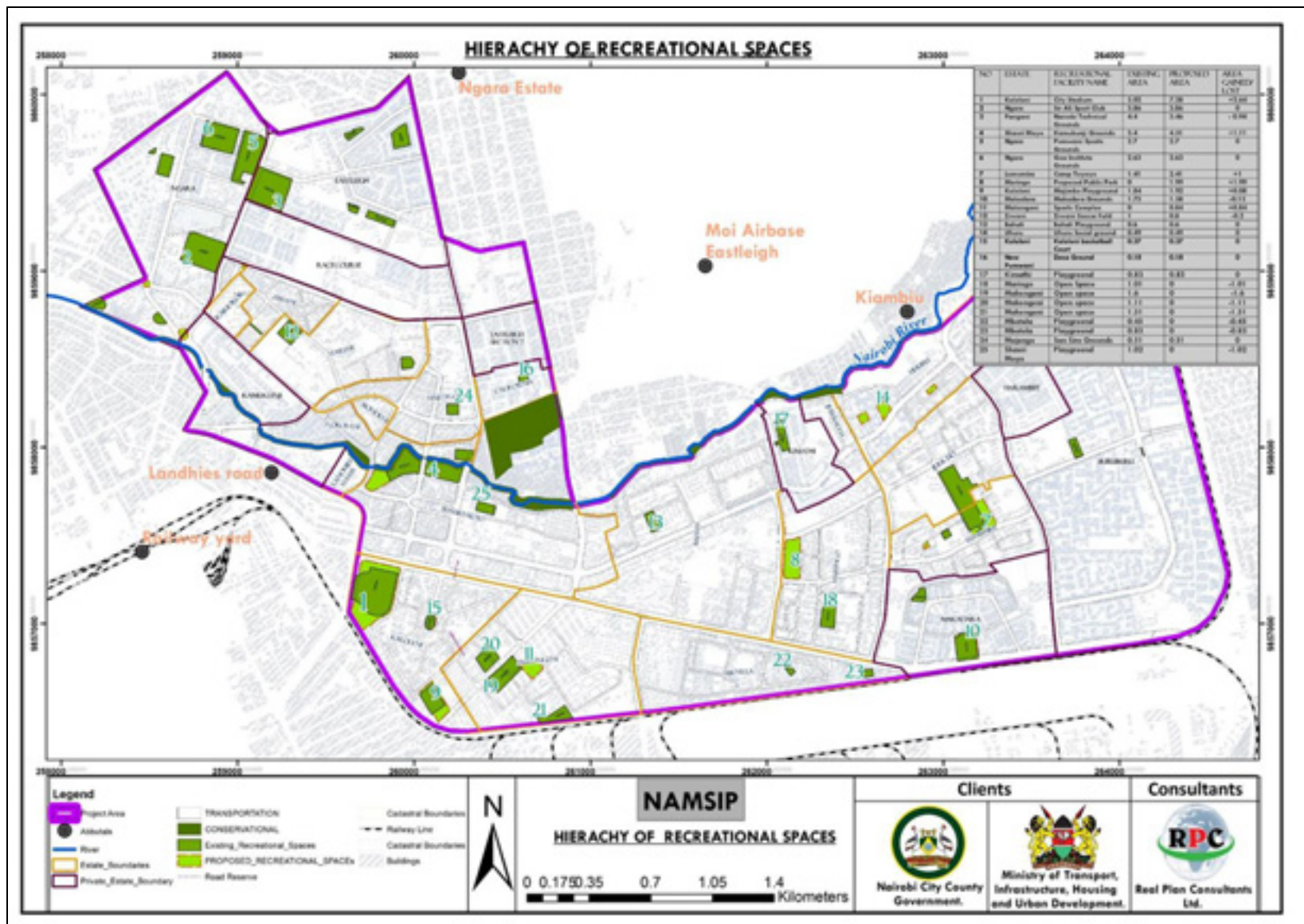


Figure 83: Proposed Recreational Facilities

## 4.13 OTHER FACILITIES

### Rehabilitation Centres

Presently, the project area is served by three rehabilitation centres located in Bahati and Pumwani Social Halls and YMCA in Maringo. As earlier mentioned, the area's population is on a steady increase which has exerted tremendous pressure on these facilities hence the need to provide more. To bridge this gap, the following has been recommended

#### 1. Retaining and Upgrading of Existing Centres

This entails retaining and upgrading facilities at Bahati and Pumwani Social Hall by equipping them with requisite facilities to improve the quality of the service offered as well as increase carrying capacity.

#### 2. Provide New Rehabilitation Centres

Taking into account the deficit noted above, two new facilities have been proposed in Lumumba and Majengo area. Land earmarked for this purpose in Lumumba is 0.45 Ha while 0.3 Ha is set in Majengo as shown in the table below.

Table 52: Newly Proposed Rehabilitation Centers

Estate	Allocated Land (Ha)
Makadara	0.5
Majengo	0.3
<b>Total</b>	<b>0.8</b>

### Elderly Homes

Demographic data reveals an increase in aged population in the project area. Coupled with the high poverty levels, it is unlikely that the elderly access sufficient medical care and other necessities. Therefore, two homes for the elderly will be developed in Majengo (0.3 Ha) and Bahati (0.37 Ha) areas to serve the large Eastlands population.

Estate	Allocated Land (Ha)
Bahati	0.37
Majengo	0.31
<b>Total</b>	<b>0.68</b>

### Libraries

Eastlands is served by three libraries situated in Buruburu, Kaloleni and Makadara. The libraries are however inadequate, considering the prevailing demand and the rapidly changing needs especially in terms of technology advancement. In order to improve the situation, the following are recommended.

- Upgrade Makadara and Buruburu libraries to modern standards by increasing seating capacity and collection space.
- Ensure provision of library services in CORE centres and educational institutions
- Formulation of policies to enhance proper management of the library.

### Cemeteries and Crematoria

Traditionally, most communities in Kenya bury the dead in the ancestral/countryside home. However, burying the dead in the City is becoming increasingly popular due to the changing socio-economic characteristics and cultural beliefs. The main cemetery in Nairobi which also serves Eastlands is the Lang'ata Cemetery. This facility was declared full more than 2 decades ago but is still in use due to the unavailability of an alternative site.

There also are 4 small cemeteries within the project area; Kariokor World War II, Muslim, Bohra Qabrastan and Aga Khan Shia Imami Khojia Ismaili Cemetery. These facilities are in good condition and still in use.

Taking the above into account, the following is recommended:

**a) Retention of the Existing Facilities**

The following cemeteries will be retained to serve their designated purpose. It is important to note that the Kariokor War Cemetery was gazetted in 2014 as site of historical interest.

Table 53: Retained Cemeteries

<b>Cemetery</b>	<b>Estate</b>	<b>Area (Ha)</b>
Kariokor World War II	Starehe	1.6
Muslim cemetery	Starehe	6.6
Bohra Qabrastan	Starehe	0.8
Aga Khan Shia Imami Khojia Ismaili	Starehe	0.8

**b) Purchase of New Site**

Development of cemeteries demands a large piece of land which cannot be availed within the project area. Therefore, the NCCG is expected to acquire adequate land for a major city cemetery since most of the old cemeteries are full. The map below shows the location of the existing cemeteries and proposed social halls

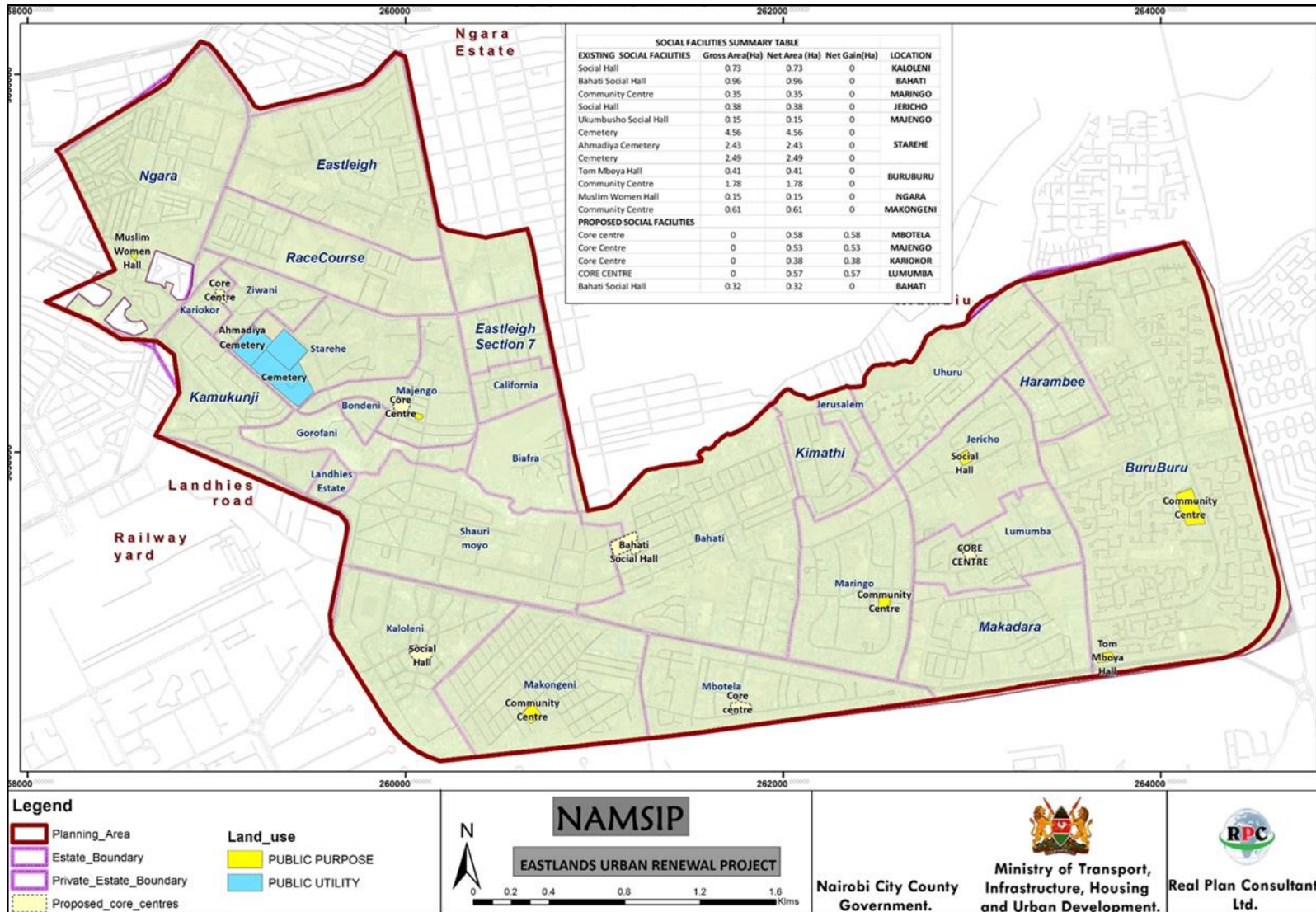


Figure 84: Location of Cemeteries and Proposed CORE Centres

#### **4.14 ENVIRONMENTAL MANAGEMENT**

The study findings demonstrated that there were significant environmental setbacks that required necessary attention hence a comprehensive environmental strategy. The strategy is anchored on Article 42 of the Constitution of Kenya (2010) which provides for the right to a clean and healthy environment. It is also based on guiding principles as provided for in the Environmental Management and Coordination Act (1999): of special importance is the principle of participation in development of policies, plan and processes for the management of environment.

The general environmental concerns that cut across the projects study area include:

- Poor solid waste disposal and management
- Poor drainage of storm water
- Inadequate coverage of water
- Inadequate sewer reticulation
- Pollution of Nairobi River
- Encroachment of Nairobi river riparian reserves
- Air pollution by dust, motor vehicle exhaust fumes, unconventional disposal of solid wastes by burning and industrial emissions
- Noise pollution by touting and public service vehicles hooting e.g. at Jogoo Road.
- Fires especially at the informal settlements and markets e.g. Gikomba markets latest incident in the year, 2018 in which property of unknown value was lost. Lives were also lost.

##### **Nairobi River**

The river requires regeneration to provide an ample recreational site. Pollution from solid waste dumping, encroachment of riparian land, untreated effluent/industrial discharge have all affected the river water quality.

##### **Storm Water Drains**

Poor storm water drainage is a major problem. Many of the existing drains require repairs and protection from all forms of encroachment. New buildings should also provide conclusive storm water management designs for approval by the County Government

##### **Motor Vehicle Exhaust Emissions**

Population increase in Nairobi's Eastlands area has led to the increase of private cars and PSVs which generate so much fumes beyond environmental sustainability. The explosion of car ownership coupled with people cooking indoors on wood-fired stoves, is creating an urban health crisis already estimated by the UN to be killing 776,000 globally people a year. If unchecked, within a generation it is likely to kill twice as many annually, with devastating costs to public services and economies.

In response to the highlighted issues, various environmental management strategies have been proposed as outlined in the matrix below.

Table 54: Environmental Management Matrix

Key issues	Objective	Strategy	Action plans/areas	Actors	Time frame
Poor solid waste management.	<ul style="list-style-type: none"> <li>To reduce environmental degradation caused by poor solid waste management</li> <li>To identify waste disposal sites their capacity and use</li> <li>To come up with an efficient and functional solid waste management system.</li> <li>To recover energy and resources from wastes.</li> </ul>	<ul style="list-style-type: none"> <li>Identification of waste sources.</li> <li>Involvement of all stakeholders in environmental conservation and management.</li> <li>establishment of sorting point in the residential estates</li> <li>Establishment of compost pits</li> <li>Enhance Waste separation at source.</li> <li>Compositing of organic waste.</li> <li>Recycling of inorganic waste.</li> <li>Strategically locate dumpsites.( The current dumpsite is illegal- The county government does not a valid waste disposal license from NEMA)</li> </ul>	<ul style="list-style-type: none"> <li>Provision of waste collection bins in the CBD</li> <li>Promote waste reuse and recycle and reduction by promoting waste sorting.</li> <li>Conducting public awareness on waste disposal and management.</li> <li>Public awareness on waste separation (all residential areas)</li> <li>Training on compositing procedure (all residential areas)</li> <li>Capacity building on waste recovery</li> <li>Increase the number of waste collection trucks</li> <li>Provision of proper protective equipment for waste collectors</li> <li>Enforce county by-laws</li> <li>Development of New landfills</li> <li>Improvement of collection and transportation system.</li> </ul>	<ul style="list-style-type: none"> <li>Nairobi City County Government</li> <li>NEMA</li> <li>Individuals</li> <li>Private waste collectors.</li> <li>Corporations.</li> <li>Community based organization.</li> </ul>	Short term
Inadequate and blocked storm water drainage channels.	<ul style="list-style-type: none"> <li>To provide for an efficient storm and surface water drainage.</li> <li>To provide for surface drains.</li> </ul>	<ul style="list-style-type: none"> <li>Identification of natural drainage channels</li> <li>Enhance disaster preparedness to reduce loss of life and property during flooding.</li> <li>Construct storm water retention facilities.</li> </ul>	<ul style="list-style-type: none"> <li>Construction of drainage channels</li> <li>Regular opening of drainage channels blocked by waste to reduce flooding during rainy season.</li> <li>Planting trees to reduce surface runoff.</li> </ul>	<ul style="list-style-type: none"> <li>Nairobi City County Government</li> </ul>	Medium term

Pollution of Nairobi River.	<ul style="list-style-type: none"> <li>To provide for the conservation and management of water resource</li> <li>To identify sources of pollutants.</li> </ul>	<ul style="list-style-type: none"> <li>Control and buffer water sources from pollutants</li> <li>Restrict human activities from the river resource.</li> <li>Identification of pollutants/polluters</li> </ul>	<ul style="list-style-type: none"> <li>Reclaim riparian reserve of the entire river.</li> <li>Observe riparian way leave</li> <li>Enforce polluter pay principle</li> <li>Form a committee to check and oversee pollution of the rivers and other water resources</li> </ul>	<ul style="list-style-type: none"> <li>WRA.</li> <li>NEMA.</li> <li>CBOs</li> <li>Residents.</li> </ul>	Short term
Inadequate sewer network coverage in the study area in terms of capacity.	<ul style="list-style-type: none"> <li>To provide for the development of an efficient sewage management system.</li> </ul>	<ul style="list-style-type: none"> <li>Extend the sewer network to Entire Eastlands area</li> </ul>	<ul style="list-style-type: none"> <li>Undertake feasibility study for greater Nairobi sewerage system</li> <li>Increase the sewerage network of greater Nairobi.</li> </ul>	<ul style="list-style-type: none"> <li>Nairobi county government</li> <li>Donors.</li> <li>Agencies.</li> <li>NAWASCO</li> </ul>	Long term.
Noise pollution at the bus stops especially along Jogoo road.	<ul style="list-style-type: none"> <li>To reduce noise levels to acceptable limits</li> </ul>	<ul style="list-style-type: none"> <li>Erect billboards showing the effects of unnecessary hooting.</li> <li>Decongest the bus parks through improved parking design.</li> <li>Provide designated motorcycle parking.</li> </ul>	<ul style="list-style-type: none"> <li>Licensing of the noise places</li> <li>Introduction of stiff fines and penalty</li> <li>Enforcement of noise regulations</li> <li>Involve stakeholders in noise control efforts.</li> </ul>	<ul style="list-style-type: none"> <li>Nairobi County government</li> <li>NEMA</li> <li>Taxi Operators</li> <li>Matatu Operators</li> <li>Transport SACCOs.</li> </ul>	Long term.
Air pollution e.g. Landhies road and Kariokor	<ul style="list-style-type: none"> <li>To reduce air pollution.</li> </ul>	<ul style="list-style-type: none"> <li>Erect billboards illustrating the effects of air pollution.</li> <li>Promote utilization of gas as a clean source of energy in households.</li> </ul>	<ul style="list-style-type: none"> <li>EIA for development projects and annual audits.</li> <li>Discourage burning of industrial waste.</li> <li>Public health inspections and installation of incinerators.</li> <li>Encourage use of LRTs and PSVs</li> </ul>	<ul style="list-style-type: none"> <li>NEMA</li> <li>Ministry of Environment</li> <li>Ministry of industrialization</li> </ul>	Short term.

			<ul style="list-style-type: none"> <li>• Establishing scheduled public transport and diometric routing system</li> <li>• Developing an integrated transport system supported by feeder and trunk system</li> <li>• Motor Vehicle inspections to wade off un-roadworthy vehicles.</li> <li>• Recycling.</li> </ul>		
Inadequacy in enforcement of environmental management Plans.	<ul style="list-style-type: none"> <li>• Mainstreaming the environment issues approvals.</li> </ul>	<ul style="list-style-type: none"> <li>• Circulation of application, Change of Use, Subdivisions including NEMA.</li> <li>• Involvement of NEMA on development Approvals.</li> </ul>	<ul style="list-style-type: none"> <li>• Circulation of application, Change of Use, Subdivisions including NEMA</li> <li>• Involvement of NEMA on development Approvals</li> </ul>	<ul style="list-style-type: none"> <li>• Nairobi county government.</li> <li>• -Local Village administration NEMA</li> </ul>	Short term

#### 4.15 DISASTER MANAGEMENT

The main disasters experienced in the project area are fire outbreaks and urban flooding. Serious risks in the project area are with establishments of electrical connections. This is much aggravated by illegal connections which are done haphazardly (See the figure below).



Figure 85: Unconventional Electrical Installations in Majengo

Fire outbreaks occur mostly in Markets and informal settlements. The recent fire outbreak at Gikomba market (which occurred in June 2018) killed at least 15 people and injured more than 60. The incidence is pictured below.



Figure 86: Gikomba Market Fire in 2018

In most previous fire incidences, numerous challenges have been encountered in firefighting. This range from lack of required water or other appropriate fire suppressants, inaccessibility of disaster areas, especially most slums and other informal settlements that lack access roads and fire hydrants.

The disaster management strategies are in the matrix overleaf.

Table 55: Disaster Management Strategies

Key issue	Objective	Strategy	Action plan/area	Actors	Time frame
Urban Flooding	<ul style="list-style-type: none"> <li>To eliminate loss of lives and property during floods</li> <li>To eliminate loss of livelihoods during floods.</li> </ul>	<ul style="list-style-type: none"> <li>Develop a proper storm water drainage channels</li> <li>Enhance disaster preparedness team</li> <li>Restrict development in areas prone to floods.</li> <li>Increase vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>Resettlement of people in flood prone areas</li> <li>Establish a flood response team in flood prone areas.</li> </ul>	County government of Nairobi.	Short term
Fire disasters in markets and informal settlements	<ul style="list-style-type: none"> <li>To reduce fire outbreaks in forests and informal settlements.</li> <li>To reduce loss of life, livelihoods and property.</li> </ul>	<ul style="list-style-type: none"> <li>Enhance disaster preparedness.</li> <li>Upgrade informal settlements.</li> <li>Enhance accessibility in the informal settlements.</li> </ul>	<ul style="list-style-type: none"> <li>Public awareness on alternative sources of energy</li> <li>Control developments in the forest reserves</li> <li>Upgrade access roads in the informal settlements</li> <li>Equip the fire department of Nairobi with fire response trucks and firefighting equipment</li> <li>Training communities in first response</li> <li>Employment of fire marshals</li> </ul>	County fire department. County government of Nairobi.	Short term

## 4.16 HERITAGE PRESERVATION

The project area is one of the most historically and politically significant zones in the Kenyan urban space. Its development dates back to the colonial era and it as such bears significant history regarding the politics and events that took place during the pre and early post-independence periods. Most of these events can be said to have shaped the country's journey towards achieving its independence.

In view of the above, a number of heritage sites have been identified and proposed as part of the tourism circuits in Eastlands. Furthermore, specific adjustments have been recommended for each of the sites in order to improve the attractiveness to tourists and generate significant revenue for the Government. The matrix below shows the proposals.

Table 56: Heritage Preservation Matrix

Heritage Site	Location	Historical Significance	Preservation & Improvement Strategies
Kaloleni Social Hall	Kaloleni	<ul style="list-style-type: none"> <li>Was the first Parliament in the country</li> <li>Important political meetings held in the hall</li> </ul>	<ul style="list-style-type: none"> <li>Refurbishment of the hall while maintaining the architectural features</li> <li>Upgrading the social hall to a Community Resource and Empowerment (CORE) Centre</li> <li>Establishment of a Resource Centre adjacent to hall, where historical information can be found</li> <li>Hotel and Conference facilities and serviced apartments adjacent to the hall to serve tourists</li> <li>Establishment of a monumental park at the central square (near the hall) where statues of key political figures can be erected</li> </ul>
Kaloleni estate streetscape	Kaloleni	<ul style="list-style-type: none"> <li>Significant in showing past unique neighbourhood design efforts</li> </ul>	<ul style="list-style-type: none"> <li>Widening of the streets to at least 12 m to better serve the increased population</li> </ul>
First Governor of the British Colony of Kenya's Residence	Kaloleni	<ul style="list-style-type: none"> <li>Residence to the first Governor of the British Colony of Kenya</li> </ul>	<ul style="list-style-type: none"> <li>Refurbishment of the building and gazettement it as a national heritage</li> <li>To be put to a use that is of interest tourists</li> </ul>
House No. L1	Kaloleni	<ul style="list-style-type: none"> <li>Officially launched by Queen Elizabeth II (before she became a queen)</li> </ul>	<ul style="list-style-type: none"> <li>Refurbishment of the building and gazettement it as a national heritage</li> <li>To be put to a use that is of interest tourists</li> </ul>
City Stadium	Kaloleni	<ul style="list-style-type: none"> <li>Initially called Native stadium</li> <li>Served as recreational ground for native Africans</li> </ul>	<ul style="list-style-type: none"> <li>Modernize the stadium and increase its seating capacity to 60,000.</li> <li>Memorialization of the heritage assets related to the stadium</li> </ul>
COTU Headquarter	Solidarity Building in Gikomba	<ul style="list-style-type: none"> <li>Headquarters of the largest association of workers unions that began shaping relations between Kenyan employers and workers</li> </ul>	<ul style="list-style-type: none"> <li>Memorialization of the heritage assets related to the organization</li> </ul>

		soon after the country's independence	
Kariokor War Cemetery	Starehe	<ul style="list-style-type: none"> <li>• People who fought for the British in World War II are buried there</li> </ul>	<ul style="list-style-type: none"> <li>• Greening and beautification of the cemetery</li> </ul>
Kariokor Market	Kariokor	<ul style="list-style-type: none"> <li>• Assembly point for Carrier Cops of the II World War</li> <li>• Hence the name 'Kariokor'</li> </ul>	<ul style="list-style-type: none"> <li>• Renewal of the market to meet new business demands</li> <li>• Memorialization of the heritage assets related to the market</li> </ul>
Kamukunji grounds	Shauri Moyo	<ul style="list-style-type: none"> <li>• Major public gatherings and political events hosted here during the pre-independence and early independence periods</li> </ul>	<ul style="list-style-type: none"> <li>• Rehabilitation and proper design of the park</li> <li>• Memorialization of significant events that have taken place at the park</li> <li>• Accommodation of friendly income generating activities such as artistry stands and skating areas</li> <li>• Rehabilitation of Nairobi River to enhance quality of the environment around the park</li> </ul>
Burma Market	Shauri Moyo	<ul style="list-style-type: none"> <li>• Was an assembly point for African soldiers during the Burma Campaign of 1941-1945</li> </ul>	<ul style="list-style-type: none"> <li>• Densification the market to meet new space demand and accommodate the informal traders operating around the market</li> <li>• Memorialization of the heritage assets related to the market</li> </ul>
Mwai Kibaki Residence	Bahati	<ul style="list-style-type: none"> <li>• Served as residence to the 3rd President of Kenya, Mwai Kibaki, during the early stages in his political career</li> </ul>	<ul style="list-style-type: none"> <li>• Refurbishment of the building and gazettement it as a national heritage</li> <li>• To be put to a use that is of interest tourists</li> </ul>
Oginga Odinga Residence	Jerusalem	<ul style="list-style-type: none"> <li>• Served as early residence for the first Vice President of Kenya, Jaramogi Oginga Odinga and his sons Dr. Oburu and Raila Odinga</li> </ul>	<ul style="list-style-type: none"> <li>• Refurbishment of the building and gazettement it as a national heritage</li> <li>• To be put to a use that is of interest tourists</li> </ul>
Idi Amin Dada's and Tom Mboya Residences	Ziwani	<ul style="list-style-type: none"> <li>• Served as residence to the late Ugandan President, Idi Amin Dada</li> <li>• Home to the late Tom Mboya, a former prominent Kenyan politician and freedom fighter</li> </ul>	<ul style="list-style-type: none"> <li>• Refurbishment of the building and gazettement it as a national heritage</li> <li>• To be put to a use that is of interest tourists</li> </ul>
Pumwani Maternity Hospital	Starehe	<ul style="list-style-type: none"> <li>• The Hospital was founded in 1926 by a Charitable Organization called Lady Grigg Welfare League and was named Lady Grigg Maternity.</li> <li>• Serves as the largest Referral Maternity Hospital in East Africa</li> </ul>	<ul style="list-style-type: none"> <li>• Establishment of a Documentation Centre within the hospital where historically significant information about the hospital can be accessed</li> </ul>

Two tourism circuits emerge based on the locations of the above heritage sites (See the map overleaf)

**Tourism Circuit 1:** It starts from the Central Railway Station to Kenya National Archives and Tom Mboya statue in the CBD, Kariokor market, Kariokor War Cemetery, Kamukunji Grounds, Burma market, Kaloleni estate and back to the Central Railway Station. This circuit is represented by a dotted purple line in the map overleaf.

**Tourism Circuit 2:** This circuit is mapped in red dotted lines. It begins at Railway Station to Kenya National Archives and Tom Mboya statue in the CBD, to Kamukunji grounds and beyond through the proposed leisure corridor at the edge of Nairobi River riparian reserve. At Bahati, someone can branch off to President Mwai Kibaki's former residence and proceed to the Jerusalem based Jaramogi Oginga Odinga's former residence via Heshima-Wangu Corridor. S/he can finally get back to Jogoo Road (via Rabai Road) and back to Kaloleni estate, where there are several heritage assets, before completing the circuit at the Central Railway Station.

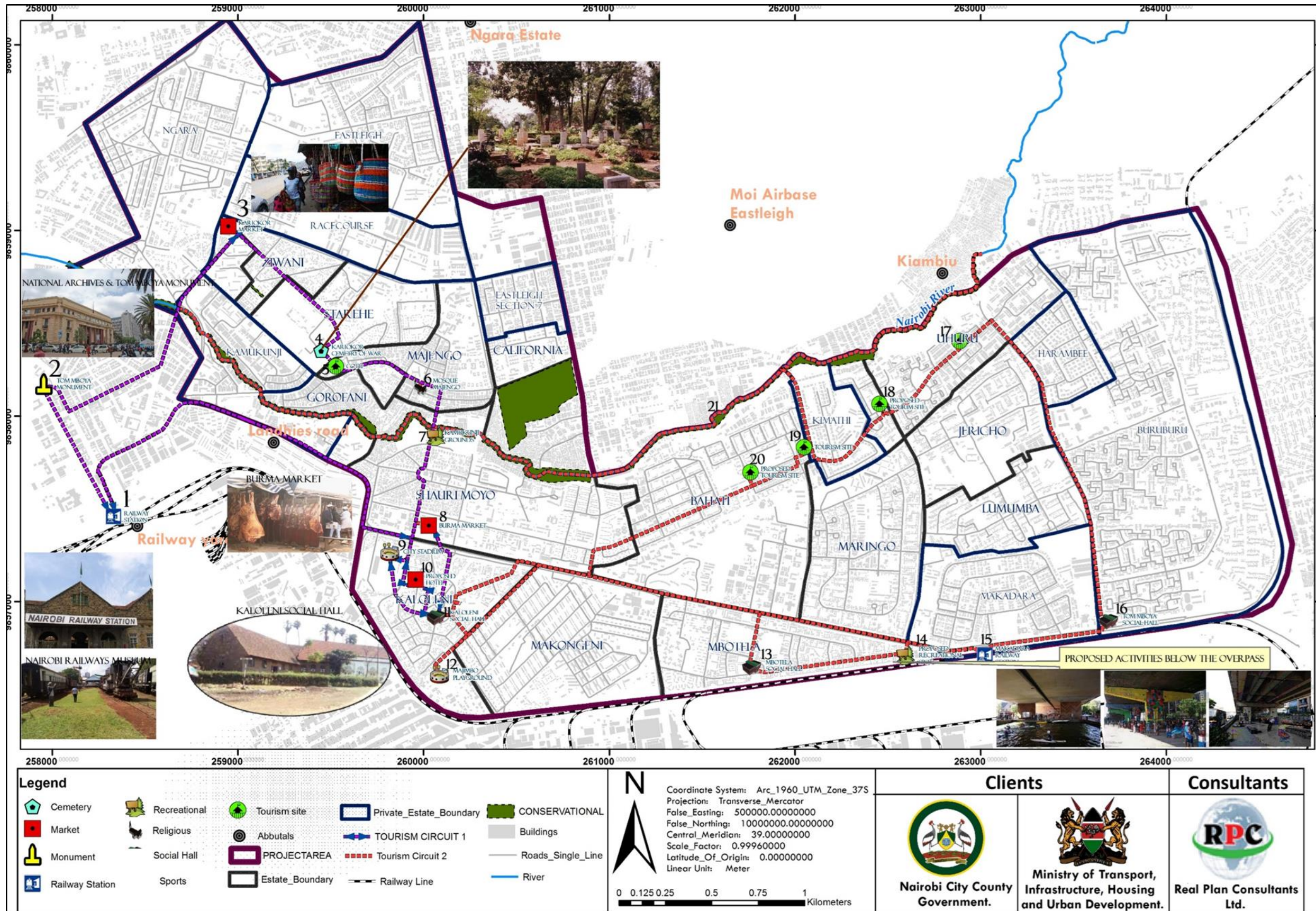


Figure 87: Proposed Tourism Circuits

## 4.17 ECONOMIC STRATEGY

This strategy provides proposals on the ways in which the economy of the project area can be improved. The main goal being making Eastlands a place where people can live work/invest and play. Hence it is essential that its economic structures be streamlined so that its economic potential can be optimized.

The socio-economic survey results reveal that the main pillar of Eastlands' economy is business and light industries. The local economy is specifically driven by markets (which include retail, textile, fish, meat and mixed-use markets), shopping centres and light industrial activities.

As such, the approaches recommended to spur economic development in the area include:

- Revitalization of existing markets
- Provision of additional markets
- Enhancing business environment within shopping centres
- Enhancing productivity in the Jua kali industrial sector
- Expansion of BCR spaces

### 4.17.1 Market Revitalization

Market revitalization is focused on improving the business environment and stimulating economic returns in the existing markets, including Gikomba, Shauri Moyo, Jogoo Road, Kariokor and Jericho. The objectives of this approach are:

- To attract new businesses into the markets
- To stimulate new economic activities
- To ensure improved self-sustainability of the markets
- To improve sense of place, safety and security
- To contribute to the stimulation of Kenya's/Eastlands local and regional economy

The detailed challenges in these markets are tabulated below.

Table 57: Challenges affecting Markets

Theme		Challenge Description
Infrastructure	Water	Some markets have poor/ no access to water. Even if the markets have access to water, it is of poor quality. Water is essential for traders to provide good quality and hygienic products. For example, food stalls need water in preparing the food.
	Storm Water	Overcrowding of traders and buyers in the streets or markets, as well as poor refuse removal lead to the blockage of storm water drains. For example, traders in street markets set-up their stalls where there is a storm water drain and thus blocking the drain. When storm water drains are blocked it results in flooding of the markets and streets.
	Electricity	Electricity supply to the roadside markets is inadequate. Maintenance of electricity infrastructure in the markets and area are also poor. In all the markets food is traded. However, with limited access to electricity, refrigeration is a challenge leading to a high potential for food rotting and spread of diseases.
	Sewage	Solid and liquid waste management is poor in all the markets. For example, street markets flood because of blocked drains and then the products and stalls are ruined.
	Roads	Roads in the area are not maintained and, in some areas like Gikomba, tarred roads do not exist. Access to markets is therefore difficult, as no transportation can reach the market and, in some cases, access by foot is also difficult.
	Parking	Parking structures or allocated parking space are not provided for traders or buyers of the markets. Most of the markets do not even have street parking available. Lack of parking can result in people not going to the market.

	<b>Refuse Removal</b>	All the markets have inadequate refuse removal system. Therefore, waste is dumped on the market site or next to the site. This leads to unhygienic conditions in the markets.
<b>Expansion potential</b>	-	The markets (e.g. Gikomba and Shauri Moyo) are already encroaching on the road reserves. Therefore, limited space is available to accommodate new traders. The only way to expand markets is to relocate or build multi-storey buildings.
<b>Safety and Security</b>	<b>Logistics</b>	There are logistical issues to transport goods to and from stalls in the market.
	<b>Crime</b>	Crime in the markets are quite high especially in the congested markets such as Gikomba. Gangsterism and pick pocketing are high as there are little/ no control over who enters the market. Another problem is cheating around transactions since the traders are not regulated.
	<b>Emergency Services</b>	No emergency services are available on the site or near the markets. Since the markets have health and safety issues, access to emergency services is essential.
<b>Contestation for space</b>	<b>Unregulated space</b>	There is little or no regulation of market space and trading in the stalls. There is also encroachment onto road reserves and pedestrian walkways. This leads to conflict between traders as well as traders setting up their stalls in places not suited for trading.
	<b>“Free for all”</b>	Due to unregulated space, overcrowding of markets and high demand for market space, traders set up shops in areas that are not suited for trading.
	<b>Overcrowding</b>	Due to high demand and limited market space, markets have become overcrowded. As a result, markets have started to encroach onto public spaces.
	<b>Diversity of users</b>	Little visitor diversity.
<b>Urban Quality</b>	<b>Market Age and Dilapidation</b>	The market buildings and infrastructure are outdated and dilapidated, which leads to health and safety risks.
	<b>Public Toilets</b>	Toilet facilities in the markets are outdated, inadequate or not even present. It leads to poor hygiene.
	<b>Regulations</b>	The markets have regulations but are not always adhered to or effectively enforced. Poorly enforced regulations lead to markets not being up to standard. This allows traders to cheat around transactions.
	<b>Complementary Uses</b>	Apart from trading stalls and residential units, very little complementary uses to the markets exist.
	<b>Accessibility</b>	Access to the markets are limited and typically only available from certain access points. Some markets have no access to public transportation which limits the number of buyers.
	<b>Maintenance</b>	Very little maintenance is done on existing market infrastructure and stalls. This propagates the deterioration levels witnessed in the markets.
	<b>Street Furniture</b>	No street furniture in or around the markets are available. When there is no place for buyers to rest or relax, then the time spent by buyers at the market decreases.
<b>Health</b>	<b>Disease control</b>	The high density of markets can cause diseases to spread rapidly. Instances of disease outbreaks have been witnessed in markets like Shauri Moyo, leading to closure.
	<b>Lack of storage facilities for produce</b>	No storage facilities are available for fresh produce and meat products in the markets. Fresh produce and meat products are thus bound to rot and increase chances of disease infection among the consumers.
<b>Economics/ Business</b>	<b>Cost of stand</b>	Some traders feel that the cost of stands is too high, and it makes running the business difficult. Some traders also do not want to pay any fees for stalls, therefore they set-up their stalls in unallocated spaces.
	<b>Tourism friendly</b>	Tourism and sales to tourists in the markets are limited. It needs to improve so that the overall supply of money in the Eastlands economy increase.

Considering the above challenges, a number of proposals have been made for each of the markets. It is noteworthy that the markets are designed to provide all services. However, some level of specialization is still maintained as follows.

No	Market	Proposed specialization
1.	Gikomba	Second hand clothes/footwear and fish
2.	Shauri Moyo/Burma	Meat
3.	New Burma	General merchandise
4.	Kamukunji light industry	Metal fabrication
5.	Jericho light industry	Garages and metal fabrication
6.	Mwariro	General merchandise
7.	Furniture market	Furniture
8.	Kaloleni	Sports items
9.	Jogoo Road	Textiles and leather products
10.	Jericho	Textiles
11.	Kariokor	Leather products and artefacts
12.	New Pumwani	General merchandise

The specialized commodities in each market are proposed to take a bigger share of the available space.

### Gikomba

Gikomba is an expansive open-air market and an agglomeration of both formal and informal activities from which sales worth millions of shillings are made daily. The traders are categorized into various levels including wholesalers, intermediaries and retailers. There are approximately 150 wholesalers and 37,360 retailers.

The current informal market area is 77 900 m<sup>2</sup>, where the average size of a retail shed is 3.25 m<sup>2</sup> and the average size of the wholesaler's premise is around 200 m<sup>2</sup>. Quarry Road Market is sandwiched between the informal premises and it has 274 stalls.

According to the socio-economic survey findings, the majority of wholesale traders earn a monthly income of between Ksh. 60,001 and 120,000 (48%), followed by those that earn between Ksh. 24,001 and 60,000 (32%). Secondly, about 56% of these traders keep stocks worth between Ksh. 100,000 and Ksh. 2,000,000. The rest have stocks of between Ksh. 2,100,000 and 10,000,000.

The retailers engage in 28 trade lines as tabulated and mapped out herein below.

Table 58: Sections of Gikomba Market, Commodities Sold and Occupants

No.	Section	Commodities Sold	Occupants
1	Quarry Market Fish Mongers	Fish	1530
2	Cereals/Poultry	Poultry, cereals	1500
3	Vegetable market	Vegetable/fruits/grains	1500
4	Quarry Market Shoe Retailers	Shoes	1500
5	Quarry Road Open Air Market	Mixed goods	1550
6	Quarry Road Main markets	Mixed goods	4000
7	Timber area	Timber	1000
8	Material area	Clothes	400
9	Section 1A,	Bags Dresses	1100
10	Section 1B,	Jackets	2000
11	Section 1C,	Jogger/fleeces	300
12	Section 1D,	Sweater/Hotels	250
13	Area J,	Blazers/coats	270
14	Area 2A,	Boys jeans/men suits	500
15	Area 2B,	Jackets/men jeans	560
16	Area 42,	Shirts/jeans	2000
17	Area 2C,	Child jacket/t-shirt	1800
18	2D	Shirts	500
19	Shoes Traders	Shoes	4000
20	Kwa Gacucu Open air market	Child rummage, jackets, ladies pants, t-shirts	3500

21	Dispensary Line,	Duvet/towels/nets	100
22	Solidarity area,	Jackets/shirts/sweaters	1000
23	Area market line	Blankets/capes/t-shirts	500
24	Iron area	Iron sheets	1500
25	Hotels,	Food/drinks	500
26	Posta,	Mixed goods	500
27	Lumbwa Road	Timber/ plywood/jokes	500
28	Kamukunji markets,	T-shirts/leather jackets/sweater/socks/blouses	3000
	<b>Total</b>		<b>37,360</b>

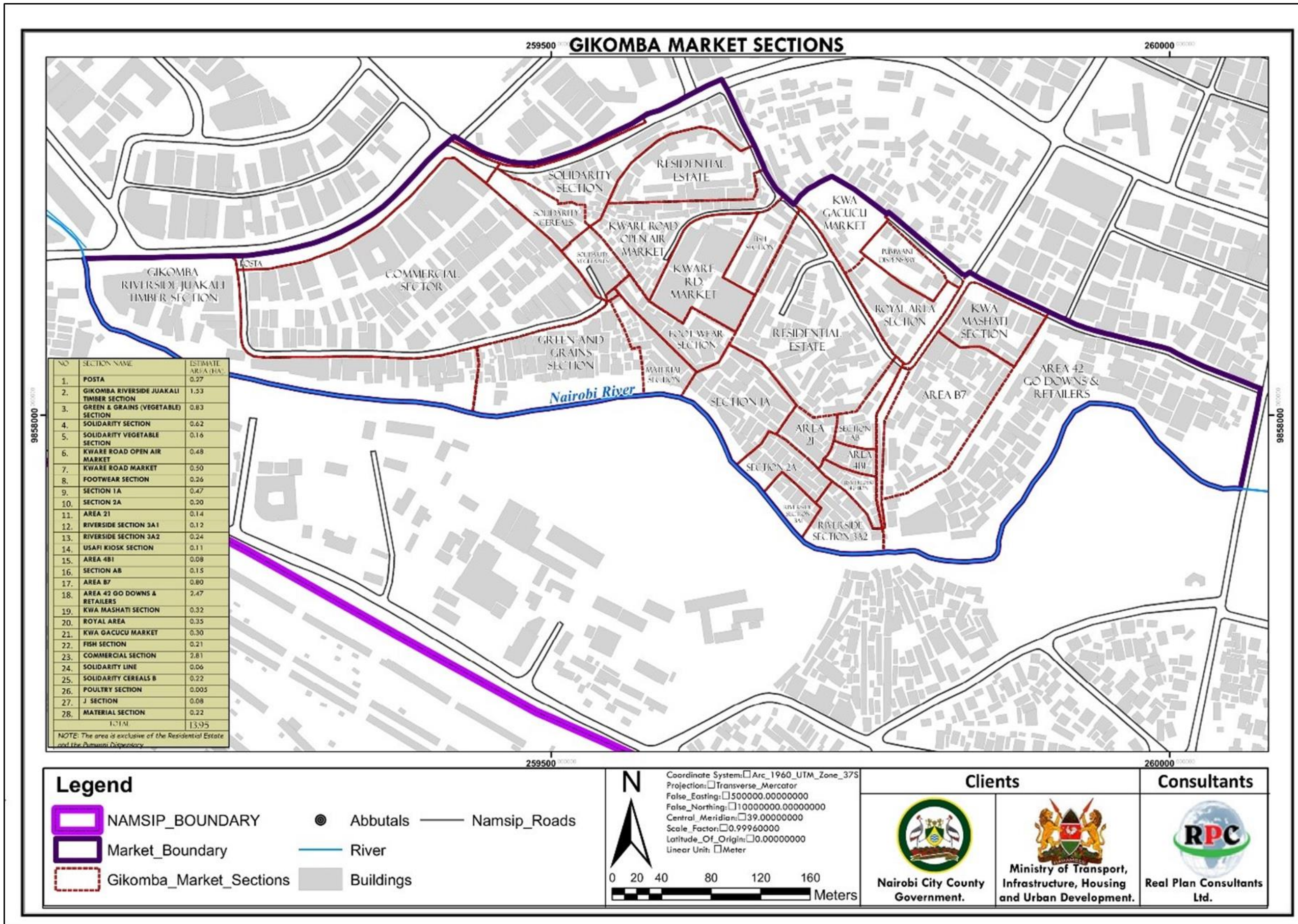


Figure 88: Spatial Distribution of Gikomba Market Sections

## Proposals

Gikomba area has been planned as a commercial area that is demarcated into 14 blocks, which will accommodate various activities and will be developed in 7 phases as shown in the table below. The proposed building height is 7 levels and it is estimated that 20,938 stalls will be achieved in Gikomba once the redevelopment process is completed.

Table 59: Proposed Activity Areas in Gikomba

Block No(s)	Main Use	Ground Area (m <sup>2</sup> )	Area at 7 levels (m <sup>2</sup> )
A (Construction ongoing)	General	2037	14260
B,C	Second hand goods & eateries	3738	26167
D,E,N & Terminals	Second hand goods & eateries	4521	31644
F,G	Fish & Agricultural Produce	7690	53831
H,J	Agricultural Produce	5451	38155
K,L,M	Furniture & allied	3300	23099
P	Furniture & allied	1181	8266
<b>Total</b>		<b>27,917</b>	<b>195,422</b>

Transport proposals have focused on road widening, establishment of missing links, traffic management, and provision of a bus and freight terminus. Quarry road has been proposed for expansion to 30 m. It has further been extended to the Southwest and joined to Meru Road. This is meant to enhance linkage between the Southern and the Northern sections of the market. Digo and Meru roads have also been expanded to 30 meters. Internal service roads, which measure 9m, 12m and 20m wide, have been provided as well. The bus and freight termini have been assigned land measuring 0.3 Ha and 0.2 Ha respectively.

The proposed land use structure for Gikomba Market is shown overleaf.

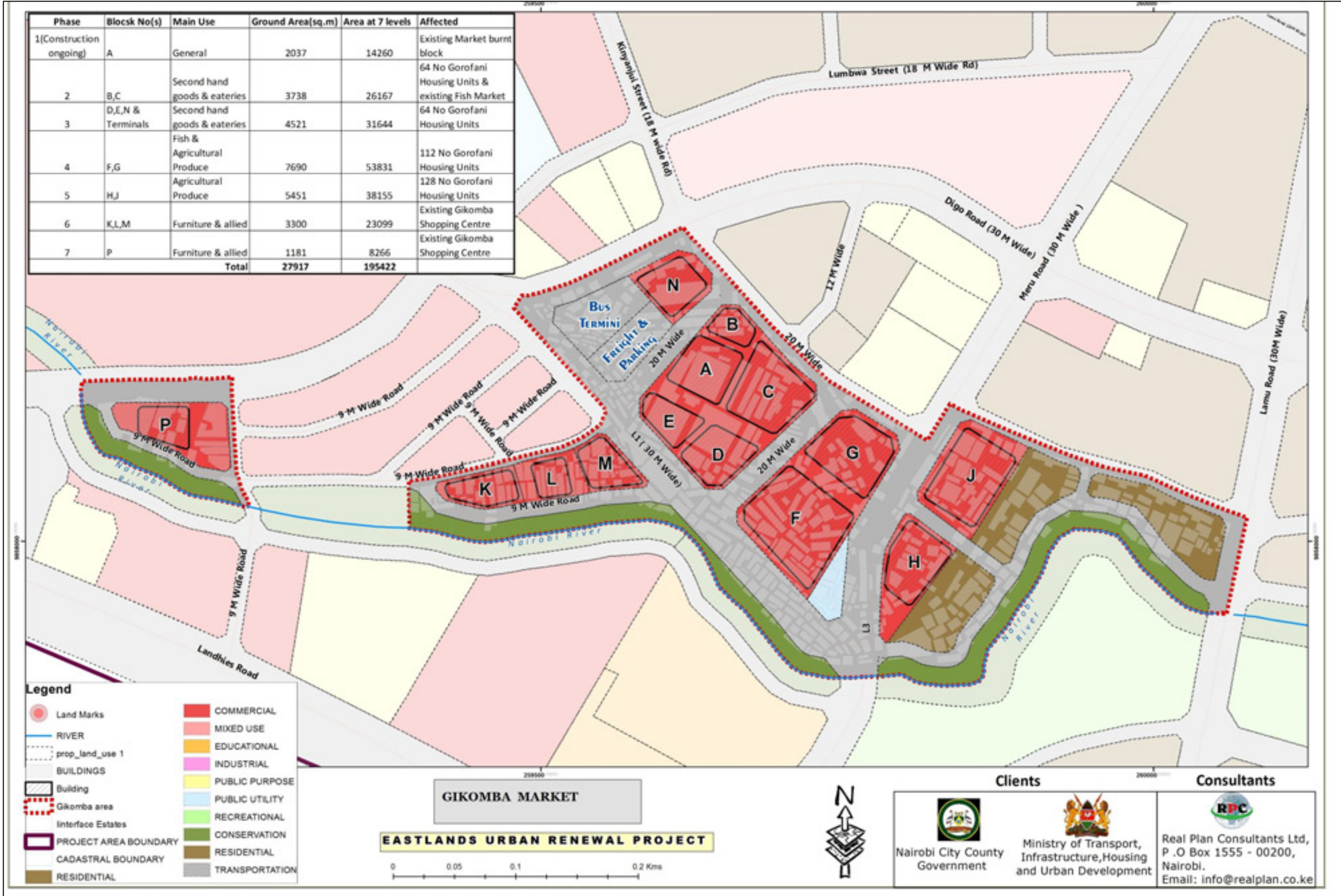


Figure 89: Proposed Land Use for Gikomba Market

## Shauri Moyo Market

Shauri Moyo market (commonly known as Burma) is one of the largest meat market in East and Central Africa. It is located within Shauri Moyo estate as shown below.



Figure 90: Location of Shauri Moyo Market

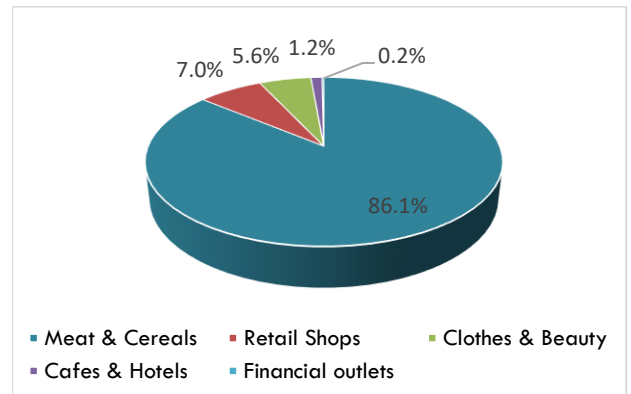
The meat market distributes meat for various butcheries and restaurants that serve roasted meat. This market currently occupies 7985 m<sup>2</sup> and consists of 373 stalls. The average size of the stalls is 12 m<sup>2</sup> and are shared by up to 10 wholesalers in peak season. The market serves up to 7000 traders and has around 3730 employees.

## Proposals

The redevelopment proposal of the market involves the construction of a five-level high-rise market. The proposed site will have 80% plot coverage which is equal to 19,120 m<sup>2</sup>. The high-rise market stalls will have an area of 71,700 m<sup>2</sup> at 5 levels (floors). This area is less 25% circulation area (walkways, stairs & common utilities) which is 14,340 m<sup>2</sup>. The market stalls will accommodate businesses dealing in meat & cereals, clothes & beauty, financial outlets and cafes & hotels as indicated in the table below.

Table 60: Proposed Stalls in Shauri Moyo Market

No.	Stall Category	Proposed No. of Stalls	%
1.	Meat & Cereals	7,745	86.1
2.	Retail Shops	627	7.0
3.	Clothes & Beauty	500	5.6
4.	Cafes & Hotels	107	1.2
5.	Financial outlets	21	0.2
	<b>Total</b>	<b>9,000</b>	<b>100.0</b>



The proposed layout of the market is shown overleaf.



Figure 91: Proposed Layout for Shauri Moyo Market

## Jogoo Road

Jogoo Road market (also known as Uhuru Market) is positioned along Jogoo road, to the East of St. Annes Girls Secondary School (see location map below).



Figure 92: Location of Jogoo Road Market

The market measures 2.2 Ha. It originally had 6 two-level building blocks labelled A to F. However, Block E was gutted down by fire in 2011. The block has never been rebuilt but stalls were established to accommodate the affected traders. Blocks A, B, C and F have 81 stalls each while block D has 154 stalls. This makes a total of 478 stalls. The blocks mainly accommodate small-scale textile and leather light industrial activities, which incorporate sewing of school uniforms, sweaters and handbags.

A section the market has new stalls, which are made of wood and corrugated iron sheets. They were built to accommodate the victims of another fire incidence, which occurred on 23<sup>rd</sup> July 2018. The section also has older informal stalls, which have encroached into the road reserves significantly. The main commodities sold in the stalls include groceries, food and second hand clothes. The total number of traders in the market is estimated to be 1000.

## Proposals

The market has been earmarked for redevelopment under NAMSIP and designs prepared. This plan adopts the NAMSIP proposal, which provides for a new two-level market complex, besides the existing market blocks. It also recommends that the burnt block be replaced. The new site layout incorporates food court, loading bays, garbage collection points, fire assembly and exit points, community facilities (e.g. childcare centre), banking facilities and circulation corridors. (See the figure below).

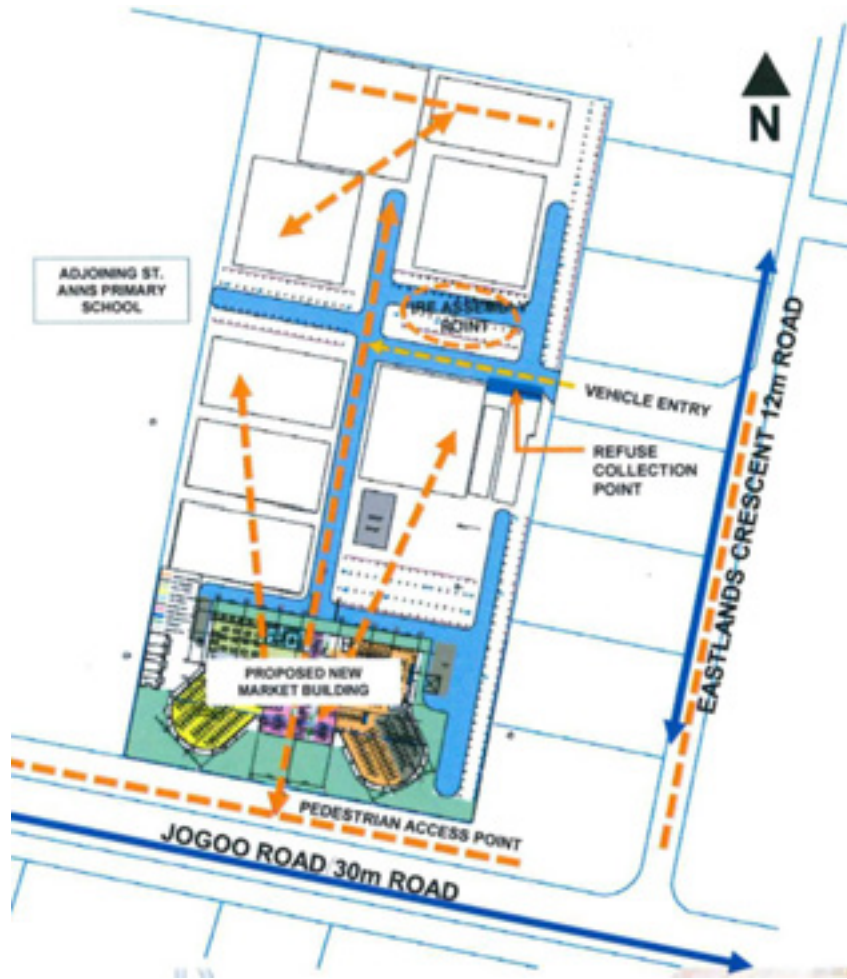


Figure 93: Proposed Site Layout for Jogoo Road Market

The area allocated to the new market complex is 0.5 Ha. The mezzanine floor will accommodate market offices, community facilities (social hall, childcare centre etc.) and textile workshops. Level 1 will have:

- 9 leather/textile stalls
- 71 textile and accessories stalls
- 14 storage stalls
- 71 second hand clothing stalls
- 206 stalls for school uniforms and other clothing

The ground floor will incorporate:

- 9 food stalls
- 71 electronics stalls
- 170 green grocer/ fruits/ vegetable stalls
- 36 dry cereal stalls
- 14 storage stalls
- 71 clothing stalls

The plans for level 1 and ground floor are shown overleaf.

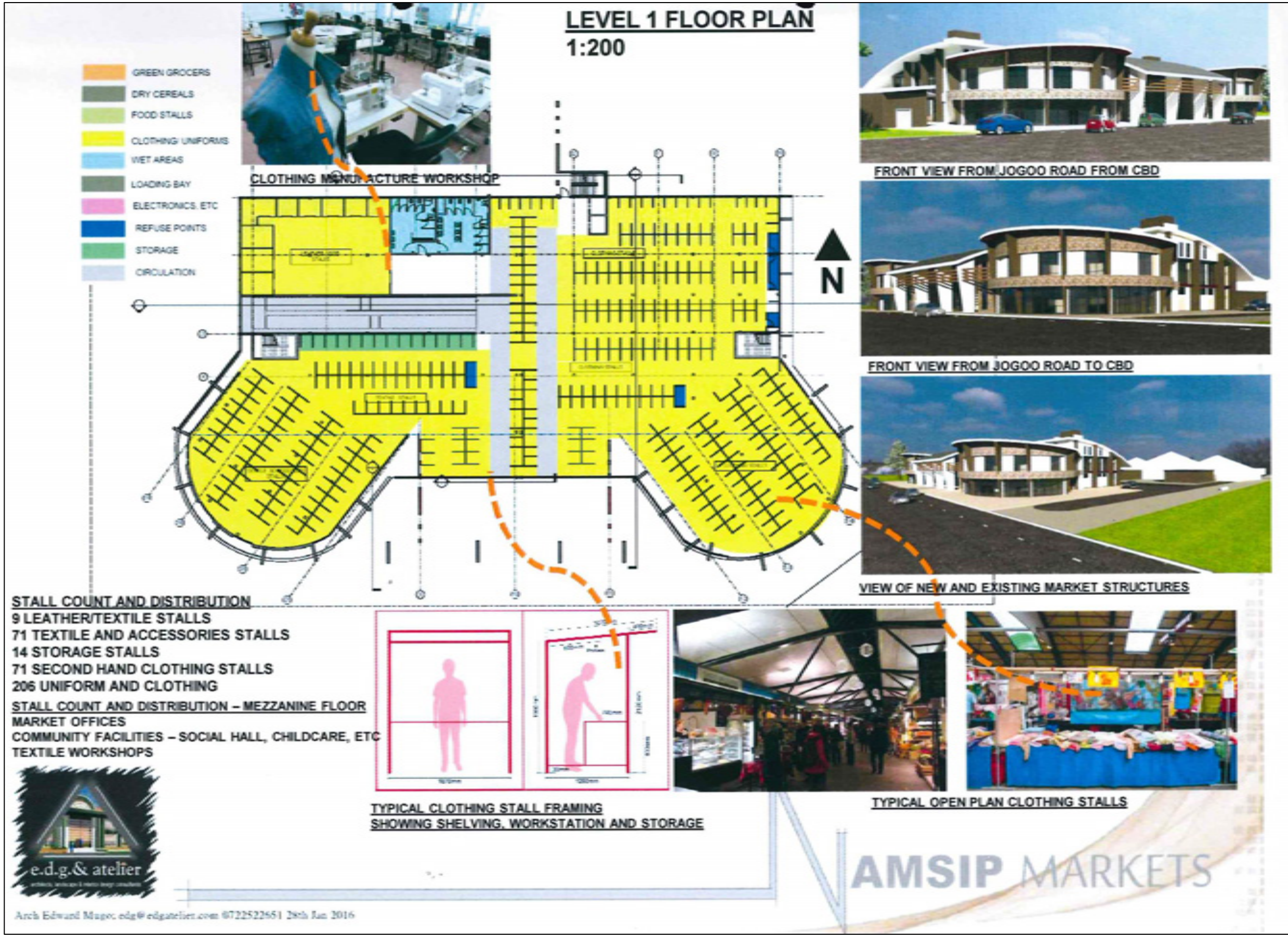


Figure 94: Proposed Level 1 Floor Plan for Jogoo Road Market Complex

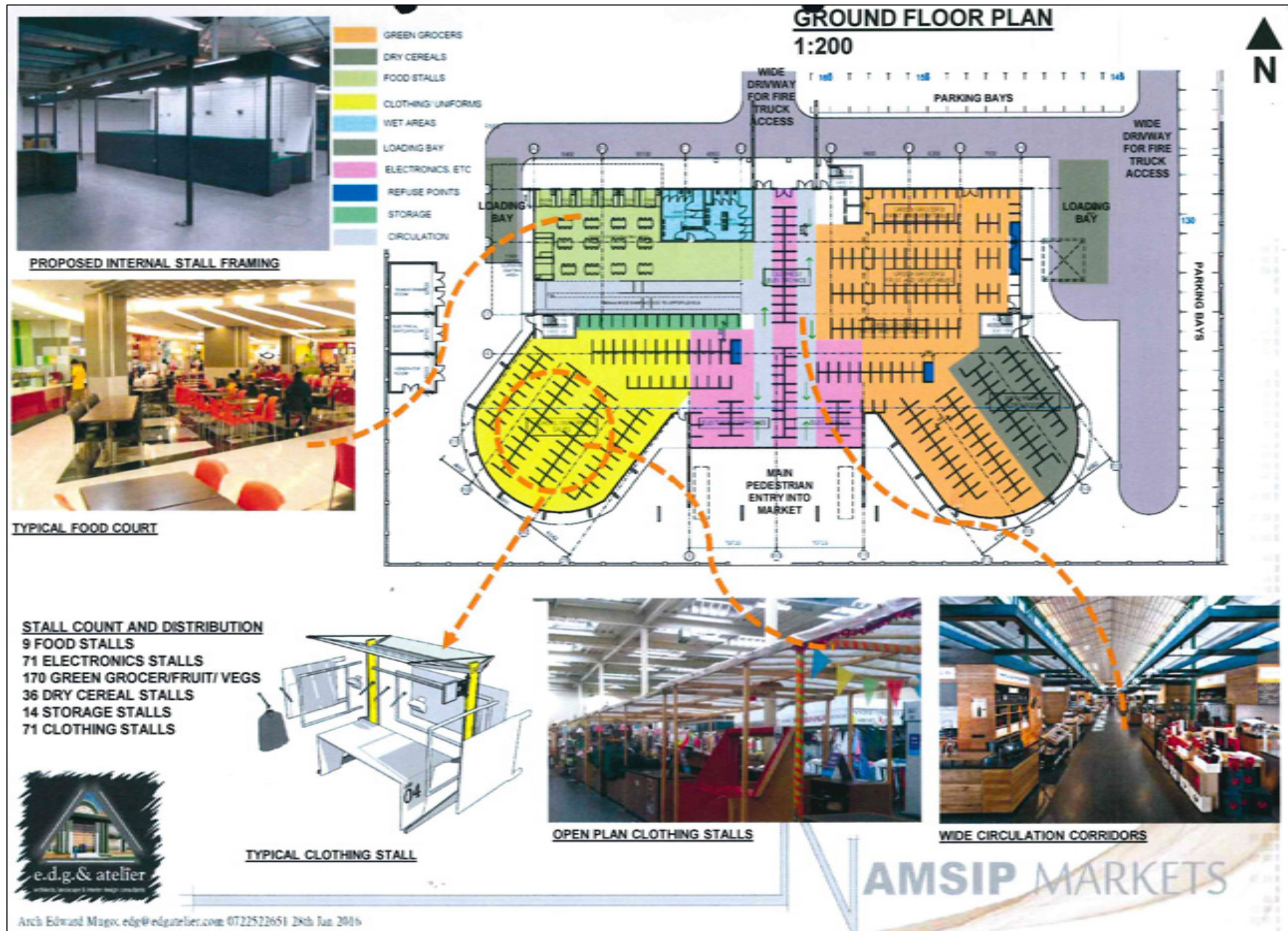


Figure 95: Proposed Ground Floor Plan for Jogoo Road Market Complex

Notably, the market is going to be of both economic and social benefits. The community centre will provide services that enable social development. The diverse business opportunities will increase employment and income generation. The general environment in the market will also improve significantly given that various utility facilities have been provided.

### Kariokor Market

Kariokor is one of the leading art and craft market in Nairobi, which is structured in the form of an open informal market and closed market. It is located at the junction between Dr. Griffins Road and General Waruinge Street, approximately 0.9 Km from the CBD.



Figure 96: Location of Kariokor Market

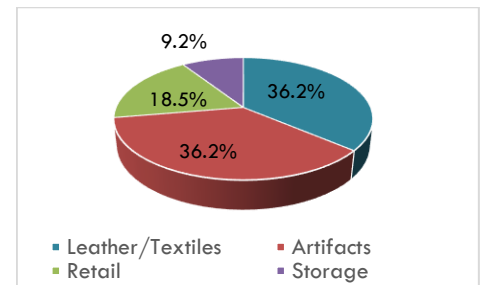
This market occupies 0.7 Ha and has 206 stalls with approximately 7000 workers. This market produces and sells different art and craft products including leather products such as sandals, shoes and belts, *akala* sandals (produced from tyres), baskets, wood sculptures, sisal ropes, and beadworks.

### Proposals

Kariokor market is proposed to accommodate leather/textile shops, artefacts galleries, general retail shops and storage facilities all within a five level market complex. Considering a ground coverage of 80% and 25% circulation area within the building, the net commercial space five becomes 21000 m<sup>2</sup> and it is distributed among the said businesses as follows.

Table 61: Proposed Business Areas in Kariokor Market

Type of Stall	Commercial Space Assigned (m <sup>2</sup> )	Average Stall Size (m <sup>2</sup> )	Achievable No. of stalls	%
Leather/Textiles	7,350	7.2	1,025	36.2
Artifacts	7,350	7.2	1,025	36.2
Retail	4,200	8.0	525	18.5
Storage	2,100	8.0	260	9.2
<b>Total</b>	<b>21,000</b>	-	<b>2,835</b>	<b>100.0</b>



It is noteworthy that no leather production activities are unsuitable for the site and should thus not be allowed. This is because the process is offensive. It is proposed that such activities be located at the leather city in Athi River.

The location of Kariokor market between three major road corridors makes pedestrian access difficult. As such, two footbridges are proposed of Dr. Griffins road (one on either sides), and along General Waruinge street (See the illustration below).



Figure 97: Proposed Footbridges to Kariokor Market

### Jericho Market

Jericho market is located along Rabai Road, directly opposite Metropolitan Hospital Buruburu as illustrated below.



Figure 98: Location of Jericho Market

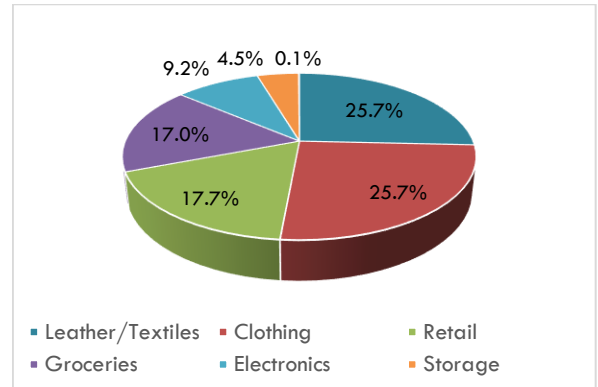
It measures 1.3 Ha and has 476 stalls, which accommodate general retail shops, clothing shops, bars and restaurants. The clothe traders deal in newly imported, second-hand, locally manufactured and custom-tailored clothes.

### Proposals

The market is proposed to be redeveloped with a structure of 5 levels. The proposed plot coverage is recommended at 80% and the internal circulation space proposed to take 25% of the floor area. The net commercial space is for five floors is thus 39000 m<sup>2</sup>. It is distributed to different types of stalls as summarized in the table below.

Table 62: Proposed Business Areas in Jericho Market

Type of Stall	Commercial Space Assigned (m <sup>2</sup> )	Average Stall Size (m <sup>2</sup> )	Achievable No. of stalls	%
Leather/Textiles	9750	7.2	1360	25.7
Clothing	9750	7.2	1360	25.7
Retail	7500	8.0	935	17.7
Groceries	5850	6.5	900	17.0
Electronics	3900	8.0	485	9.2
Storage	1950	8.0	240	4.5
Food Courts	300	60.0	5	0.1
<b>Total</b>	<b>39000</b>	-	<b>5285</b>	<b>100.0</b>



Given that the Stalls in Jericho market are private, two options for redevelopment are proposed. The first option involves the county government buying the stalls and redeveloping the facility as an exclusive public market. The second and preferred option entails a development partnership between the County Government and the stall owners so that each party contributes the resources and gets its returns proportionately.

### 4.17.2 Additional Markets

The new markets proposed in this plan include Mwariro, Furniture Market, New Burma and Kaloleni. The proposals in each of them are detailed out herein after.

#### Mwariro

Mwariro is located in Ziwani ward, approximately 500 meters Southwest of Kariokor Market. It sits on approximately 6 acres of land and borders Ring Road Ngara to the North, Quarry Road to the East, Kombo Munyi Road to the South and Ring Road to the West. The location map is shown below.



Figure 99: Location of Mwariro Market

The market is currently under construction and it is expected to accommodate approximately 350 stalls on a 3 level structure. The trade lines to be incorporated in the market are tabulated below.

Table 63: Proposed Mwariro Market Segments

No.	Level	Proposed Activities
i.	Ground floor	Mechanics, Garages and spares, Car wash, Green grocers, Food kiosks, Hardware Motor vehicle Spares shop, Charcoal, Live chicken, Butchery, Carpentry, Used paints and empty containers
ii.	First floor	Selling of second hand clothes, shoes, bags, mosquito nets
iii.	Second floor	Selling movie and music CDS, Money exchange (MPESA) agents, Electronics, Salons, Barber shops

The figure below shows the proposed market structure

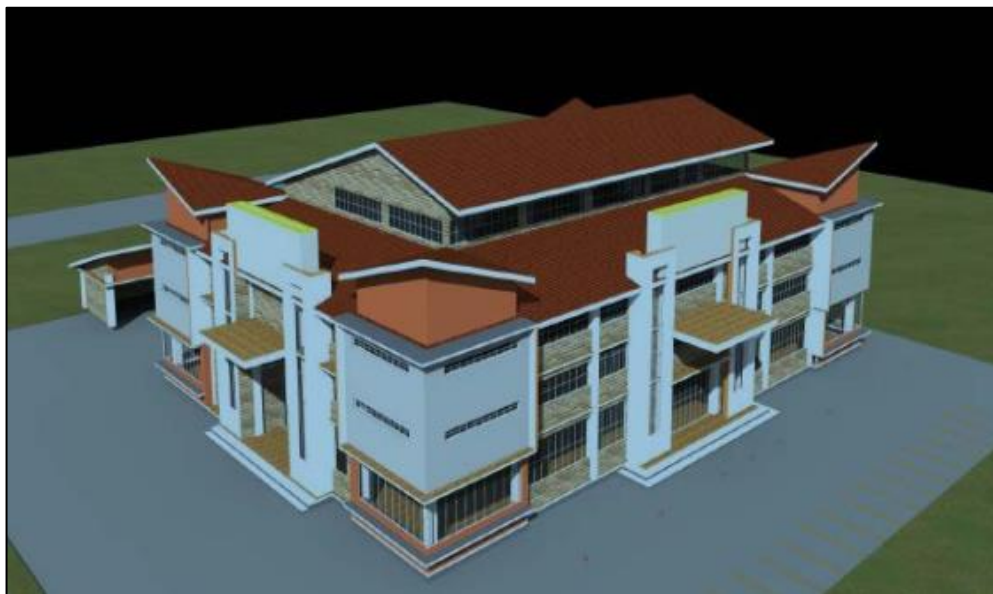


Figure 100: Proposed Market Structure in Mwariro

## Furniture Market

The Market is proposed within the Makadara secondary node in Maringo estate (See Action Area Plan for Maringo). It fronts the Jogoo road to enhance access to the furniture show rooms. The market is expected to be developed up to 5 levels to accommodate approximately 861 stalls.

## New Burma

The site for the New Burma market is located adjacent to Kamukunji Jua Kali market and measures approximately 1.58 Ha. It borders Ahero Street to the South and Sakwero Road to the North (see the Action Area Plan for Shauri Moyo). It is proposed that the buildings in this market be 5 levels with a potential for 6,600 stalls.

## Kaloleni

The proposed site for this market is within Kaloleni Estate (see the Action Area Plan for Kaloleni). The area set aside for the market is approximately 0.96 Ha. The market structure is proposed to be 3 levels and the achievable number of stalls is 2,500.

### 4.17.3 Enhancement of Business Environment in Shopping Centres

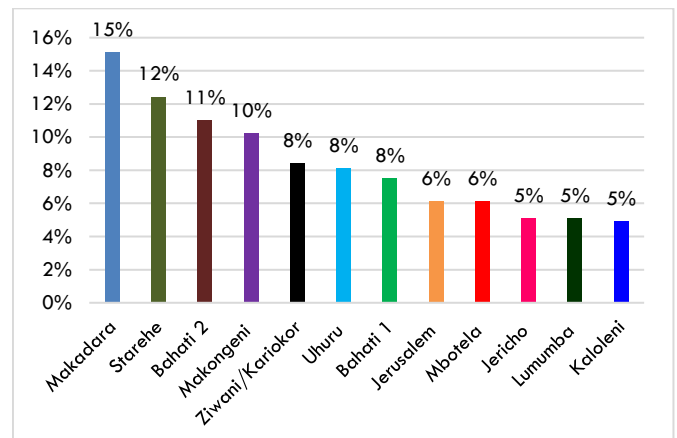
The shopping centres in the project area are generally less vibrant than they can be. They also tend to host small-scale retail enterprises, bars and restaurants mainly. In a bid to stimulate economic vibrancy, a number of adjustments have been proposed. These include:

- Development densification – Ground coverage of 80% and plot ratios of 6.0 recommended
- Mixed use developments to allow for diversification of business activities
- Introduction of new shopping centres e.g. in Mbotela, Starehe and Makongeni
- Provision of utility infrastructure and support facilities

The total area occupied by the shopping centres has risen to 9.8 Ha. This has a capacity to accommodate approximately 42,059 business spaces, measuring an average of 7 m<sup>2</sup>. The achievable workspaces per shopping centre are tabulated below.

Table 64: Achievable Business Spaces by Shopping Centre

No.	Shopping Centre	Area (Ha)	Business Spaces	%
1.	Makadara	1.5	6,340	15.1
2.	Starehe	1.2	5,225	12.4
3.	Bahati 2	1.1	4,625	11.0
4.	Makongeni	1.0	4,285	10.2
5.	Ziwani/Kariokor	0.8	3,514	8.4
6.	Uhuru	0.8	3,425	8.1
7.	Bahati 1	0.7	3,170	7.5
8.	Jerusalem	0.6	2,570	6.1
9.	Mbotela	0.6	2,570	6.1
10.	Jericho	0.5	2,140	5.1
11.	Lumumba	0.5	2,140	5.1
12.	Kaloleni	0.5	2,055	4.9
	<b>Total</b>	<b>9.8</b>	<b>42,059</b>	<b>100.0</b>



#### 4.17.4 Productivity Enhancement in Jua Kali industrial Sector

The main Jua kali industrial zone is Kamukunji light industries. A second light industrial zone is proposed adjacent to Jericho market.

##### Kamukunji Light Industries

The Kamukunji light industrial zone is located in Shauri Moyo and Landhies estates and sections of the surrounding road reserves. The original artisans operated on a land parcel within Shauri Moyo, which measures about 0.8 Ha. The land was allocated to them during a previous government regime. It is however held in trust by the ministry in charge of manufacturing. The current extent of the extended Jua kali zone is shown in colour purple in the map below.



Figure 101: Extent of Kamukunji Jua Kali Industrial Zone

The main economic activity in this area is fabrication and sale of Jua kali products. These include domestic, farm and commercial products. The products fabricated are diverse and include chaff cutters, water cans, hoes, and rakes; construction equipment like wheelbarrows and spade; steel doors, windows and gutters; and domestic equipment like stoves, cooking and frying pans, ovens, food warmers, deep fryers, kettles, spoons, buckets and storage boxes.

Essentially, therefore, the areas of specialization by the traders include:

- Metal works (welding and fabrication)
- Sheet metal (water tanks, buckets, *jikos*, metal boxes, gutters)
- Blacksmith-Heated metals
- Pottery

There are also supporting services on site, which include:

- Hotels

- Painting, paints manufacture and sales
- Money transfer services
- Intermediaries who package and market products
- Transport service providers

### Proposals

It is proposed that a well-defined zone within Shauri Moyo be allocated to jua kali activities. The zone measures 3.35 Ha and it is sandwiched between Ahero Street, Sakwero and Landhies roads (see the figure below)



Figure 102: Proposed Extent of Kamukunji Jua Kali Industrial Zone

The new area represents 300% increment of the industrial zone. There are also major re-adjustments proposed on the road, water and sewer networks serving the jua kali area. These are discussed in detail under the Action Area Plan for Shauri Moyo estate.

The proposed ground coverage is 80%, giving a developable area of 26,800 m<sup>2</sup>. With development of a 5-storey market and 25% circulation area within the buildings, the net productive business area is estimated at 100,500 m<sup>2</sup>. This space will be able to accommodate 1827 stalls.

### Jericho Light Industries

The proposed location for Jericho Light Industries is North of Jericho market, along Rabai Road (see the figure below).



Figure 103: Proposed Location of Jericho Light Industrial Zone

It covers an area of 1 Ha and is intended to accommodate light industrial businesses and garages initially located in the NCKK land and the current car repair activities and spare parts business along Rabai Road corridor.

Considering an average size of garage and Jua kali shop as 500m<sup>2</sup> and 30m<sup>2</sup> respectively, and a 25% circulation area, the number of achievable garages and Jua kali shops is estimated at 3 and 20 respectively on one level only. If the Jua kali premises are developed at 5 levels, a total of 100 shops will be achieved. As such, the grand total number of business spaces will be 103.

**4.17.5 Expansion of BCR Spaces**

The total area proposed for BCR activities is 24.2 Ha. In these zones, mixed-use buildings will accommodate businesses on lowest two floors and residencies on the upper floors. They are expected to increase the gross leasable work areas significantly. The total number of business spaces that can be developed in the BCR zones is estimated to be 41,486.

**4.17.6 Expected Economic Changes**

The main economic changes expected upon the implementation of the above strategies include:

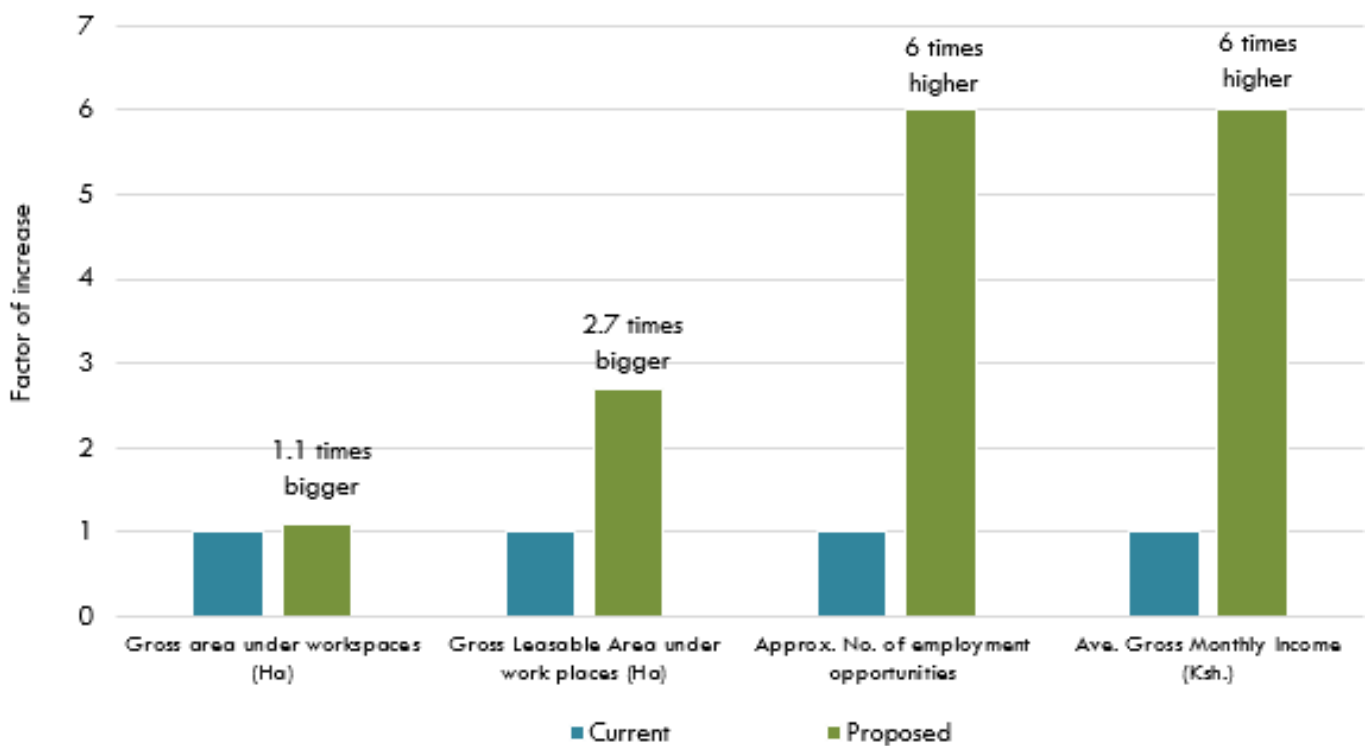
- Increase in the workspaces
- Increase in employment opportunities
- Improved Gross monthly income
- Improved government revenue

The table below summarizes the expected changes.

Table 65: Expected Economic Changes

No.	Thematic Area	Current Situation	New Situation	Impact
1.	Gross area under workspaces (Ha)	109.0	117.7	Additional gross work area of 8.7 Ha
2.	Gross Leasable Area under work places (Ha)	131	353	2.6 times bigger Gross Leasable Area
3.	Approx. No. of employment opportunities	67,692	407,352	6 times more employment opportunities
4.	Ave. Gross Monthly Income (Ksh.)	875,054,484	5,265,839,304	Additional Gross Monthly Income of Ksh 4,390,784,820
5.	Annual Government revenue (Ksh.)	444,000,000	8,389,811,300	19 times higher annual revenue

The changes are further illustrated in the figure below.



**Notes:**

- Gross Leasable Area under work places calculated as:  
 $\{(Gross\ area\ under\ workspaces \times 80\% \ GC) - 25\% \ circulation\ space\ within\ buildings\} \times Average\ number\ of\ building\ levels\ in\ the\ commercial\ areas\ (2\ floors\ in\ the\ existing\ situation\ and\ 5\ floors\ in\ the\ proposals)$
- New employment opportunities = Each business space assumed to provide employment for at least 3 people
- Gross Monthly Income = Average min wage (Ksh. 12,927)  $\times$  estimate number of employees

**4.18 REVENUE ENHANCEMENT STRATEGY**

The current County Government sources of revenue include equitable share, conditional grants like free maternal health care, compensation for user fees forgone, leasing of medical equipment and road maintenance levy. NCCG also generates funds from property rates (property rates, Land rent), parking fees, building permits, single business permit and out-door advertisements.

The potential to generate additional revenue from the project cannot be underestimated. The County Government can get additional revenue from-

- House Rental Revenue
- House Sales
- Markets Rent
- Licensing and Permits
- Car and public vehicle parking
- Land Rates

#### 4.18.1 Rental Revenue

Rent on single rooms range from Ksh. 900 per month to Ksh. 1,200. The County Government gets between Ksh. 1,200 to Ksh. 2,000 for double rooms while one-bedroom houses fetch between Ksh. 2,200 to Ksh. 5000. Rent on two-bedroomed units ranges from Ksh. 2,700 to Ksh. 5,000 while a three bedroomed house fetches between Ksh. 7,000 and Ksh. 10,000. These rent levels are too low although the tenants think otherwise. It is worth to note that while the sitting tenants profess to be poor, the reality is that a sublet market has developed which is in most cases more than 4 to 5 times.

Under these non-market arrangements, the County Government raises appropriately Ksh 25,868,550 per month or 310,422.600 per annum. However, due to high default levels, this revenue is never fully generated. Current average monthly revenue collection stands at approx. Ksh. 18,877,815 representing only 73% collection and 27% default. The current cited revenue does not include accruals from Makongeni. The estate does not belong to the government.

The proposed monthly rent for the various house typologies is as follows:

No.	Housing Type	Proposed Rent	Market Rates	% Variation
i.	Bedsitter	2,400	7-10,000	24-34
ii.	1 Bed room	3,200	12-15,000	21-27
iii.	2 Bed Rooms	5,800	16-25,000	23-36
iv.	3 Bed Rooms	8,200	28-35,000	23-29

The proposed rent rates are 2 to 3 times less than commercial rates that prevail in Eastlands and other similar adjacent estates. If all the housing units were put on rental, the accrued monthly rent would be approximately Ksh. 554,743,800, equivalent to Ksh. 6.7 billion per year. This is 22 times the current level. However, it should be noted that the current stock of houses is only 8% of what is proposed. Overall, this plan proposes retention of 62,930 housing units (50.1% of the total) as rental. This is estimated to generate up to Ksh. 229,705,600 per month, an increase of Ksh. 208,483,850 above the current levels.

The table below provides the details of the revenue that will accrue from the houses set aside for rental.

Table 66: Achievable Revenue from Houses Proposed for Renting

House type	No. Units (Sitting tenants)	Social Rent (Ksh)	Total rent Revenue(Ksh)	
			Monthly	Annually
Bedsitter (Studios)	28,948	2,400	69,475,200	833,702,400
One bedroom	17,620	3,200	56,384,000	676,608,000
Two bedroom	10,698	5,800	62,048,400	744,580,800
Three bedroom	5,664	8,200	46,444,800	557,337,600
<b>Total</b>	<b>62,930</b>		<b>234,352,400</b>	<b>2,812,228,800</b>

The proposed units will generate Ksh. 234.4 Million monthly. This assumes that all properties are occupied and all tenants pay their monthly rents. The Annual rental income translates to a total of Ksh. 2.81 Billion.

#### 4.18.2 Land Rates Revenues

The plan proposes payment of property rates on the units for sale. The proposed annual rates are 1,000 per bedsitter or one-bedroom unit, 2,000 per two-bedroom unit and 3,000 per three-bedroom unit. The approx. revenue is Ksh. 85 Million per annum and Ksh. 850 Million in 10 years (see the table below).

Table 67: Achievable Revenue from Land Rates

House type	No. Units (Sitting tenants)	Annual Land Rate	Total Annual Revenue	Total Revenue (10 years)
Bedsitter (Studios)	28,948	1,000	28,948,000	289,480,000
One bedroom	17,620	1,000	17,620,000	176,200,000
Two bedroom	10,698	2,000	21,396,000	213,960,000
Three bedroom	5,664	3,000	16,992,000	169,920,000
<b>Total</b>	<b>62,930</b>		<b>84,956,000</b>	<b>849,560,000</b>

#### 4.18.3 Market Stalls Revenues

There are several markets in the project area whose upgrade will improve the revenue base of the County Government. The improvement will make it easier not only to conduct business but also to collect monthly rent. The following markets will contribute to the revenue kitty as shown below: -

Table 68: Rental Revenue from Markets

No	Market	No. of Stalls	Monthly Rent (Ksh)	Monthly	Annual Rent (Ksh)
13.	Gikomba	20,938	3,200	67,001,600	804,019,200
14.	Shauri Moyo/Burma	9,000	2,000	18,000,000	216,000,000
15.	New Burma	6,600	2,000	13,200,000	158,400,000
16.	Kamukunji light industry	1,827	10,000	18,270,000	219,240,000
17.	Jericho light industry	103	10,000	1,030,000	12,360,000
18.	Mwariro	350	2,000	700,000	8,400,000
19.	Furniture market	861	10,000	8,610,000	103,320,000
20.	Kaloleni	2,500	2,000	5,000,000	60,000,000
21.	Jogoo Road	2261	2,000	4,522,000	54,264,000
22.	Jericho	5,285	2,000	10,570,000	126,840,000
23.	Kariokor	2,835	2,000	5,670,000	68,040,000
24.	New Pumwani	1929	2,000	3,858,000	46,296,000
	<b>Total</b>	<b>54,489</b>		<b>156,431,600</b>	<b>1,877,179,200</b>

#### 4.18.4 Licensing and Permits

The revenues that can be generated from licensing and permits are tabulated below.

Table 69: Revenue from Licenses and Permits

No	Market	No of Stalls	Ave. Payment per stall (Ksh)	Total Annual Revenue (Ksh)
1.	Gikomba	20,938	15,200	318,257,600
2.	Shauri Moyo/Burma	9000	17,800	160,200,000
3.	New Burma	6600	15,000	99,000,000
4.	Kamukunji light industry	1827	21,700	39,645,900
5.	Jericho light industry	103	21,700	2,235,100
6.	Mwariro	350	15,000	52,500,000
7.	Furniture market	861	21,700	18,683,700

8.	Kaloleni	2500	15,000	37,500,000
9.	Jogoo Road	2261	15,000	33,915,000
10.	Jericho	5,285	15,000	79275000
11.	Kariokor	2,835	15,000	42525000
12.	New Pumwani	1929	15,000	28,935,000
13.	BCR zones	41,486	15,000	622,290,000
14.	Shopping Centres	42,059	15,000	630,885,000
	<b>Total</b>	<b>138,034</b>		<b>2,165,847,300</b>

#### 4.18.5 Revenue from Car Parks

The plan proposes development of various parking facilities. Five sites have been identified for development of 5-level parking silos. These are to be located at the proposed Gikomba bus terminus, Makadara bus terminus, New Burma market, Jericho market and Makadara Furniture market. Others facilities where parking revenue can be generated are the proposed Kaloleni Bus Park, Gikomba Freight Terminus and Machakos Country Bus. The detailed breakdown is illustrated below.

Table 70: Revenue from Car Parks

Parking Facilities	Approx. No. of vehicles per day	Proposed Parking Fee (Ksh)	Daily Revenue (Ksh)	Monthly Revenue (Ksh)	Annually Revenue (Ksh)
Gikomba Parking silo	1000	400	400,000	12,000,000	144,000,000
Makadara Parking silo	1000	400	400,000	12,000,000	144,000,000
New Burma Parking silo	1000	400	400,000	12,000,000	144,000,000
Jericho Parking silo	1000	400	400,000	12,000,000	144,000,000
Furniture Parking silo	1000	400	400,000	12,000,000	144,000,000
Kaloleni bus park	4000	200	800,000	24,000,000	288,000,000
Machakos Country Bus	4000	200	800,000	24,000,000	288,000,000
Gikomba Freight terminus	1000	200	200,000	6,000,000	72,000,000
<b>Total</b>			<b>3,800,000</b>	<b>114,000,000</b>	<b>1,368,000,000</b>

The Monthly revenue that can be generated from development of parking facilities is Ksh. 114,000,000. This translates to an annual revenue of Ksh. 1,368,000,000.

#### 4.18.6 Summary

In summary, the identified new and improved revenue streams can generate approx. Ksh. 3.3 Billion annually. The detailed summary of annual revenues is shown on the table below. This revenue stream will be a major boost to the county government incomes as they aspire to provide improved services.

Table 71: Summary of Revenues

Type of Revenue	Annual Revenue	10 Year Revenue Projection
House Rental Revenue	2,812,228,800	28,122,288,000
House Sales	-	155,122,000,000
Land Rates	84,956,000	849,560,000
Markets Rent	1,877,179,200	18,771,792,000
Licensing and Permits	2,165,847,300	21,658,473,000
Car/bus parking	1,368,000,000	13,680,000,000
Public vehicle parking	81,600,000	816,000,000
<b>Total</b>	<b>8,389,811,300</b>	<b>239,020,113,000</b>

#### **4.19 CONCLUSION**

The thematic strategies respond to issues unique to the various sectors that affect development of Eastlands. The proposals in each sector are geared towards improving the performance of the entire urban system within and around the project area. This is in recognition of the fact that a functional and productive urban environment is only achievable if the situation in each sector is operationalized appropriately. Notably, the proposals incorporate aspects that range from responding to the increasing demand for various facilities and services to improving the quality of the products in each sector and enhancing the economic returns from investments that are to be made across the board.

## **CHAPTER FIVE**

### **ACTION AREA PLANS**

The Action Area Plans are detailed and they focus on individual estates, and the Nairobi Riverfront. Twenty (20) Action Area Plans have been proposed as discussed in the subsequent sections. A brief background of each area is also presented.

It is important to note that the Action Area Plans consist of two types of spatial layouts. The first one is a land use plan showing the areas allocated to housing, work places and public spaces. The public spaces include existing and proposed road networks, water and sewerage systems and other infrastructural facilities.

The second plan also shows the proposed land use zones but further details out built-up and courtyard open spaces within the areas under housing and gives the proposed housing blocks. The purpose of this plan is to guide the estimation of the dwelling units that are achievable per estate based on the floor plans discussed under the section on housing sector proposals.

It is however noteworthy that the house layouts may vary depending on the architectural designs that will be developed during the detailed planning stage in each estate. This window is given so as to allow for flexibility to the project teams that will prepare detailed designs during the implementation of the projects in each estate. The layouts provided herein are thus only indicative and not binding. The land use plan is on the other hand binding and the land allocations will need to be observed.

#### **5.1 MARINGO**

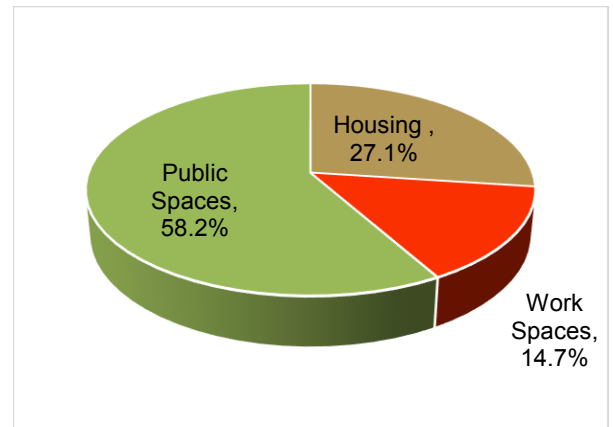
Maringo estate covers an area of 55 Ha and the analysis of existing land use distribution reveals that housing, public spaces and workspaces take up 34.7 Ha, 20.2Ha and 1.0 Ha respectively. It is situated in an area that is surrounded by mixed use developments, including BCR, government offices and Jogoo Road market. It is also close to Makadara Railway station and Makadara Hamza estate, which is dominated by BCR activities. The area has thus been identified in the NIUPLAN (2014-2030) as a node with the potential to perform the functions of a secondary CBD.

In consideration of the above, Maringo is proposed to contribute significantly to the establishment of the proposed Makadara secondary CBD. The land use distribution has thus been realigned to provide for additional work spaces (7.1 Ha more) and accommodate more employment generating activities. The area covered by public spaces have also been expanded by 11.8 Ha in order to provide for more space for the development of physical and social facilities that are suitable for a CBD.

The area under housing has however reduced to 14.9 Ha. However, it is proposed that vertical expansion of housing be done (up to 16 levels) in order to cover up for the lost horizontal space. Of the 14.9 Ha under housing, the built up area is proposed at 8.1 Ha while the remaining 6.8 Ha is to be taken up by the courtyard open spaces. The proposed land use distribution is tabulated below.

Table 72: Proposed Land Use Budget in Maringo

Land use		Area (Ha)	(%)
Housing	Built –up residential	8.1	14.7
	Courtyard open space	6.8	12.4
	<b>Subtotal</b>	<b>14.9</b>	<b>27.1</b>
Work spaces	Commercial	2.9	5.3
	BCR	5.2	9.4
	<b>Subtotal</b>	<b>8.1</b>	<b>14.7</b>
Public spaces	Educational	8.9	16.2
	Recreational	2.1	3.8
	Public purpose	7.9	14.4
	Transportation	13.1	23.9
	<b>Subtotal</b>	<b>32.0</b>	<b>58.2</b>
<b>Total</b>		<b>55.0</b>	<b>100.0</b>



Given the existence of private developments and public facilities which cannot be demolished, the proposed renewal approach in Maringo is selective redevelopment.

### Housing

Currently, Maringo has about 4,200 units which is inclusive of approximately 2,800 extensions. The proposal is to construct 14,072 units estimated to cost Ksh. 20.8 billion. These units will cater for 7,304 sitting tenants and 6,768 new tenants. The distribution by unit type and implementation cost is shown in the table below. Prominence is given to bedsitters, one and two bedroom units for the sitting tenants to enhance access by all residents.

Table 73: Proposed No. of Units for Siting and New Tenants in Maringo

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	3,416	2,459,522,858	766	551,517,142	4182	3,011,040,000
1 BR	32	1,941	1,863,372,595	869	834,227,405	2810	2,697,600,000
2 BR	50	1,301	2,277,215,248	2,427	4,246,784,752	3728	6,524,000,000
3 BR	65	646	1,596,066,492	2,280	5,631,153,508	2926	7,227,220,000
3 BR+ SQs	75	0	0	426	1,358,940,000	426	1,358,940,000
<b>Total</b>		<b>7,304</b>	<b>8,196,177,193</b>	<b>6,768</b>	<b>12,622,622,807</b>	<b>14072</b>	<b>20,818,800,000</b>



Figure 104: Proposed Maringo Estate housing layout

### Work Places

In order to create employment opportunities, work places have been earmarked. These are commercial zones, which include a proposed furniture market and shopping centre. The shopping centre will accommodate small stalls and multiple business activities. The proposed 2 Ha furniture market to be developed as a multi-storey facility will be used mainly by the carpenters who currently market their products along Jogoo road. More than 860 stalls will be created, creating potential employment to over 4300 people assuming an average 5 personnel stall.

Within the designated 6.9 Ha BCR zones, more employment spaces will be created at the ground and first floor level floors. The BCR areas are expected to provide shops and service facilities for the resident population.

### **Public Spaces**

An area of 1.9 ha has been earmarked for the construction of county offices. This is centrally located within the node. The proposed county offices will help in providing essential services required in the node and in the entire Eastlands area.

In addition to the existing St. Patrick Primary School, Dr. Kraft School which have all been retained, a TVET College is proposed taking up 1.2 Ha. The college is proposed to enhance training and skill development in line with current National Government policy that emphasizes middle level training. Other facilities proposed include a Level 4 hospital, a police station and a community centre. The proposed community centre, occupying 0.35 Ha, will be adjacent to the residential, educational and commercial land uses. This will encourage its usage. The proposed police station is located strategically along Nyasa road thus making it easily accessible. There are also newly proposed recreational facilities, which include the 2 public parks located along Nyasa Road.

The proposed transportation network focuses on expansion of roads. The road expansion proposals are intended to cater for more traffic which is expected to increase significantly. Nile and Nyasa roads are recommended for expansion to 40m while Uaso and Rukwa roads are proposed to be 30m wide. A viaduct to Industrial area has also been proposed at Nile-Jogo road junction in order to increase connectivity between Nairobi industrial area and Makadara secondary CBD. There is also a proposed bus station at the junction between Nyasa and Jogoo Roads. This location currently accommodates an informal bus station. Additionally, a BRT station is also proposed adjacent to this bus station.

In the case of water supply, it is recommended that DN 200 HDPE pipes be newly along Nile road and DN 150 Pipes along Nyasa road. This is expected to augment water supply in Maringo. Water will however be drawn from the DN 300 HDPE pipeline along Jogoo road and conveyed to an elevated tank before being distributed to the various units proposed in the estate. The proposed sewer system constitutes service lines that will convey sewerage directly into the primary trunk main proposed along Nyasa Road.

The Action Area Plan for Maringo estate is shown in the map overleaf.

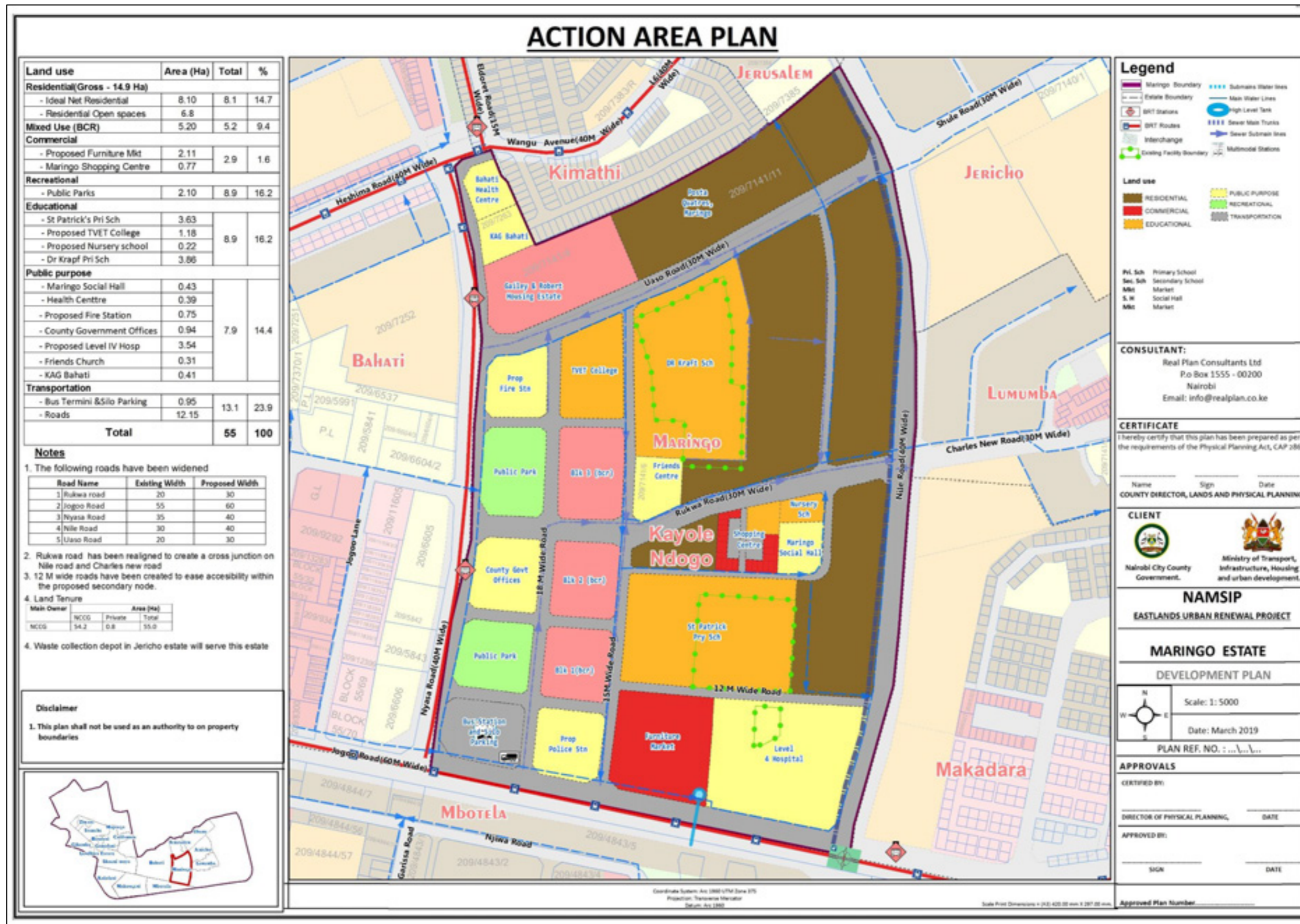


Figure 105: Action Area Plan for Maringo

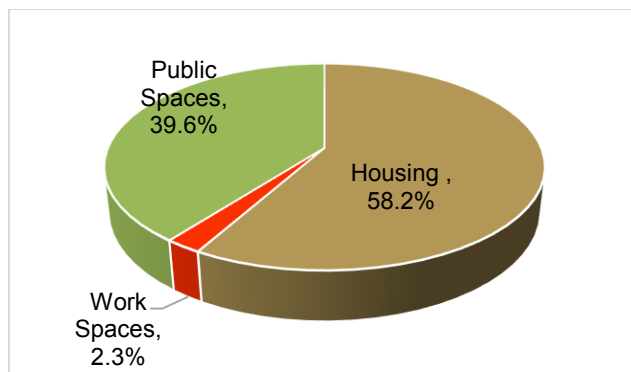
## 5.2 MBOTELA

Mbotela is a predominantly residential estate located along Jogoo road and it covers 48.7 Ha. Housing occupies 31 Ha (64%) followed by public and work spaces at 15 Ha (31%) and 3 Ha respectively. Given that Mbotela comprises of several private residential developments and the NCCG land also accommodates a significant population, it is proposed that the estate be retained as predominantly residential and the renewal approach be selective redevelopment.

Housing is recommended to take 28.3 Ha of the land, comprising of 23.5 Ha and 9.9 Ha built-up residential and courtyard open spaces respectively. Public spaces are recommended to occupy 40% while workplaces occupy 2% of the estate. The table below details out the proposed distribution of land uses.

Table 74: Proposed Land Budget for Mbotela

Land use		Area (Ha)	(%)
Housing	Built –up residential	23.5	48.3
	Courtyard open space	4.8	9.9
	<b>Subtotal</b>	<b>28.3</b>	<b>58.2</b>
Work spaces	Commercial	0.9	1.9
	Industrial	0.2	0.2
	<b>Subtotal</b>	<b>1.1</b>	<b>2.3</b>
Public spaces	Educational	4.1	8.4
	Public purpose	1.0	2.1
	Transportation	14.2	29.1
	<b>Subtotal</b>	<b>19.4</b>	<b>39.6</b>
<b>Total</b>		<b>48.7</b>	<b>100.0</b>



### Housing

The proposals for housing include reorganization of old County Housing zone and provision of development control regulations for privately owned sections. The proportion of land earmarked for residential use reduced slightly by 2.7 Ha. However, the number of proposed housing units has increased to 7,232 units from the current demand of 3604 (904 main houses and 2700 extensions).

It is further proposed that out of the total number of achievable units, 3679 be set aside for sitting tenants while 3553 accommodate new residents. This means that the current demand by sitting tenants has been exceeded by 75 units. The construction cost is estimated at Ksh. 10.9 Billion.

The table below shows the proposed distribution of units between the sitting and new tenants according to unit type and the estimated cost of construction.

Table 75: Proposed Housing Units in Mbotela

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	1,657	1,193,297,915	372	267,582,085	2,029	1,460,880,000
1 BR	32	993	953,569,321	445	426,910,679	1,438	1,380,480,000
2 BR	50	677	1,185,031,540	1,263	2,209,968,460	1,940	3,395,000,000
3 BR	65	352	869,490,768	1,242	3,067,689,232	1,594	3,937,180,000
3 BR+ SQs	75	0	0	231	733,700,000	231	733,700,000
<b>Total</b>		<b>3,679</b>	<b>4,201,389,544</b>	<b>3,553</b>	<b>6,705,850,456</b>	<b>7,232</b>	<b>10,907,240,000</b>

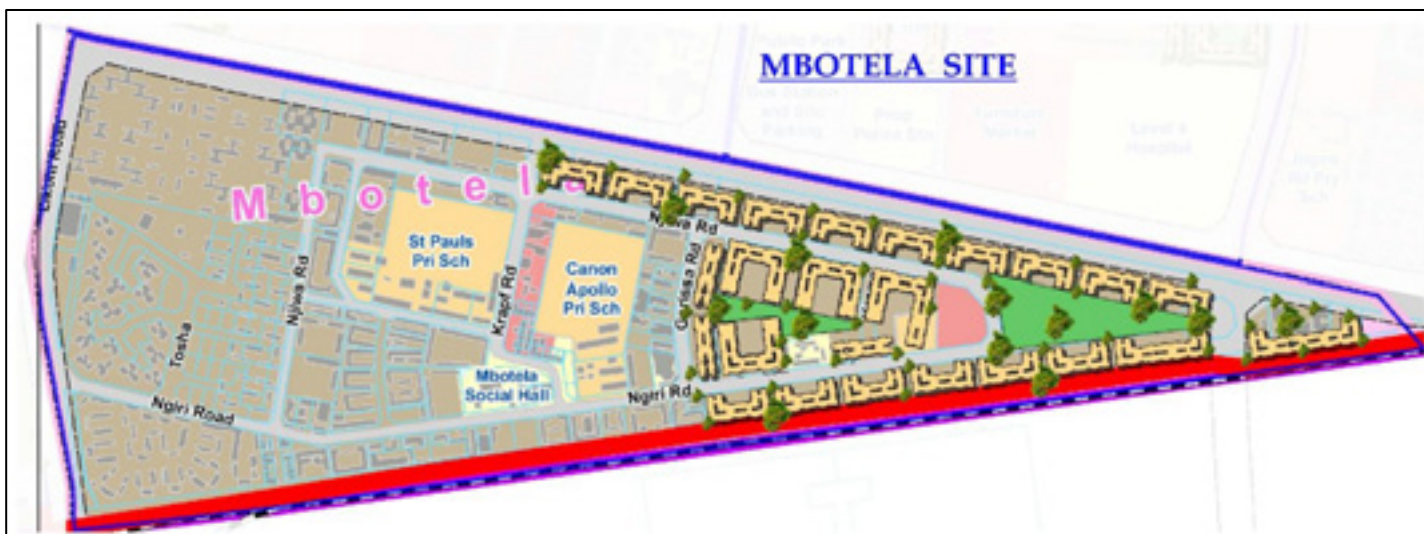


Figure 106: Proposed Mbotela Estate housing layout

### Work Places

Despite the need to increase employment areas, the land dedicated to works places has notably reduced from the current 2.5 Ha (5%) to 1.1 Ha which accounts for 2% of the land. This is due to the proposed relocation of furniture traders along Jogoo road to a designated furniture market in the proposed secondary CBD. This move strives to create a better business environment for the traders. The commercial space retained within the estate comprises two shopping centres which are intended to provide basic functions to Mbotela residents.

### Public Spaces

Public spaces have increased by a significant 4.3 Ha, mainly due to the proposed improvement of the transportation network. Jogoo road has been proposed for widening to 60m and Likoni road to 40m. All the internal roads are proposed to be at least 12m wide.

The area occupied by Canon Apollo Primary, Mbotela Nursery (next to social hall) and St. Paul Primary has been retained but vertical expansion of the schools recommended. Besides the three facilities, a new nursery school covering 0.28 Ha is proposed along Ngiri road to serve the Eastern part of the estate.

The existing clinic has been earmarked for upgrading to a health centre and sufficient land (0.21 Ha) provided. The social hall has earmarked for improvement to fit the status of a Community Resource and Empowerment Centre. It is expected to support economic empowerment, social integration, talent and skill development and innovation among the young people. A police post (0.14 Ha) has also been newly proposed.

In order to improve water supply, it is proposed that DN 100 HDPE pipes be introduced along the estate boundary upon replacing the DN300 BLS main pipeline along Jogoo road. This will help to abstract and convey water to the planned developments using DN 75 and DN 50 HDPE pipes. An elevated tank is also proposed at St. Paul's Primary school. This will provide the required head to supply water to the high-rise buildings. A new sewerage reticulation network has also been proposed to serve Mbotela.

# ACTION AREA PLAN

Land use	Area (Ha)	Total	%
<b>Residential (Gross - 28.33 Ha)</b>			
- Ideal Net Residential	23.50	28.3	58.1
- Residential Open spaces	4.7		
<b>Commercial</b>			
- Mbotela Shopping Centre	0.59	0.99	1.6
- Proposed Shopping Centre	0.40		
<b>Recreational</b>			
- Proposed Recreational	2.10	2.1	4.3
<b>Educational</b>			
- Canon Apollo Pri Sch	1.73	4.1	8.4
- St Pauls Pri Sch	2.09		
- Proposed Nursery school	0.31		
<b>Public purpose</b>			
- Mbotela Social Hall	0.57	1	2.1
- Health Centre	0.21		
- Proposed Police Post	0.14		
- Church	0.11		
<b>Transportation</b>			
- Roads	14.20	14.2	29.1
<b>Total</b>		<b>48.7</b>	<b>100</b>

### Notes

- The following roads have been widened

Road Name	Existing Width	Proposed Width
1 Likoni road	25	40
2 Jogoo Road	35	60

- Njiwa road, Krapf road, Jinja road and Garissa road will be improved

- Land Tenure

Main Owner	Area (Ha)
NCCG	Private
NCCG	25.2
	18.88
	44.08

- Waste collection depot in Jericho estate will serve this estate

### Disclaimer

- This plan shall not be used as an authority to on property boundaries

### LOCATION CONTEXT



### Legend

	Mbotela Boundary		Submain Water Lines
	Estate Boundary		Main Water Lines
	BRT Stations		High Level Tank
	BRT Routes		Sewer Main Trunks
	Interchange		Sewer Submain Lines
	LRT Routes		Multimedial Stations
	Existing Facility Boundary		Existing Facility Boundary
	Cadastral Boundaries		

Land use	
	RESIDENTIAL
	COMMERCIAL
	INDUSTRIAL
	EDUCATIONAL
	PUBLIC PURPOSE
	RECREATIONAL
	TRANSPORTATION

PH. Sch	Primary School
S.H	Social Hall
H.C	Health Centre
Ch	Church
P.P	Police Post

### CONSULTANT:

Real Plan Consultants Ltd  
P.O. Box 1555 - 00200  
Nairobi  
Email: info@realplan.co.ke

### CERTIFICATE

I hereby certify that this plan has been prepared as per the requirements of the Physical Planning Act, CAP 186.

Name \_\_\_\_\_ Sign \_\_\_\_\_ Date \_\_\_\_\_  
COUNTY DIRECTOR, LANDS AND PHYSICAL PLANNING

### CLIENT



**NAMSIP**  
EASTLANDS URBAN RENEWAL PROJECT

### MBOTELA ESTATE

### DEVELOPMENT PLAN

Scale: 1: 5000  
Date: March 2019  
PLAN REF. NO. : .../.../...

### APPROVALS

CERTIFIED BY: \_\_\_\_\_  
DIRECTOR OF PHYSICAL PLANNING, \_\_\_\_\_ DATE \_\_\_\_\_  
APPROVED BY: \_\_\_\_\_  
SIGN \_\_\_\_\_ DATE \_\_\_\_\_

Approved Plan Number: \_\_\_\_\_

Coordinate System: Arc 2011 UTM Zone 37S  
Projection: Transverse Mercator  
Datum: Arc 1960  
Scale: Project Dimensions = (483,420.00 mm x 297,000.00 mm)

Figure 107: Proposed Action Area Plan for Mbotela

### 5.3 KALO LENI

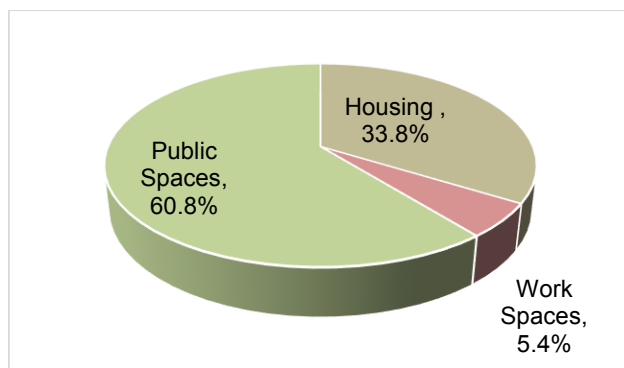
Kaloleni is located along Jogoo Road, (about 2.8 Km East of Nairobi CBD) and it occupies 54.6 Ha. Being an estate that served important purposes during the fight for Kenya’s independence, it has a rich historical heritage. Key historical features include Kaloleni Social Hall, the estate’s streetscape, City Stadium, palm trees and the residences of prominent leaders e.g. the 1<sup>st</sup> Governor of the former protectorate of Kenya. The existing land use distribution is such that housing covers 30.5 Ha (56%) while public spaces and work places occupy 20.9 Ha (38%) and 3.2 Ha (6%) respectively.

Considering the need to preserve the heritage and encourage tourist activities in the estate, selective redevelopment, with major improvements on the public spaces is recommended. Secondly, the need to increase and reorganize employment zones has led to the provision of additional work places. There is also the necessity to increase housing stock which calls for densification of housing. However, the location of the estate along the flight path gives room for a maximum building height of 5 levels.

Given the potential of Kaloleni as a tourist destination, sports and recreational hub and a business zone, Kaloleni forms a major activity node. The current land use structure has thus been altered to give room for increased public spaces at 33 Ha (61%) and reduced housing area at 18.5 Ha (34%). The area under work places has however been retained at 3 Ha (5%). The built-up and the courtyard open spaces under housing area cover 8.4 Ha and 10.1 Ha respectively as illustrated below.

Table 76: Proposed Land Use Distribution in Kaloleni

Land Use		Area (Ha)	%
Housing	Built-up Residential	8.4	15.3
	Courtyard open space	10.1	18.5
	<b>Subtotal</b>	<b>18.5</b>	<b>33.8</b>
Work space	Commercial	2.1	3.8
	BCR	0.9	1.6
	<b>Subtotal</b>	<b>3.0</b>	<b>5.4</b>
Public space	Educational	4.7	8.5
	Recreational	10.2	18.8
	Public purpose	3.7	6.8
	Transportation	14.6	26.7
	<b>Subtotal</b>	<b>33.2</b>	<b>60.8</b>
<b>Total</b>		<b>54.6</b>	<b>100.0</b>



#### Housing

The proposed units in Kaloleni have increased from the current 881 units to 9328 units. Those assigned to the existing tenants are 4791 while the rest (4537) have been proposed to accommodate new tenants. The construction of these units is estimated to cost approximately Ksh. 14.0 billion. The units are proposed to be located within 67 high-rise building blocks organized in courts. The table below details out the proposed distribution of housing units and the cost of implementation.

Table 77: Proposed Housing Units in Kaloleni

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	2,066	1487,358,515	463	333,521,485	2,529	1,820,880,000
1 BR	32	1,446	1387,914,179	647	621,365,821	2,093	2,009,280,000
2 BR	50	799	1398,825,890	1491	2,608,674,110	2,290	4,007,500,000

3 BR	65	480	1185,322,108	1693	4,181,987,892	2,173	5,367,310,000
3 BR+ SQs	75	0	0	243	775,170,000	243	775,170,000
<b>Total</b>		<b>4,791</b>	<b>5459,420,692</b>	<b>4537</b>	<b>8,520,719,308</b>	<b>9,328</b>	<b>13,980,140,000</b>



Figure 108: Proposed Kaloleni Estate housing layout

### Work Places

The area under work places has been enhanced to expand the Burma/Stadium business node. The proposals comprise of a new proposed high-rise market (0.96 Ha), the existing Kaloleni Shopping Centre and an adjacent Resort and Conference Centre (0.65 Ha) to be run by NCCG. The proposed market is

designated to harness the business opportunities currently targeted by the informal traders operating in the area adjacent to City Stadium. The market is estimated to have about 2,500 stalls once fully established. The shopping centre is centrally located next to the chief's camp, covers 0.5 Ha and will provide for various small-scale business activities. The proposed Resort and Conferencing centre is meant to tap opportunities arising from the development of heritage facilities in the estate which have significant tourism potential.

### **Public Spaces**

Among the facilities occupying the proposed public spaces in Kaloleni are the schools. They include a proposed Educational Complex (which is currently St. Pauls Primary) and Kaloleni Primary. The complex has been proposed to incorporate the current primary school and a secondary section. The public purpose facilities include a proposed fire station, a proposed health centre (an upgrade from the existing Kaloleni dispensary) the Social Hall (a heritage site which has been proposed for upgrade to a CORE centre), a Resource Centre (intended to provide historical information), the preserved Governor's house (heritage site), the existing AP Camp cum Chief's Office and the existing Church (known as Church of God).

Others are the recreational facilities which have been proposed for expansion and upgrade. They include City Stadium, which has been expanded to 7.8 Ha to allow for its upgrade to international standards; Majimbo Grounds (expanded to 2.9 Ha) and the existing basketball court. Majimbo is also proposed as storm water detention site to help in controlling flooding during the rainy seasons.

There is also the proposed transportation network. It encompasses the estate's internal streetscape (made up of 12m wide access roads), the proposed bus park and the major arterials (Jogoo and Lusaka Roads) which form the Northern and Western estate boundaries respectively.

Concerning water supply, Kaloleni is to soon benefit from the ongoing water supply improvement project being implemented by NWSC. This will however not completely resolve the water supply problems within the estate. Additional improvement works will thus be required in future for the problem to be eradicated. As an additional measure, an elevated tank has been proposed in this plan for purposes of water storage. Its proposed location is close to City stadium. The sewer networks have also been proposed for upgrade.

All the above proposals are spatially represented in the Action Area Plan provided overleaf.



Figure 109: Proposed Action Area Plan for Kaloleni

## 5.4 BAHATI

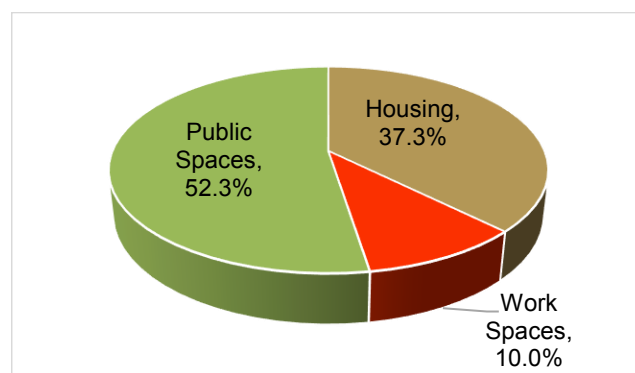
Bahati has an area of 107.8 Ha. The estate's current land use structure exhibits three main uses including housing (49.7 Ha), public spaces (47.4 Ha) and workspaces (10.7 Ha). Considering the presence of private developments and numerous public facilities which need to be preserved, Bahati has been proposed for selective redevelopment.

Its plan has been guided by the need to increase housing stock, improve connectivity and foster regeneration of Nairobi River. A section of the estate forms part of the proposed Makadara secondary CBD which is envisioned to play a key role in employment creation.

Like most estates, Bahati is proposed to retain a significant housing space, even though it has been reduced by 9 Ha in order to provide space for expansion of road networks and regularize the Nairobi river riparian reserve. The public spaces have thus been increased by 9%. The work places on the other hand occupy 10.8 Ha (see the illustration below).

Table 78: Proposed Land Use Distribution in Bahati

Land Use		Area (Ha)	%
Housing	Built-up Residential	22.7	21.0
	Courtyard open spaces	18.0	16.7
	<b>Subtotal</b>	<b>40.7</b>	<b>37.7</b>
Work spaces	Commercial	8.9	8.2
	BCR	1.9	1.8
	<b>Subtotal</b>	<b>10.8</b>	<b>10.0</b>
Public spaces	Educational	21.7	20.1
	Recreational	0.6	0.6
	Public purpose	9.9	9.2
	Transportation	21.2	19.6
	Public utility	0.5	0.5
	Conservational	2.4	2.3
	<b>Subtotal</b>	<b>56.4</b>	<b>52.3</b>
<b>Total</b>		<b>107.8</b>	<b>100.0</b>



### Housing

It is estimated that the Bahati will contribute 16,368 housing units of the total units proposed. The units are distributed between the sitting and new tenants in the ratio of 8396 to 7972. The estate is organized in courts comprising of 118 housing blocks. The construction cost is estimated at Ksh. 24.6 billion. The table below shows the proposed distribution of houses and development cost.

Table 79: Proposed Distribution of Units in Bahati

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	3,592	2,585,968,916	805	579,871,084	4,397	3,165,840,000
1 BR	32	2,561	2,458,192,957	1,146	1,100,527,043	3,707	3,558,720,000
2 BR	50	1,393	2,438,477,272	2,599	4,547,522,728	3,992	6,986,000,000
3 BR	65	850	2,100,087,490	3,000	7,409,412,511	3,850	9,509,500,001
3 BR+ SQs	75	0	0	422	1,346,180,000	422	1,346,180,000
<b>Total</b>		<b>8,0396</b>	<b>9,582,726,635</b>	<b>7,972</b>	<b>14,983,513,366</b>	<b>16,368</b>	<b>24,566,240,001</b>

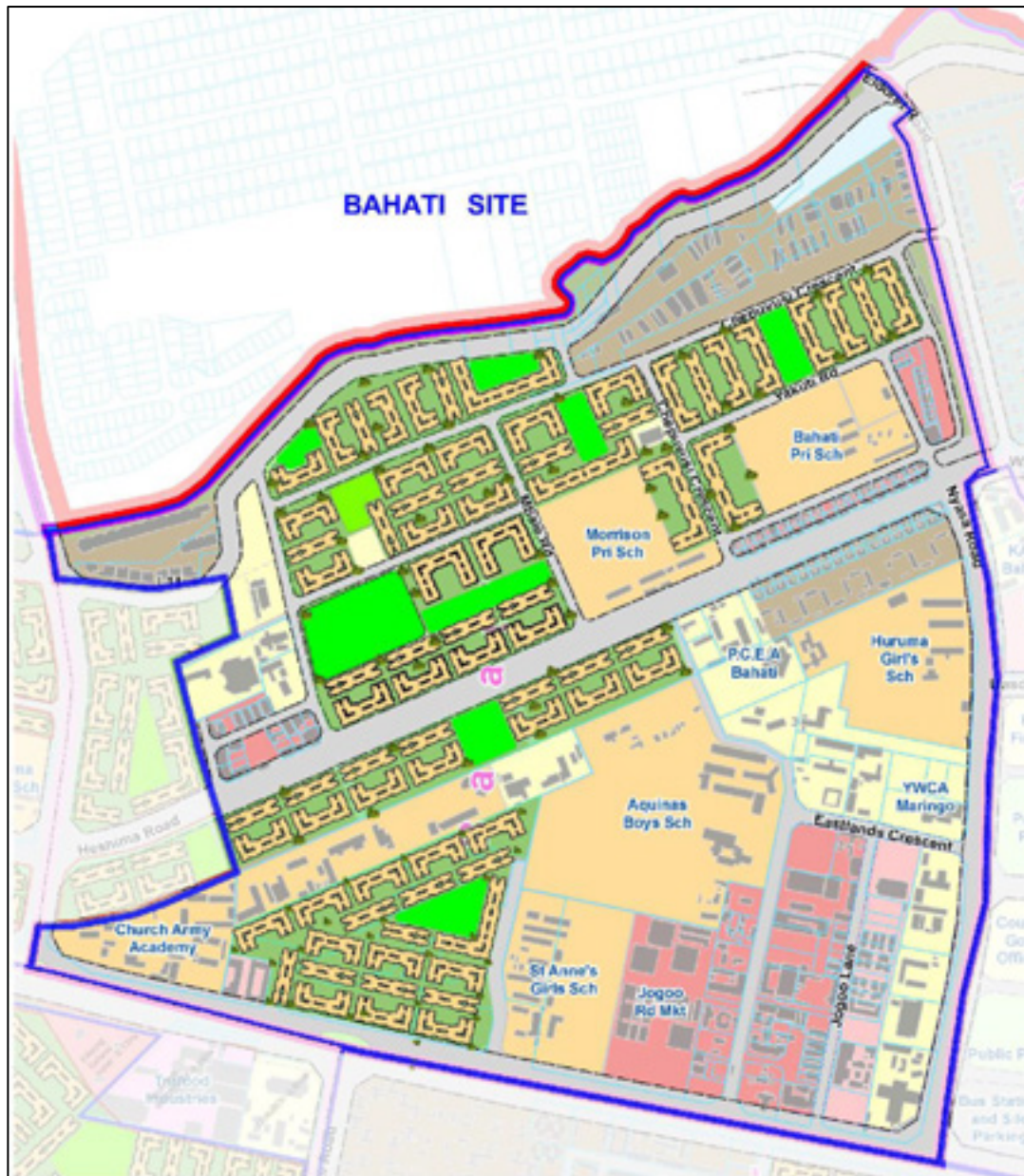


Figure 110: Proposed Bahati Estate housing layout

### Work Places

The work places in Bahati are inclusive of Jogoo Road Market and the Uchumi Supermarket neighbourhood occupying 8.7 Ha. Jogoo Road Market (2.2 Ha) is earmarked for modernization and densification to multi-level facility of approximately 2261 stalls. Besides the market, two shopping centres occupying 1.1 Ha are proposed along Heshima road to provide basic goods and services to the residents.

### Public Spaces

Bahati's public space constitute 21 Ha of land covered by transportation network. Heshima and Nyasa roads have been proposed for widening to 40m, Jogoo Road to 60m, Jogoo lane to 15m, Eastlands Crescent to 18m; and all internal streets to 12m and 15m. A new 25m wide road has also been proposed along the Southern edge of Nairobi River Riparian reserve to act as a leisure corridor and a buffer between the river and the surrounding developments. Bus Rapid Transit (BRT) routes are further

proposed along Eastleigh 1<sup>st</sup> Avenue, Nyasa, Heshima and Jogoo roads to enhance efficiency of public transport system.

Seven education facilities namely Morrison Primary, Bahati Primary, Church Army Academy, Mary Immaculate Educational Centre, St. Anne Girls, Aquinas Boys and Huruma Girls are located within Bahati. They cumulatively occupy 21.7 Ha of land and are all to be retained within their current locations.

Other public facilities retained are Bahati Playground, Jogoo Road Police Station, Deputy County Commissioner's office, Makadara Law Courts and Bahati Social Hall and Rehabilitation Centre. The social hall has been earmarked for upgrading to a Community Resource and Empowerment Centre. Taking into consideration current space occupied by Jogoo Road Police Station is limited, an annex of the facility has been proposed at the secondary CBD to create room for development of additional security infrastructure. A home for the elderly, occupying 0.4 Ha, has also been proposed next to the Apostolic Faith Church.

The estate is proposed to be supplied with water from an abstraction along Eastleigh 1<sup>st</sup> Avenue. The water is to be conveyed to an elevated tank proposed at a high point within Church Army academy before it is transferred the estate. Proposed feeder pipes comprise DN 75 and DN 50 HDPE and Upvc pipes.

The figure below shows the proposed Action Area Plan for Bahati Estate.

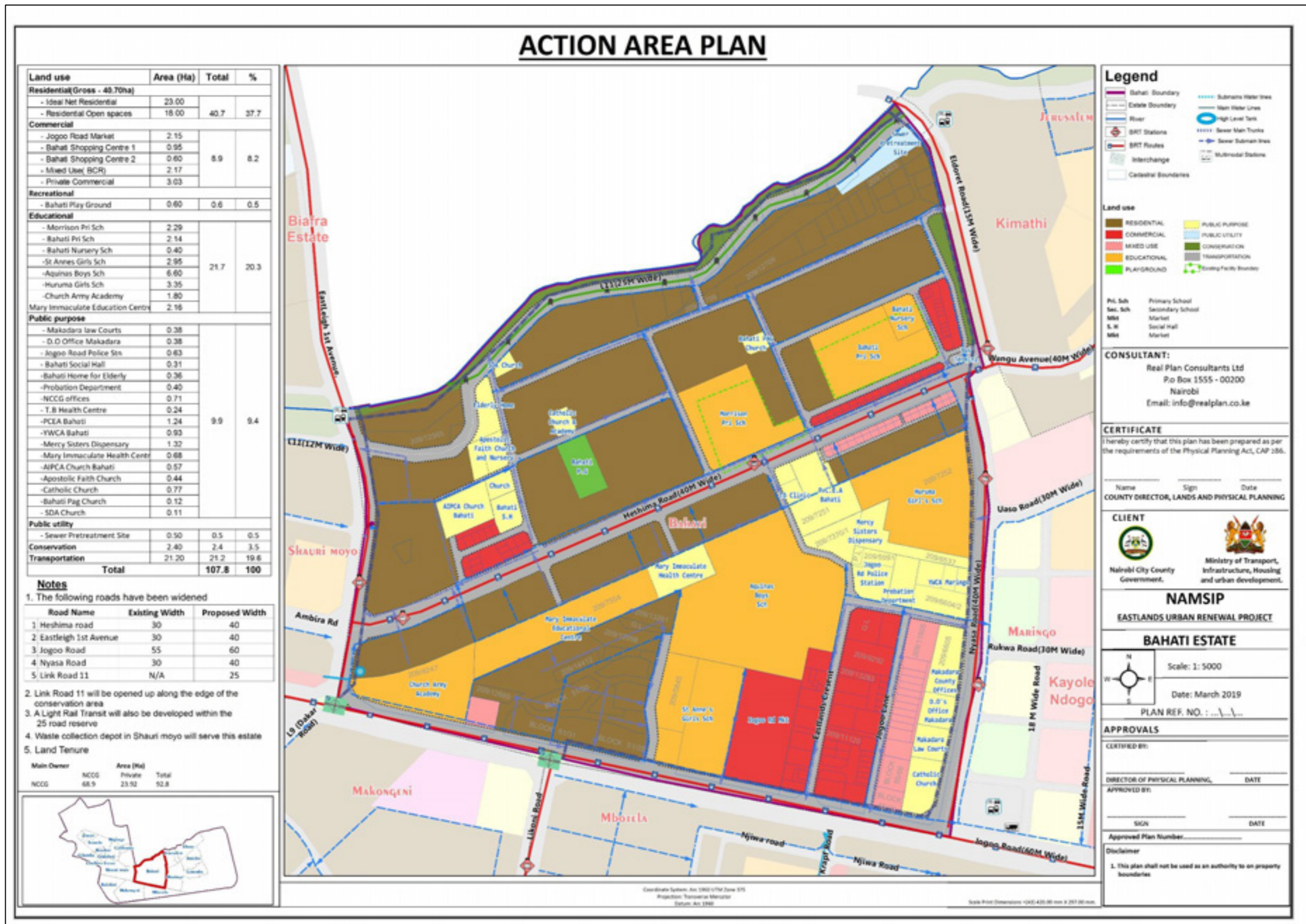


Figure 111: Proposed Action Area Plan for Bahati

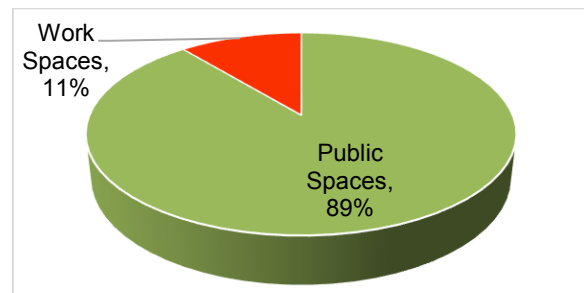
## 5.5 LANDHIES

Landhies is the smallest among the focus estates, covering 3.7 Ha. It lies along Landhies Road. The existing land use pattern has four land use zones consisting residential, light industrial, educational and conservation. Educational space takes largest proportion of land (2.7 Ha), followed by conservation areas covering 0.4 Ha. Other land use zones include residential and light industrial (metal fabrication) each taking up 0.3 Ha

The proposed Action Area Plan for Landhies provides for elimination of the residential space and increase of work places given the fact that the estate is located within an area dominated by commercial and light industrial activities. The light industrial establishments have in particular encroached into the estate's residential space thereby reducing the quality of the living environment. The heavy traffic on Landhies road which is projected to increase significantly further worsens the living situation. The proposed land use structure thus encompasses 0.4 Ha of work places and 3.3 Ha public space as shown below.

Table 80: Proposed Land Use Budget in Landhies

Land use		Area (Ha)	%
Work spaces	Light Industrial	0.4	11
Public spaces	Educational	2.5	68
	Conservational	0.5	13
	Transportation	0.3	8
	<b>Subtotal</b>	<b>3.3</b>	<b>89</b>
<b>Total</b>		<b>3.7</b>	<b>100.0</b>



Other than the two schools in Landhies, the rest of the spaces are proposed to undergo total redevelopment.

### Housing

Given the proposed elimination of residential area, it is recommended that the 56 sitting tenants be moved to Shauri Moyo to minimize the relocation distance.

### Work Places

The current residential space, measuring 0.4 Ha, has been proposed as a light industrial zone. It is recommended that the area accommodates a multi-storey facility that will specifically house showrooms. Metal fabrication is discouraged in this area because of its potential to cause noise pollution and reduce the quality of learning environment in the adjacent schools.

### Public Spaces

The proposed public spaces in Landhies consists of transportation, educational and conservation areas. Educational area covers the current Muthurwa Primary and Kamukunji Secondary Schools which have been retained since they serve children of local estates and beyond. The proposed conservation area encompasses a section of Nairobi river riparian reserve, which is proposed to cover 15m from the highest watermark. The leisure corridor referred to herein before extends to Landhies estate too.

Transportation proposals include widening of Landhies road from 35m to 40m and Sakwero road from 12m to 30m. A 30m wide missing link has further been created to connect Quarry and Sakwero roads and improve connectivity between the Northern and Southern spheres of the project area. Water and sewer reticulation networks have also been proposed as shown on the Action Area Plan overleaf.

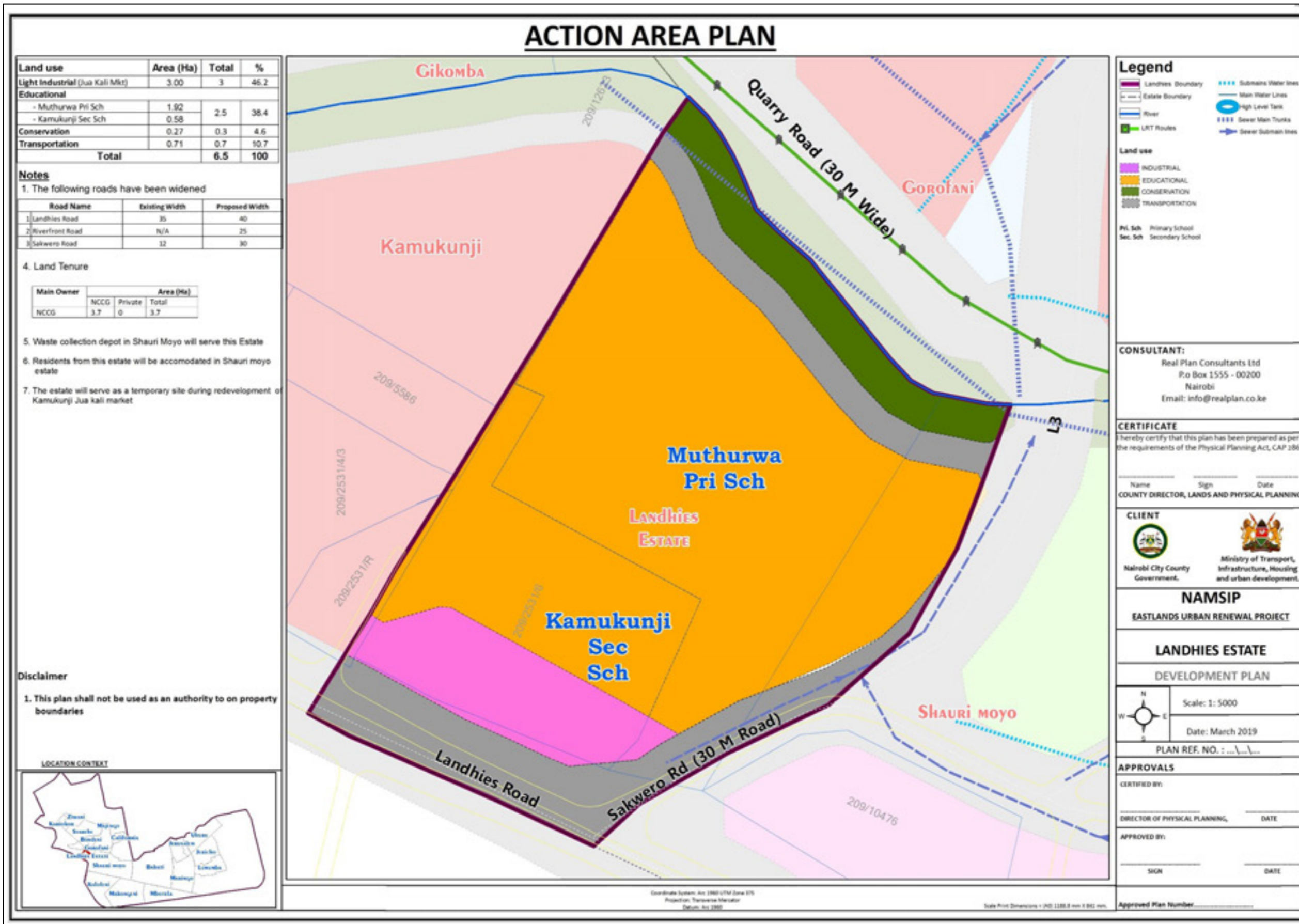


Figure 112: Action Area Plan for Landhies

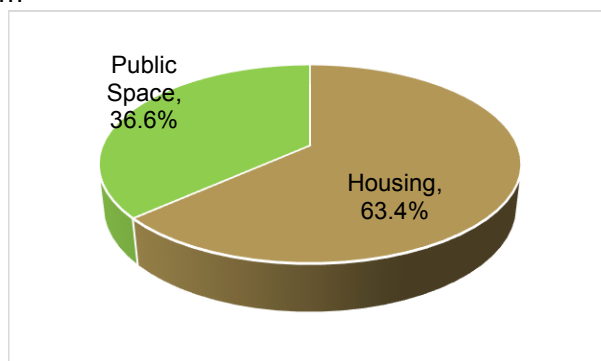
## 5.6 JERUSALEM

Jerusalem is a County Government owned estate occupying 8.3 Ha. The estate is predominantly residential considering that housing covers 6.4 Ha (77%) while public space account for 1.9 Ha (23%).

The estate is proposed for total redevelopment but the current land use structure is to be largely retained. The main proposed alteration involves densification of housing developments, widening of the road networks and expansion of the riparian reserve to the required standards. Housing has been assigned 5.3 Ha, with a built-up area of 2.2 Ha and courtyard open spaces covering 3.1 Ha. The public spaces on the other hand cover 3.0 Ha (36.6%) as shown below.

Table 81: Proposed Land Use Distribution in Jerusalem

Land uses		Area (Ha)	%
Housing	Built-up Residential	2.2	25.6
	Courtyard open spaces	3.1	37.8
	<b>Subtotal</b>	<b>5.3</b>	<b>63.4</b>
Public Space	Public purpose	0.7	8.4
	Conservational	0.8	9.6
	Transportation	1.5	18.1
	<b>Subtotal</b>	<b>3.0</b>	<b>36.6</b>
<b>Total</b>		<b>8.3</b>	<b>100.0</b>



### Housing

The proposed housing stock in Jerusalem has increased from 504 main houses to 4288 units. The new units have been distributed among sitting and new tenants in the ratio of 2281 to 2007. The proposed building height is 16 levels considering the long distance between Jerusalem and the flight path. The estate is organized into courts with 15 blocks altogether. The cost of construction is estimated at Ksh. 6.2 billion (see the table below).

Table 82: Proposed Distribution of Units in Jerusalem

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	1,132	815,135,983	254	182,784,017	1,386	997,920,000
1 BR	32	573	550,391,194	257	246,408,806	830	796,800,000
2 BR	50	399	698,802,104	745	1,303,197,896	1,144	2,002,000,000
3 BR	65	177	436,381,816	623	1,539,618,184	800	1,976,000,000
3 BR+ SQs	75	0	0	128	408,320,000	128	408,320,000
<b>Total</b>		<b>2,281</b>	<b>2,500,711,097</b>	<b>2007</b>	<b>3,680,328,903</b>	<b>4,288</b>	<b>6,181,040,000</b>

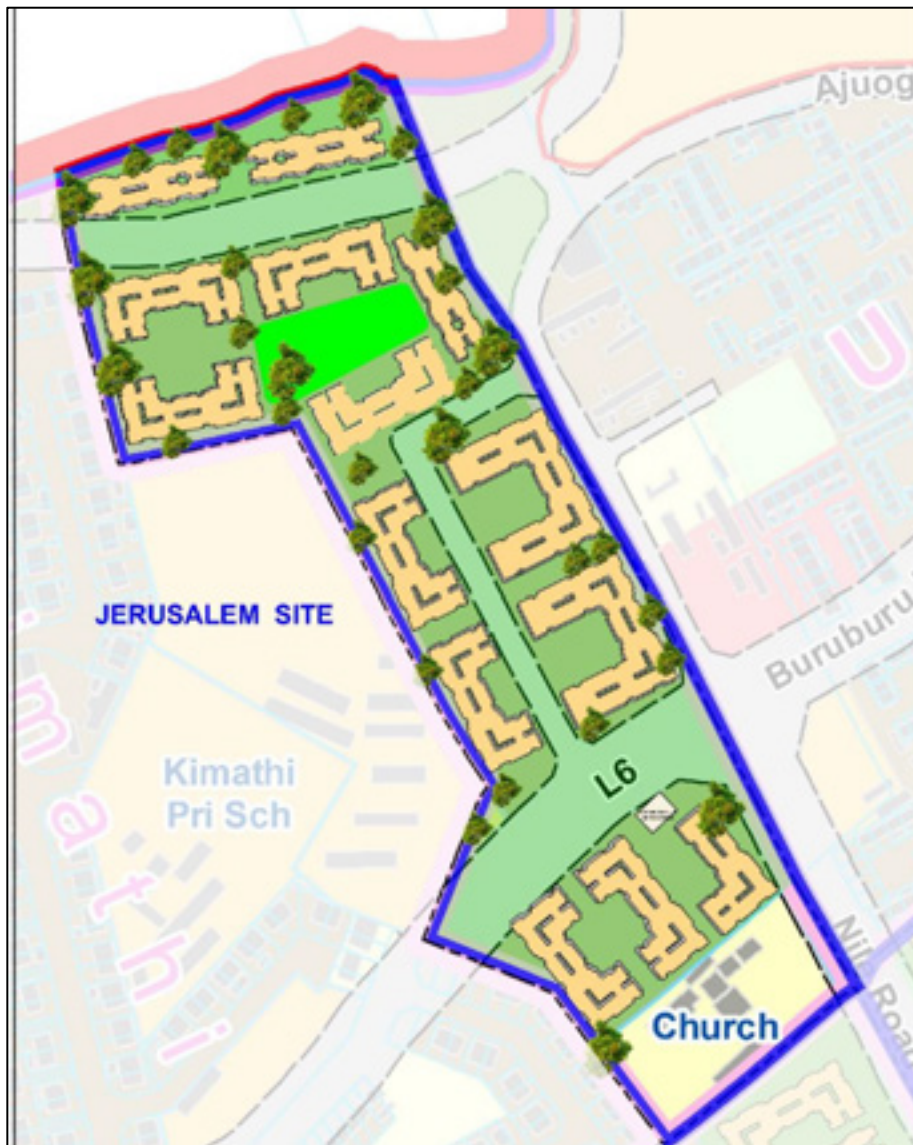


Figure 113: Proposed Jerusalem Estate housing layout

### Public Spaces

Public spaces in the estate include roads, a church and conservation area. The road sector proposals include widening Wangu Avenue to 40m and creation of a new 15m wide internal street. The proposed leisure corridor along the riparian reserve traverses the Northern edge of Jerusalem estate.

The conservation area in the estate is the 15m wide riparian zone. Proposed water supply network is comprised of a DN 150 pipe located along Nile road, DN 75 and DN 100 HDPE pipelines and an elevated water tank to be situated in Kimathi estate. It is also recommended that the estate be served by the Nile – Buruburu – Rabai road sewer trunk main, which is further earmarked for upgrading.

The Action Area is shown overleaf.

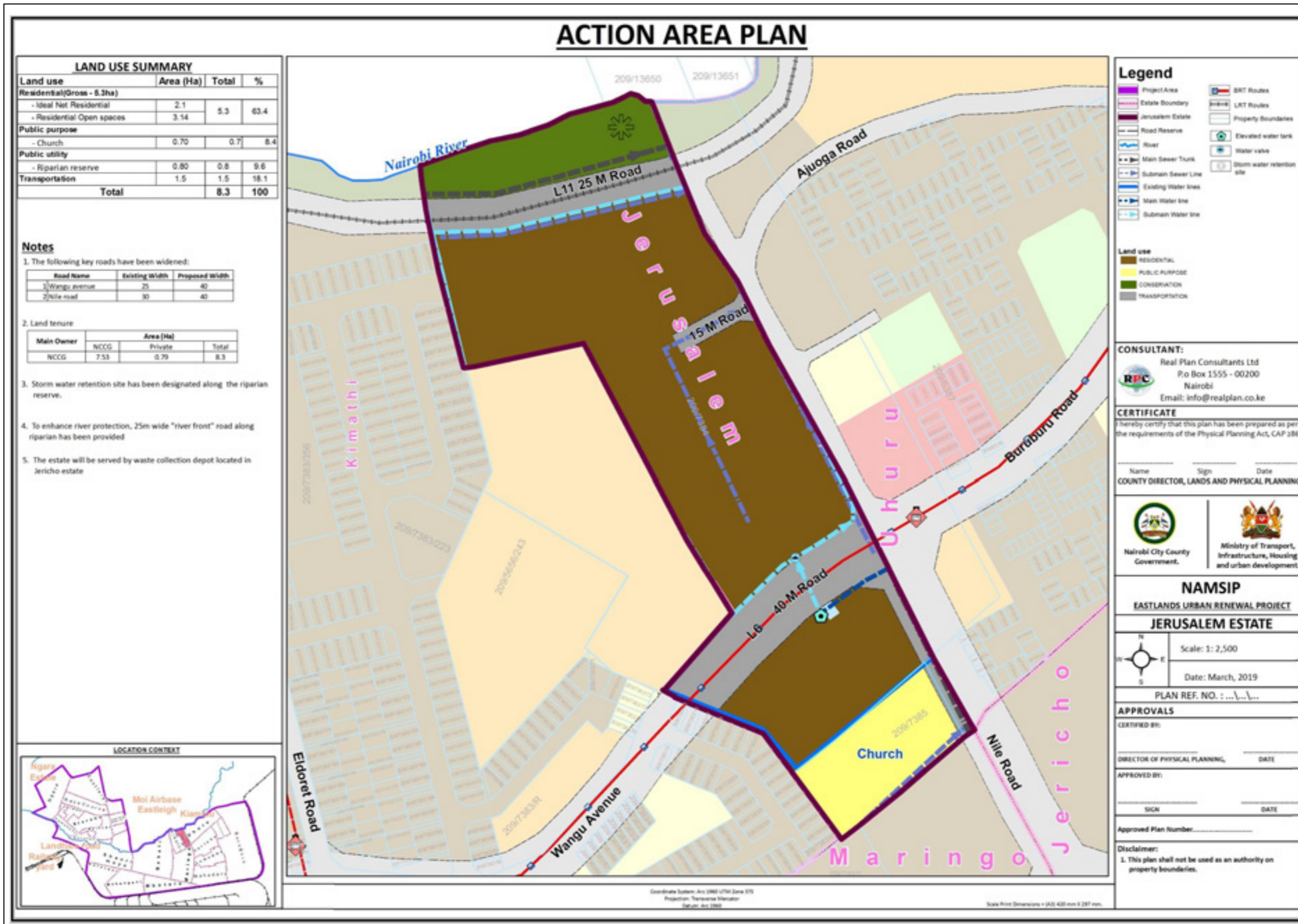


Figure 114: Proposed Action Area Plan for Jerusalem

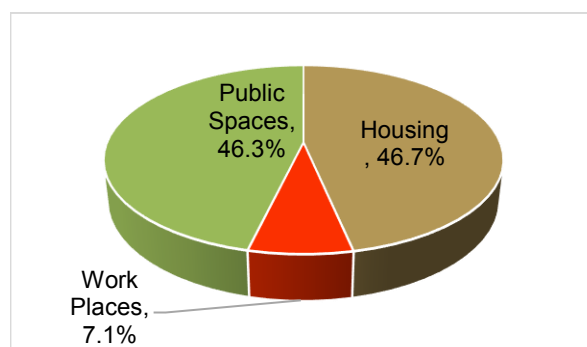
## 5.7 JERICHO

Jericho is predominantly residential estate with low-rise flats. Of the total 39.5 Ha estate land, housing takes up 15.6 Ha (43%) followed by education at 8 Ha (22%), transportation at 4.1 Ha (11%), public purpose and recreation at 3 Ha each and commercial at 2.5 Ha. Light industrial area occupies the least amount of land (0.1 Ha).

The estate has been proposed to retain the dominance of the residential use and be renewed through total redevelopment approach. The proposed land use structure comprises of housing, public and work spaces in the ratio of 18.4 Ha to 18.3 Ha to 2.8 Ha. The area under housing further includes 6.9 Ha built up area and 11.5 Ha courtyard open space (see the illustration below).

Table 83: Proposed Land Use Distribution in Jericho

Land use		Area (Ha)	%
Housing	Built-up Residential	6.9	17.4
	Courtyard Open Space	11.5	<b>29.3</b>
	<b>Subtotal</b>	<b>18.4</b>	<b>46.7</b>
Work space	Commercial	1.9	4.8
	Light Industrial	0.9	2.3
	<b>Subtotal</b>	<b>2.8</b>	<b>7.1</b>
Public space	Educational	8.1	20.3
	Public purpose	3.0	7.6
	Public utility	0.4	0.9
	Transportation	6.8	17.2
	<b>Subtotal</b>	<b>18.3</b>	<b>46.2</b>
<b>Total</b>		<b>39.5</b>	<b>100.0</b>



### Housing

The estate has been redesigned into courts which accommodate up to 55 building blocks of 16 levels and 15584 units. The proposed stock is distributed in such a way that 8198 units are to be taken up by the sitting tenants and 7385 units assigned to new tenants. The cost of construction is estimated at Ksh. 22.8 billion as shown in the table below.

Table 84: Distribution of units in Jericho

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	3,870	2,786,518,246	868	624,841,754	4,738	3,411,360,000
1 BR	32	2,228	2,138,568,192	997	957,431,808	3,225	3,096,000,000
2 BR	50	1,398	2,445,807,364	2,606	4,561,192,636	4,004	7,007,000,000
3 BR	65	702	1,735,163,196	2,479	6,121,906,804	3,181	7,857,070,000
3 BR+ SQs	75	0	0	435	1,387,650,000	435	1,387,650,000
<b>Total</b>		<b>8,198</b>	<b>9,106,056,998</b>	<b>7,385</b>	<b>13,653,023,002</b>	<b>15,583</b>	<b>22,759,080,000</b>



Figure 115: Proposed Jericho Estate housing layout

**Work Places**

Land dedicated to work places has increased from 2.5 Ha to 2.8 Ha. Jericho Market, Jericho shopping centre and a newly proposed light industrial zone are the three designated work areas. The shopping centre is centrally located within the estate to provide basic goods and services to Jericho residents. The light industrial space is intended to accommodate garages and jua kali activities currently operating within Rabai road reserve.

**Public Spaces**

Realignment of infrastructure and internal streets has been proposed in the redevelopment of the estate. Key road proposals include the readjustment (straightening) and widening of Shule to 30m and expansion of Nile and Rabai roads to 40m. Internal streets created are 12m wide.

The three schools namely Njoro Nursery, Ofafa Jericho Primary and Ofafa Jericho Boys Secondary have been retained and proposed for upgrading and densification owing to the expected population increase. Taking into account the adjustment of Shule road, realignment of Njoro Nursery and Ofafa Boys secondary has been recommended. The current areas of the facilities have however been retained.

Jericho Social Hall has also been earmarked for upgrading and expansion to a Community Resource and Empowerment Centre.

To improve water supply in Jericho, there are newly proposed HDPE pipes intended to draw water from the DN 200 HDPE pipes to be laid along Nile and Rabai Roads. Supply to the proposed residential houses is to be via DN 75 and DN 50 Pipes. The Nile - Buruburu - Rabai Road sewer trunk main, which is earmarked for upgrading, is proposed to serve Jericho.

The spatial layout of the proposals in Jericho is shown on the Action Area Plan overleaf.

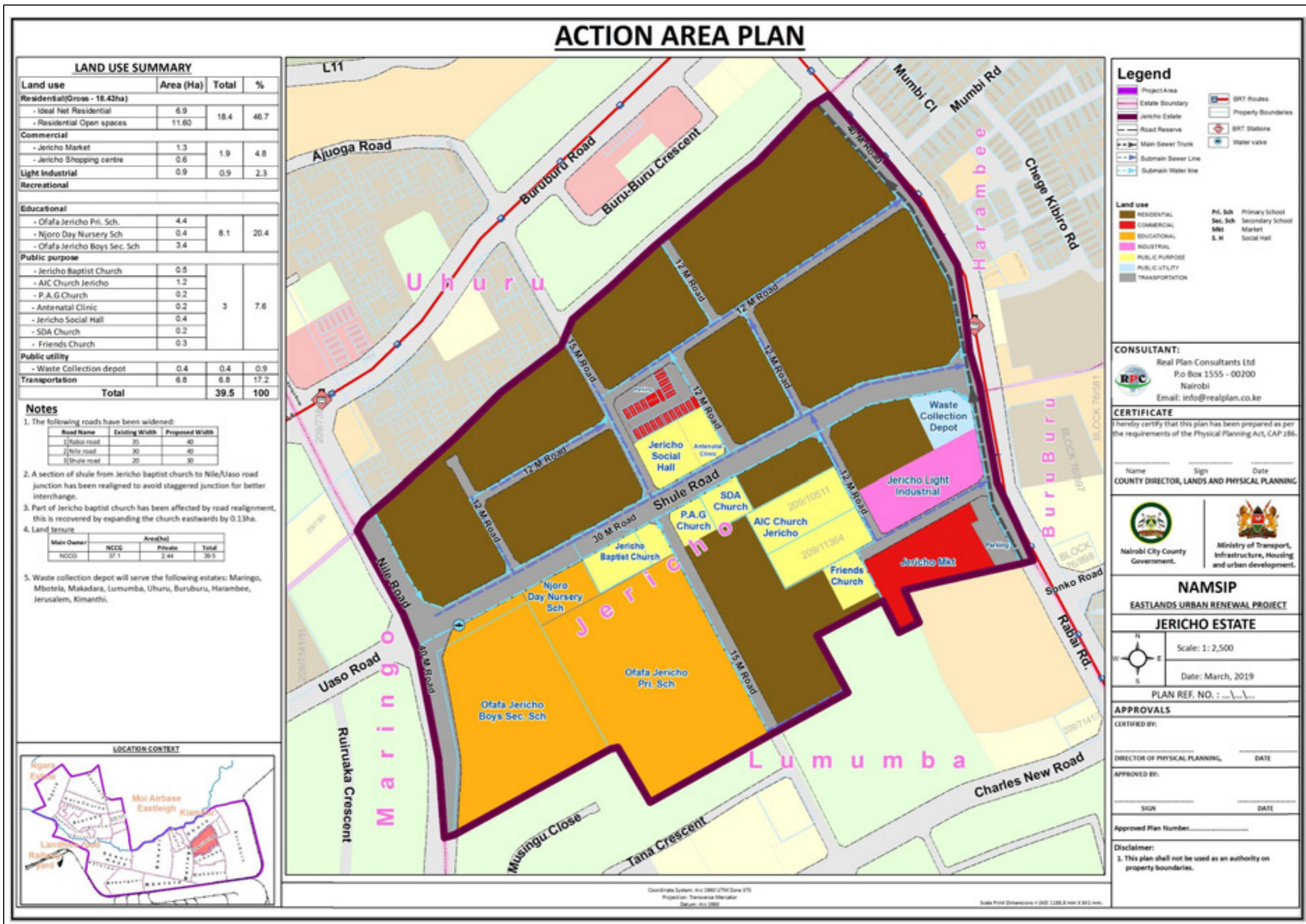


Figure 116: Proposed Action Area Plan for Jericho

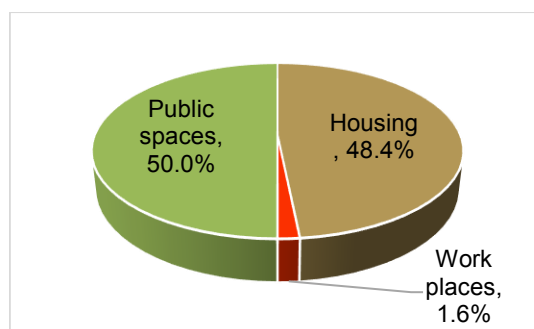
## 5.8 LUMUMBA

Lumumba estate occupies 31.6 Ha and the analysis of the existing land use structure shows housing as the dominant land use occupying 14.8 Ha (47%). This is followed by transport and recreation land uses at 7 Ha and 3.8 Ha respectively. Work places occupy the smallest area with commercial and light industry cumulatively covering 1.1 Ha.

The proposed Action Area Plan for Lumumba depicts a restructuring of the land use structure in such a manner that public spaces, housing and work places cover 17.0 Ha ,15.3 Ha and 0.5 Ha respectively.

Table 85: Proposed Land Use Distribution in Lumumba

Land use		Area (Ha)	(%)
Housing	Built-up Residential	5.6	17.8
	Courtyard Open Spaces	9.7	30.6
	<b>Subtotal</b>	<b>15.3</b>	<b>48.4</b>
Work places	Commercial	0.5	1.6
	<b>Subtotal</b>	<b>0.5</b>	<b>1.6</b>
Public space	Educational	3.2	10.1
	Recreational	3.5	11.2
	Public purpose	3.0	9.6
	Transportation	5.9	18.8
	<b>Subtotal</b>	<b>17.0</b>	<b>50.0</b>
<b>Total</b>		<b>31.6</b>	<b>100.0</b>



The recommended approach is selective redevelopment, given the need to retain the educational and other public facilities.

### Housing

Lumumba has been proposed to accommodate 12,512 units. This is a major increase from the existing 1388 units. Among the proposed units, 6495 units are proposed to accommodate sitting tenants while 6017 units are set aside for new tenants. The units are expected to be accommodated within 45 blocks of 16 levels. The construction cost is estimated at Ksh. 18.5 billion as tabulated below.

Table 86: Proposed Housing Units in Lumumba

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	2,972	2,140,173,047	667	479,906,953	3,639	2,620,080,000
1 BR	32	1,810	1,738,042,552	811	778,117,448	2,621	2,516,160,000
2 BR	50	1,121	1,962,021,292	2,091	3,658,978,708	3,212	5,621,000,000
3 BR	65	592	1,462,970,038	2,090	5,161,569,962	2,682	6,624,540,000
3 BR+ SQs	75	0	0	358	1,142,020,000	358	1,142,020,000
<b>Total</b>		<b>6,495</b>	<b>7,303,206,929</b>	<b>6,017</b>	<b>11,220,593,071</b>	<b>12,512</b>	<b>18,523,800,000</b>

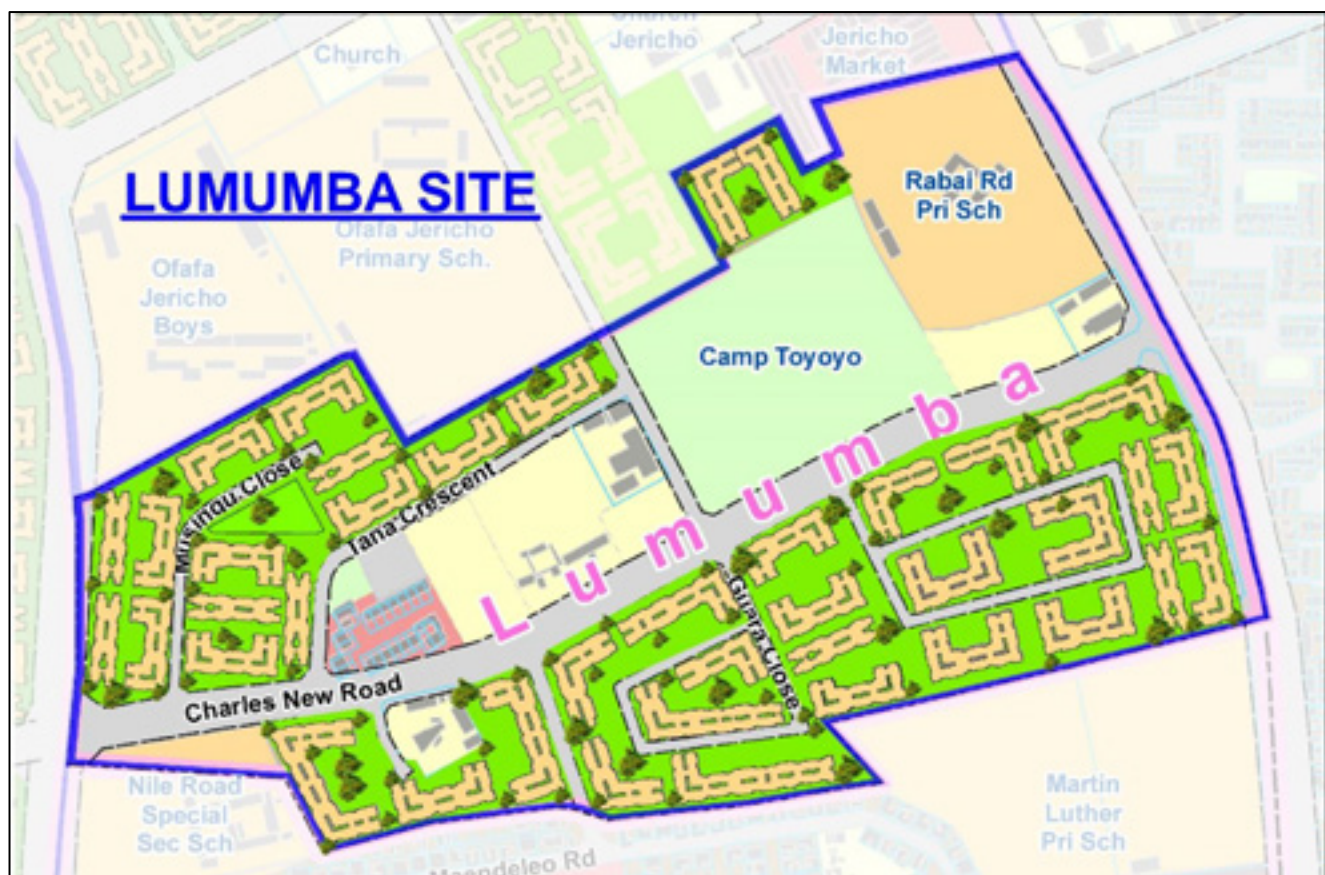


Figure 117: Proposed Lumumba Estate housing layout

### **Work Places**

The land assigned to employment areas is 0.5 Ha. It is occupied by Lumumba Shopping Centre, which is strategically located at a site that is easily accessible from all directions within the estate.

### **Public Spaces**

One of the major public spaces is Camp Toyoyo. It has been proposed for expansion and upgrading with the aim of providing a standard facility that can promote talent development and youth empowerment. The other public space is Lumumba social hall, which has been recommended for upgrade to a Community Resource and Empowerment Centre.

The current chief's camp has also been assigned 0.24 Ha and is proposed to accommodate a new police post in order to improve access of security services in Lumumba. A rehabilitation centre covering 0.2 Ha has also been introduced in Lumumba. Other facilities include Jericho Health Centre (0.95 Ha), Rabai Road Primary School, an extended section of Nile Road Special School, St Phillip Anglican, Methodist and St. Joseph Catholic Church. They have all been proposed for retention.

Transportation proposals include the expansion of Charles New road to 30m, Rabai road to 40m and Tana Crescent to 12m. The internal streets are proposed at a width of 9 m and 12 m. The existing car park located next to the shopping centre has also been retained.

The newly proposed HDPE pipes drawing water from DN 200 HDPE pipes laid along Nile and Rabai Roads are expected to serve Lumumba. Water supply is proposed to be via DN 75 and DN 50 Pipes. The proposed elevated tanks positioned at high points in Kimathi and Maringo estates are also expected to boost supply with required pressures. Adequate sewer reticulation network has also been proposed (See the Action Area Plan overleaf).

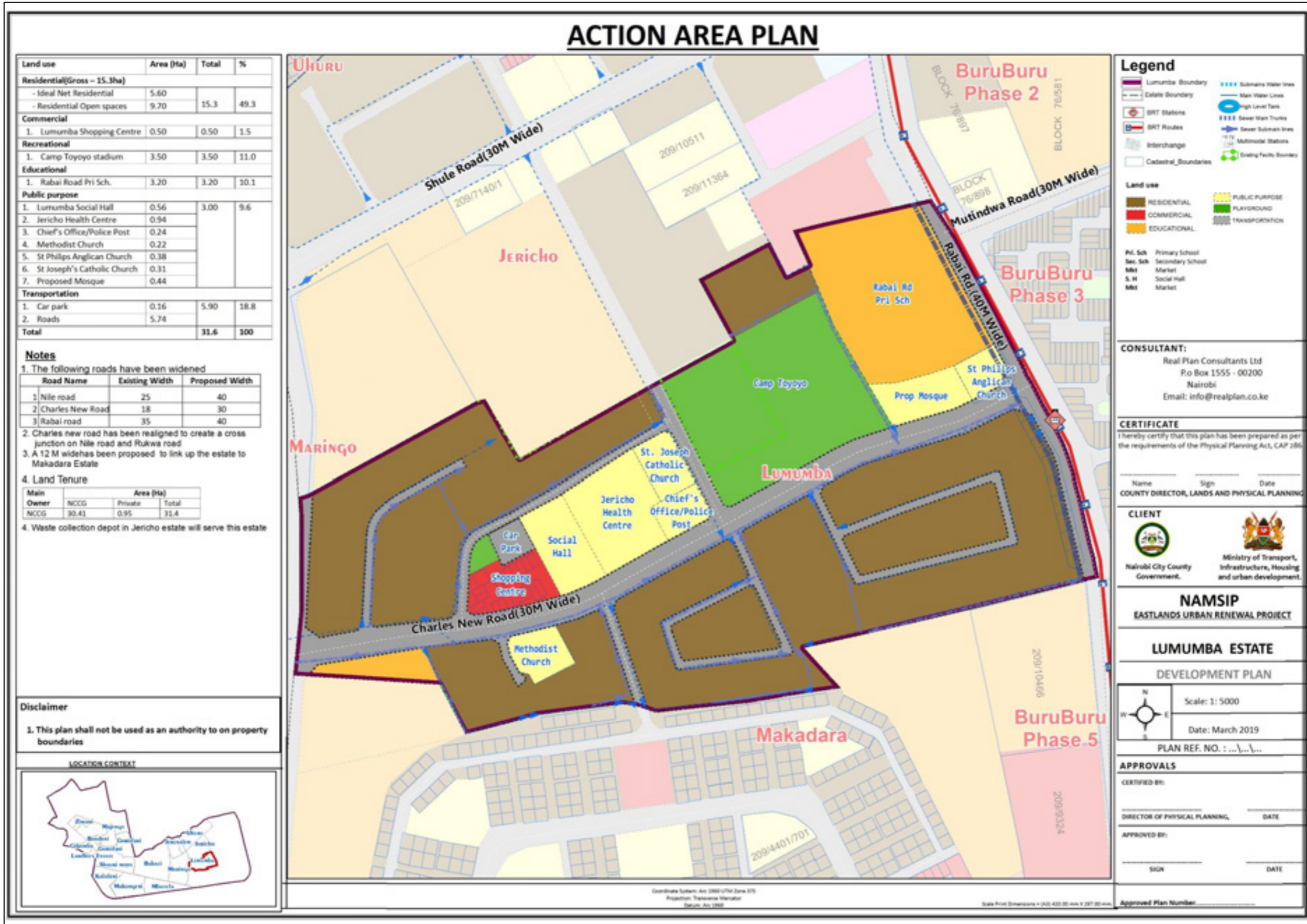


Figure 118: Proposed Land Use Plan for Lumumba

## 5.9 UHURU

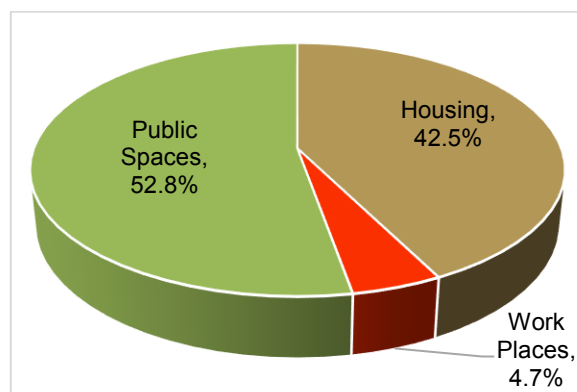
The total land area in Uhuru is 44.7 Ha. Like most estates, residential use covers the highest proportion of land i.e. 25.3 Ha (56%). Public spaces cover 18 Ha (41%) while employment spaces occupy 1.4 Ha (3%)

Taking into consideration the dilapidation levels in this estate, the need for renewal cannot be over-emphasized. However, the presence of private developments which may not be demolished calls for use of the selective approach to redevelopment. This is expected to involve re-adjustment of the land use structure, development densities and coverage of infrastructural networks.

It is proposed that land under housing be reduced to 19.0 Ha in order to create more space for expansion of infrastructural networks and increase of work places. The remaining portion is allocated to public spaces and workplaces in the ratio of 23.6 Ha to 2.1 Ha. Further details are tabulated below.

Table 87: Proposed Land Use Distribution in Uhuru

Land Use		Area (Ha)	%
Housing	Built-up Residential	14.6	32.7
	Courtyard Open Spaces	4.4	9.8
	<b>Subtotal</b>	<b>19.0</b>	<b>42.5</b>
Work Places	Commercial	1.6	3.6
	Industrial	0.5	1.1
	<b>Subtotal</b>	<b>2.1</b>	<b>4.7</b>
Public Spaces	Educational	6.6	14.8
	Recreational	1.4	3.1
	Public purpose	2.1	4.7
	Transportation	11.6	26.0
	Public utility	0.4	0.9
	Conservational	1.5	3.4
	<b>Subtotal</b>	<b>23.6</b>	<b>52.8</b>
<b>Total</b>		<b>44.7</b>	<b>100.0</b>



### Housing

The proposed housing stock has increased to 8416 units from the current 884 main units. The units allocated to sitting and new tenants are 4400 and 4016 respectively. The cost of constructing the proposed stock is estimated at Ksh. 12.4 billion. The units are expected to be accommodated within 30 blocks of a maximum of 16 levels.

Table 88: Proposed Distribution of Housing in Uhuru

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	2,027	1,459,128,697	454	327,191,303	2,481	1,786,320,000
1 BR	32	1,236	1,186,325,115	553	531,114,885	1,789	1,717,440,000
2 BR	50	743	1,301,091,330	1387	2,426,408,670	2,130	3,727,500,000
3 BR	65	394	974,222,404	1392	3,437,197,596	1,786	4,411,420,000
3 BR+ SQs	75	0	0	230	733,700,000	230	733,700,000
<b>Total</b>		<b>4,400</b>	<b>4,920,767,546</b>	<b>4016</b>	<b>7,455,612,454</b>	<b>8,416</b>	<b>12,376,380,000</b>

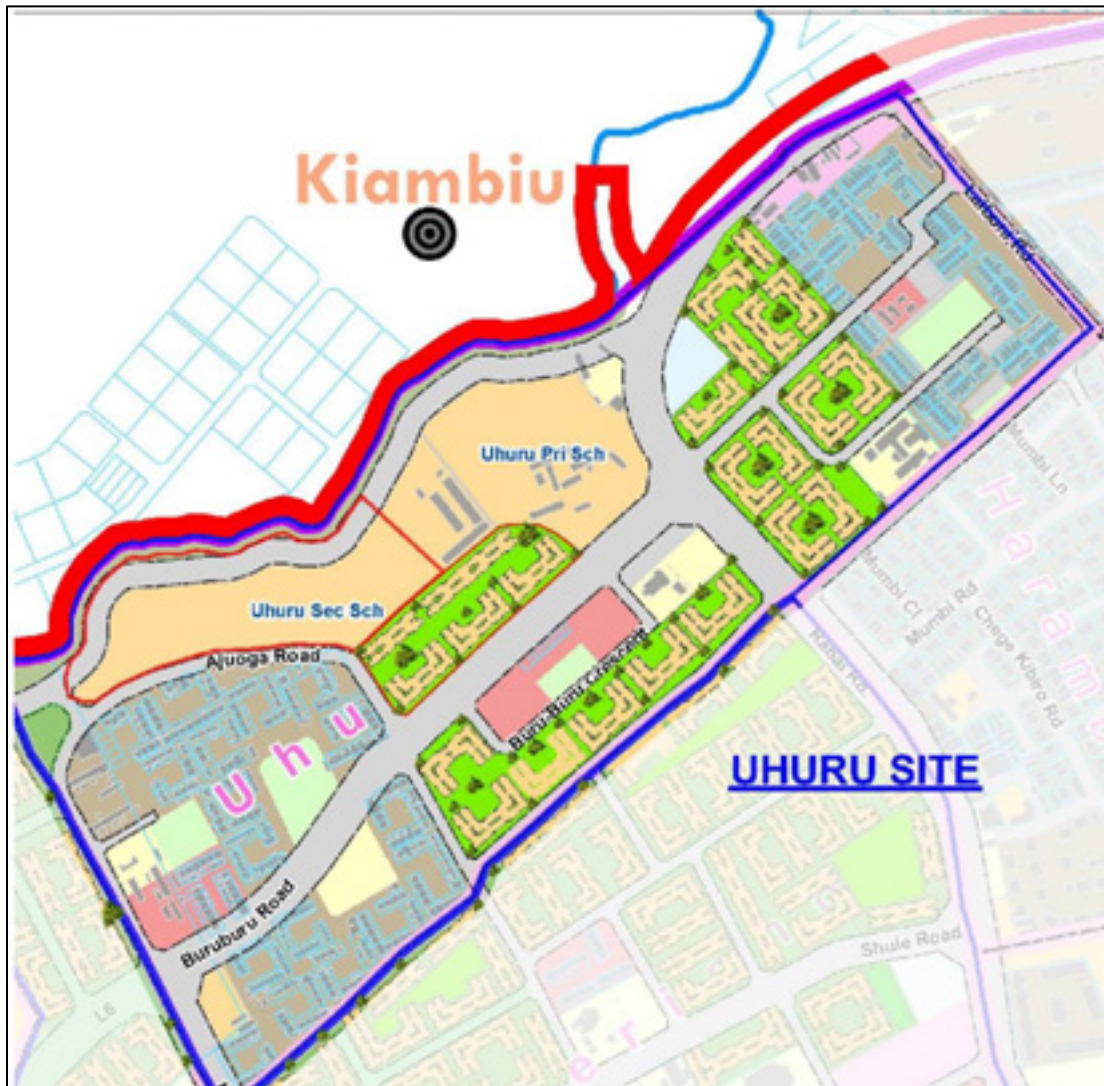


Figure 119: Uhuru estate housing layout

### **Workspace**

In order to increase the employment areas, land designated for commercial activities has increased from 0.6 Ha to 1.6 Ha. This land has been allocated to 3 shopping centres including Jerusalem, Uhuru and a third one located close to Laiboni Road. The latter centre is meant to serve the population residing on the Eastern end of the estate.

### **Public Spaces**

Public spaces in Uhuru cover education, conservation, recreation, public purpose and transportation. Transportation proposals include widening of Buruburu road to 40m, Rabai road to 40m, Nile road to 40m and the internal street to at least 15m. The proposed 25m leisure corridor along the riparian area also cross-cuts Uhuru estate. The other proposal is the establishment of a bus park at Buruburu/Rabai road junction.

The existing schools (Uhuru Primary and Secondary) are proposed for retention, upgrading and densification. A nursery school (0.3 Ha) is newly proposed along Nile road. Other facilities earmarked for upgrade are Jerusalem clinic to a health centre and the social hall to Community Resource and Empowerment Centre.

To facilitate adequate water supply, it has been proposed that Uhuru be served by the new pipes to be located along Rabai and Buruburu roads. Supply is to be boosted further by the proposed elevated tank proposed in Kimathi estate. The network within the estate is proposed to comprise of DN 50, DN 75 and DN 100 HDPE pipelines. The Action Area Plan for Uhuru Estate is shown in the figure below.

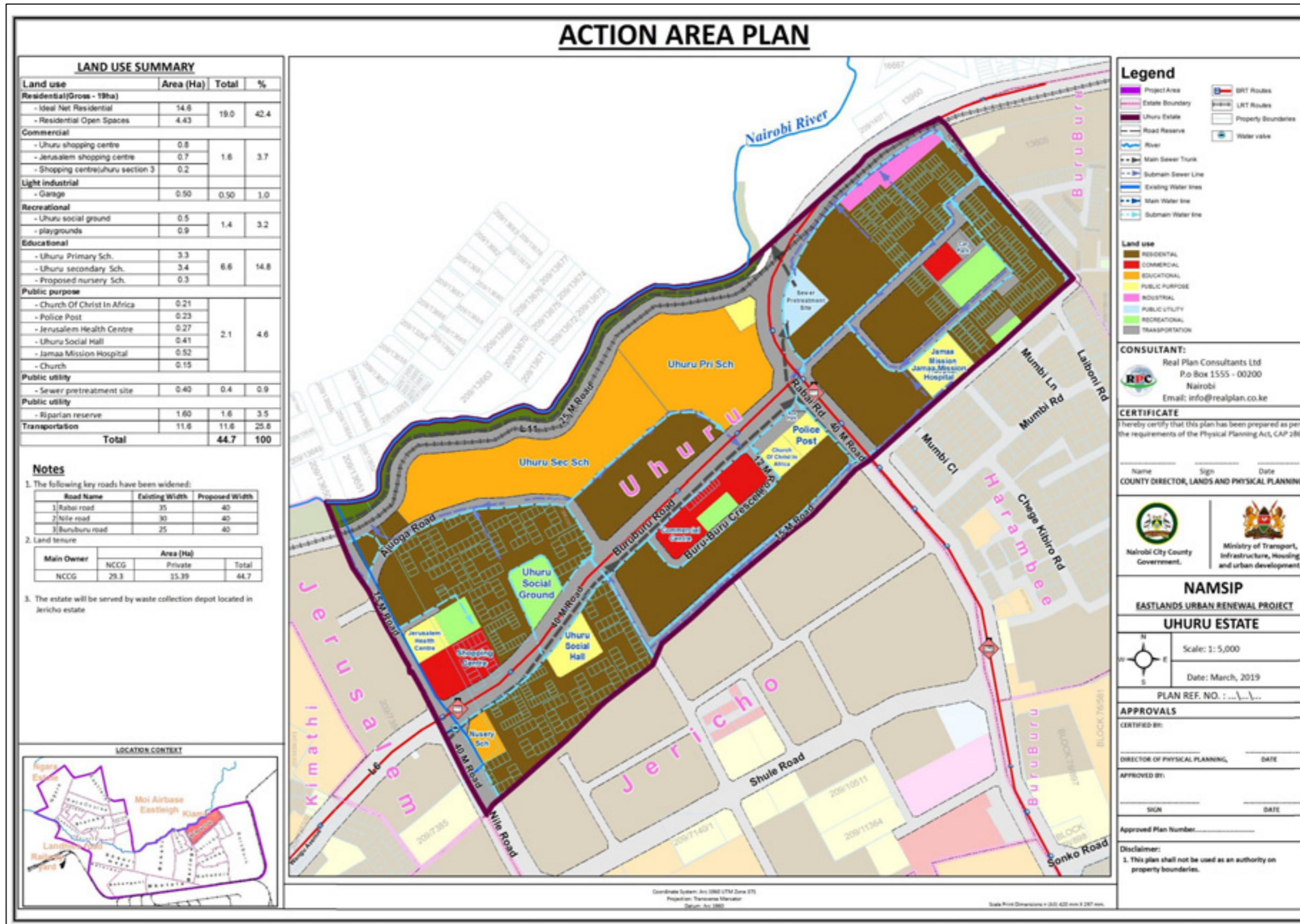


Figure 120: Proposed Action Area Plan for Uhuru

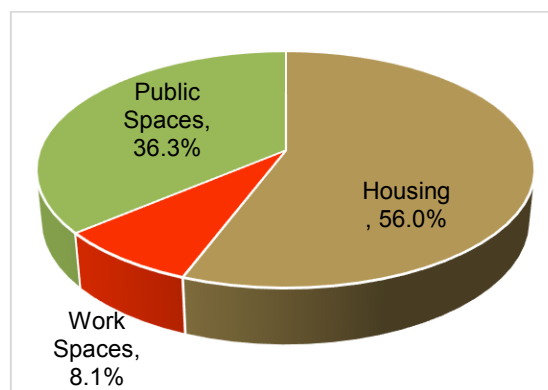
## 5.10 MAKONGENI

The Kenya Railways Staff Retirement Benefit Scheme (KRRBS) owned estate occupies an area of 67.5 Ha. Its land use structure depicts dominance by residential spaces. Housing takes 45.5 Ha (67.4%) of the land. Public spaces and work areas take 17.1 Ha (25.3%) and 4.9 Ha (7.3%) respectively. The national government is expected to spearhead discussions with the land owner to work out modalities of implementing the various aspects of the plan proposals.

The estate is proposed to remain predominantly residential, even though the area under housing has been reduced slightly (by 7.7Ha) to create additional space for public facilities and employment areas. Housing thus takes up 37.8 Ha (56.0%) of the land, public facilities and networks cover 24.5 Ha (36.3%) and work places take 5.5 Ha (8.1%). The built up area in the housing sections has been assigned 16.2 Ha while the courtyard open spaces cover 21.6 Ha (See the illustration below).

Table 89: Proposed Land Use Distribution in Makongeni

Land Use		Area (Ha)	%
Housing	Built-up Residential	16.2	24.0
	Courtyard Open Spaces	21.6	32.0
	<b>Subtotal</b>	<b>37.8</b>	<b>56.0</b>
Work space	Industrial	3.6	5.3
	Commercial	1.9	2.8
	<b>Subtotal</b>	<b>5.5</b>	<b>8.1</b>
Public space	Educational	4.0	5.9
	Recreational	1.5	2.2
	Public Purpose	4.3	6.4
	Public Utility	0.7	1.0
	Transportation	14.0	20.7
	<b>Subtotal</b>	<b>24.5</b>	<b>36.3</b>
<b>Total</b>		<b>67.5</b>	<b>100.0</b>



Having noted that there are private developments in the Kenya Railway Retirement Benefit Scheme (KRRBS) land, it is proposed that the privately leased properties be included in the renewal plan, depending on the terms of lease. Otherwise, short term leases may be discontinued and the land redeveloped by KRRBS. The most viable renewal approach for this estate is thus selective redevelopment.

### Housing

Makongeni estate has been proposed to accommodate housing for sitting tenants, new tenants and student hostels. The total number of units is 20,994. The achievable number of dwelling units for the sitting tenants is 8455. Considering that the existing number of KRRBS's units is 1354, additional 7101 units will be availed for the current tenants.

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	3,988	2,871,207,698	894	643,832,302	4,882	3,515,040,000
1 BR	32	2,306	2,213,500,969	1,032	990,979,031	3,338	3,204,480,000
2 BR	50	1,437	2,514,221,556	2,679	4,688,778,444	4,116	7,203,000,000
3 BR	65	724	1,789,165,446	2,556	6,312,434,554	3,280	8,101,600,000
3 BR+ SQs	75	0	0	448	1,429,120,000	448	1,429,120,000
Hostels		0	0	4,930	3,549,600,000	4,930	3,549,600,000
<b>Total</b>		<b>8,455</b>	<b>9,388,095,669</b>	<b>12,539</b>	<b>14,065,144,331</b>	<b>20,994</b>	<b>23,453,240,000</b>

New tenants will also find room in the estate and the number of units allocated to them is 12539. These include 4930 student hostels and 7609 regular units. While the student hostels are proposed at a height of 5 levels, the rest of the buildings are recommended to be 8 levels. The hostels are represented in pink and are located on the Western courts of Makongeni estate as shown on the Action Area Plan for the estate.



Figure 121: Proposed Makongeni Estate housing layout

### Work Places

A centrally located shopping centre has been proposed along the widened Dakar road. It is meant to offer low order services and goods to the residents. This, together with the commercial space located along Jogoo Road, represent the commercial areas in Makongeni, measuring 1.9 Ha. There is also the industrial area, which is occupied by the Trufoods Industries and takes up 3.6 Ha. Overall, the workspaces have been increased by 12%.

### Public Spaces

Public spaces are covered by the recreational, educational, public purpose, transportation and public utility areas. The recreational space is occupied by a proposed Sports Complex, which is to accommodate a football pitch and various indoor games. The sports facility is primarily meant to serve the local residents especially because their access to the City Stadium is limited.

The public purpose areas include St. Stephens ACK Church, the proposed Health Centre (an upgrade of the currently dysfunctional dispensary), the Makongeni CORE Centre (an upgrade of the existing Social Hall) and Makongeni Police Station (which has been expanded).

Educational facilities include St. Joseph Apudo Primary and Makongeni Secondary, both of which have been expanded to accommodate more students. The public utility zone accommodates an electrical sub-station.

Transport sector proposals include provision of grid-iron pattern of internal streets (all of which measure 12m wide except one which is proposed at 18m) and expansion of Vijana and Dakar Roads to 15m and 30m respectively.

The proposed water supply network within the estate is proposed to comprise of DN 50, DN 75 and DN 100 HDPE pipelines. Elevated tanks positioned at St. Joseph Apudo Primary school are meant ensure high-pressure delivery of water to all floors in the proposed housing units. The sewer system serving Makongeni is proposed to channel wastewater via Dakar road to Heshima road to the pre-treatment site in Shauri Moyo and finally to the Trunk main, which is parallel to Nairobi River.

The Action Area Plan for Makongeni is shown overleaf.

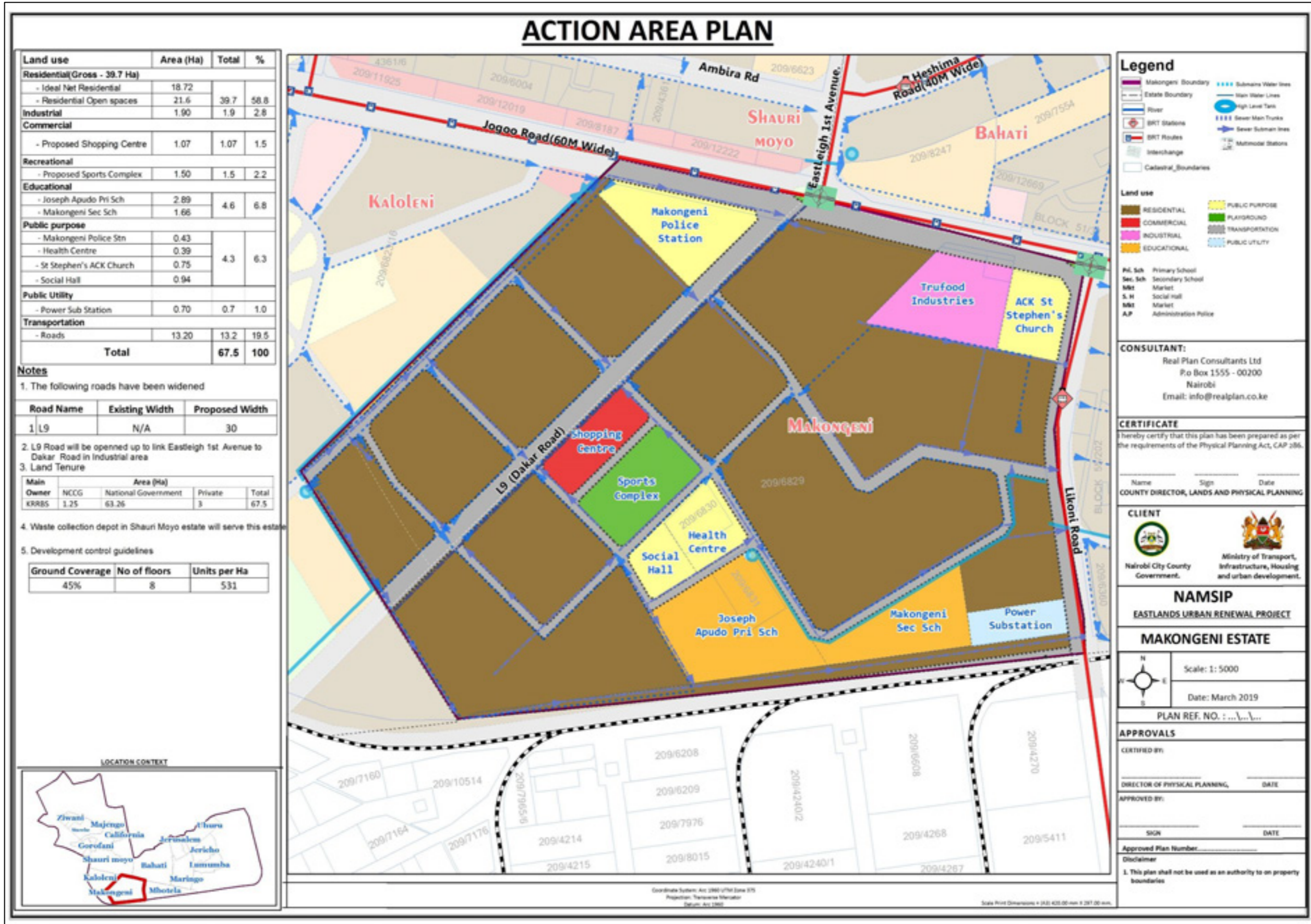


Figure 122: Proposed Action Area Plan for Makongeni

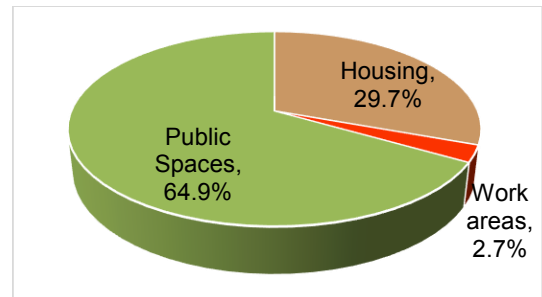
## 5.11 BONDENI

There are 5 major land use zones within Bondeni estate. They cumulatively occupy land measuring 3.7 Ha and are inclusive of residential (38%), commercial (30%), public purpose (22%), transportation (8%) and educational (3%). Commercial land use has over time submerged the residential premises due to the sprawling Gikomba market.

Bondeni is planned as a mixed-use development estate with the application of selective redevelopment approach. The proposed land use mix incorporates residential (29.7%), work spaces (2.7%), public spaces (64.9%). Notably, the residential area has been reduced by 0.3 Ha to create more workspaces, given that Bondeni is at the heart of the proposed Gikomba commercial node. The public spaces have also been increased significantly, given that the road network and the public facilities have been expanded. The areas covered by the above land uses are tabulated below.

Table 90: Proposed Land Use Distribution in Bondeni

Land use		Area (Ha)	%
Housing	Built-up Residential	0.5	13.5
	Courtyard Open Spaces	0.6	16.2
	<b>Subtotal</b>	<b>1.1</b>	<b>29.7</b>
Work places	<b>Commercial</b>	<b>0.1</b>	<b>2.7</b>
Public space	Public Purpose	1.2	32.4
	Transportation	1.3	35.1
	<b>Subtotal</b>	<b>2.4</b>	<b>64.9</b>
<b>Total</b>		<b>3.7</b>	<b>100.0</b>



### Housing

In Bondeni, 29.7% of the land is reserved for residential development. Given that the maximum building height allowed here is 8 floors, 704 dwelling units is achievable. These include 435 and 269 units for sitting and new tenants respectively. Considering that the existing number of county units is 110, the sitting tenants are expected to gain an extra 325 (See the table below).

Table 91: Proposed No. of Units for Siting and New Tenants in Bondeni

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	239	171,731,390	53	38,508,610	292	210,240,000
1 BR	32	131	125,993,165	59	56,406,835	190	182,400,000
2 BR	50	44	76,965,966	82	143,534,034	126	220,500,000
3 BR	65	21	52,365,818	75	184,754,182	96	237,120,000
<b>Total</b>		<b>435</b>	<b>427,056,339</b>	<b>269</b>	<b>423,203,661</b>	<b>704</b>	<b>850,260,000</b>



Figure 123: Proposed Bondeni Estate housing layout

**Work Places**

The work place proposed in Bondeni is a commercial zone, measuring 0.1 Ha. This forms approximately 0.01% of the total work area proposed within the Gikomba node.

**Public Spaces**

Public facilities include a proposed Health Centre, a fire station, the County Government offices (whose land has been expanded) and the Kamukunji Sub-County HQ offices. There are also the proposed water supply and sewer reticulation networks, which run along Digo and Meru Roads. These are shown on the Action Area Plan overleaf.

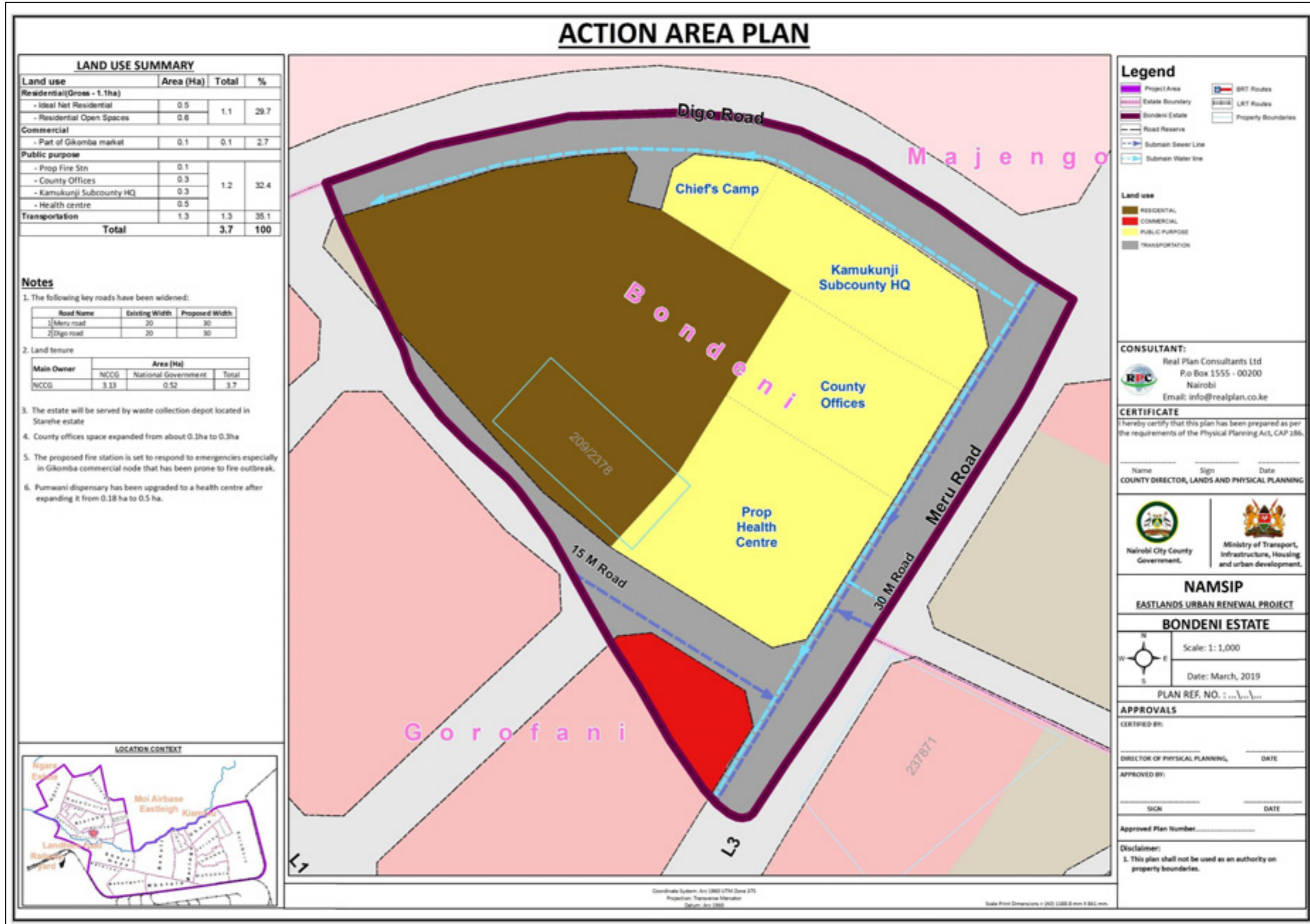


Figure 124: Proposed Action Area Plan for Bondeni

## 5.12 GOROFANI

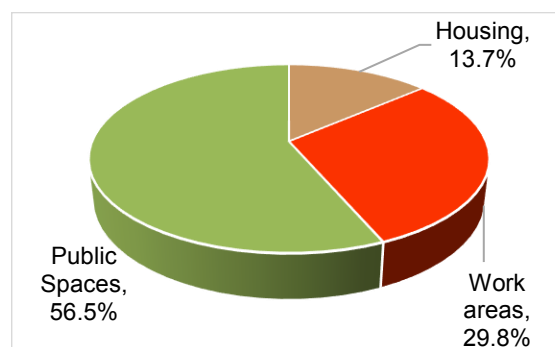
Gorofani measures 12.4 Ha. In terms of land use distribution, work area is dominant. It occupies 7.1 Ha, which is equivalent to 57% of the entire estate. This is due to the sprawling Gikomba Market and the estate's proximity to the CBD which makes the land prime for commercial use.

Gorofani estate is proposed to be a part of the Gikomba commercial node. This is because the greater part of Gorofani is currently within Gikomba market. Considering the high level of dilapidation and the land use conflicts within the estate, the proposed renewal approach is total redevelopment.

The proposed land uses include commercial, residential, industrial, conservation and transportation. The areas covered by these land uses are tabulated below.

Table 92: Proposed Land Use Distribution in Gorofani

Land use		Area (Ha)	%
Housing	Built-up Residential	0.7	6.0
	Courtyard Open Spaces	1.0	7.7
	<b>Subtotal</b>	<b>1.7</b>	<b>13.7</b>
Work spaces	Light Industrial	0.4	3.2
	Commercial	3.3	26.6
	<b>Subtotal</b>	<b>3.7</b>	<b>29.8</b>
Public spaces	Educational	0.5	4.0
	Conservational	1.5	12.1
	Public Utilities	0.1	0.8
	Transportation	4.9	39.5
	<b>Subtotal</b>	<b>7.0</b>	<b>56.5</b>
<b>Total</b>		<b>12.4</b>	<b>100.0</b>



### Housing

Like Bondeni, Gorofani is also largely within the proposed Gikomba commercial node. As such, the proposed residential space only forms 13.7% of the estate. At 8 floors, which is the maximum allowable height, a total of 832 dwelling units is achievable. These include 503 and 329 units for sitting and new tenants respectively.

Unlike other estates, the sitting tenants in Gorofani may be expected to experience a net loss of 439 housing units if new tenants are to be accommodated (considering that the sitting tenants are currently 942). Some of them may thus have to be moved to Starehe. Otherwise, the other option is to accommodate no new tenant, in which case there shall still be a deficit of 110 units for the sitting tenants.

Table 93: Proposed No. of Units for Sitting and New Tenants in Gorofani

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	250	179,965,087	56	40,354,913	306	220,320,000
1 BR	32	177	169,759,212	79	76,000,788	256	245,760,000
2 BR	50	44	76,965,966	82	143,534,034	126	220,500,000
3 BR	65	32	78,548,727	112	277,131,273	144	355,680,000
<b>Total</b>		<b>503</b>	<b>505,238,992</b>	<b>329</b>	<b>537,021,008</b>	<b>832</b>	<b>1,042,260,000</b>

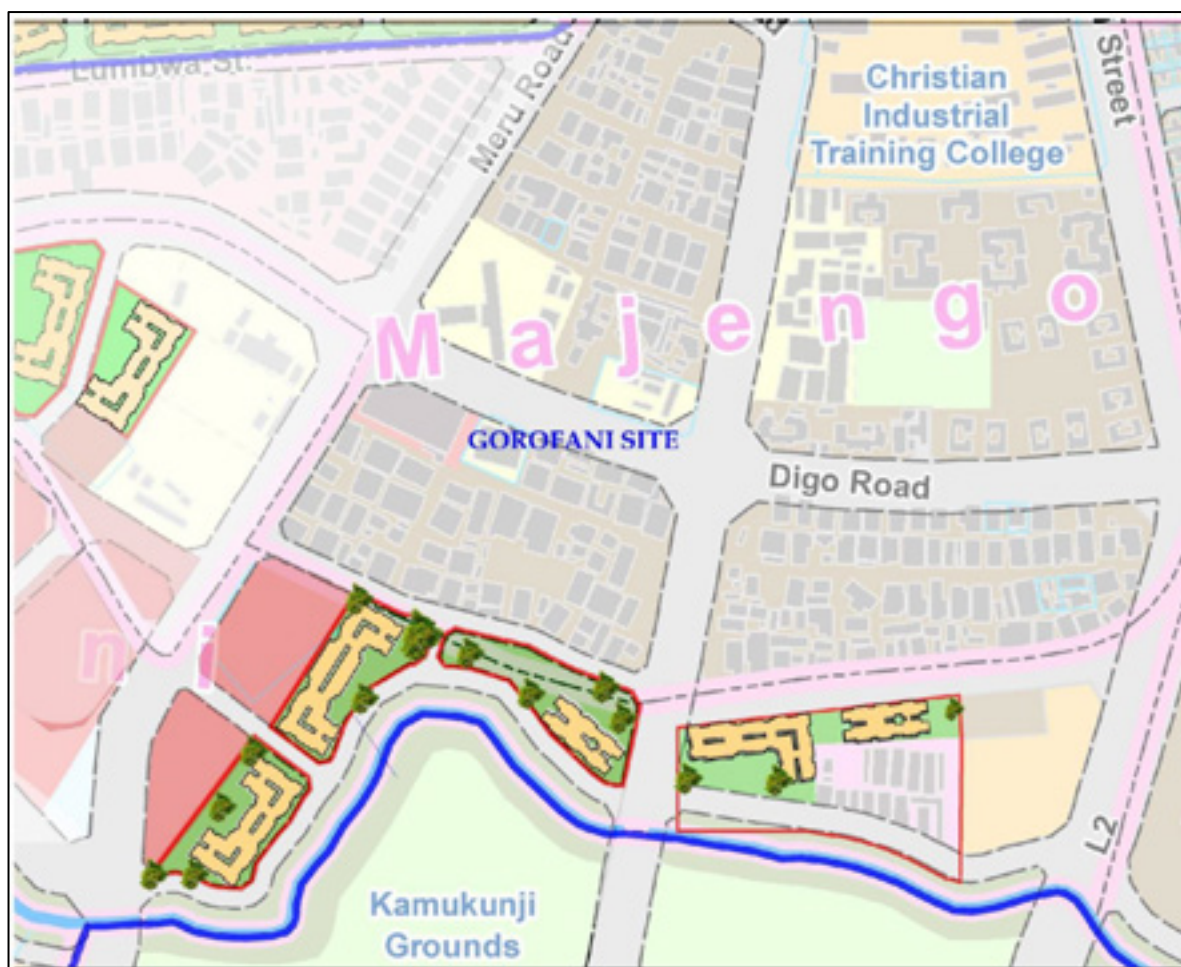


Figure 125: Proposed Gorofani estate housing layout

### Work Places

The work places in Gorofani are mainly within the proposed commercial zone, which has been divided into 14 blocks that serve traders dealing in different types of products. The blocks have been numbered from A to N as depicted in the Action Area Plan presented herein after.

### Public Facilities

A bus terminus has been proposed to serve as a loading and off-loading zone for commodities sold at the market. A 15m wide riparian reserve has also been provided on both sides of the river, thus forming the conservation area. Along the riparian reserve is a proposed 15m wide road which will act as leisure corridor and a buffer between the river and the surrounding developments. A primary school has also been proposed in the area.

The access roads have been recommended for widening in order to improve traffic circulation and enhance security in the otherwise crowded area. Meru road, Digo road and Lamu road have been proposed to be 30m.

New water supply and sewer reticulation networks have also been provided along Quarry Road and Muinami Street. The sewerage is directed to the main trunk located parallel to Nairobi River.

The map overleaf shows the Action Area Plan for Gorofani

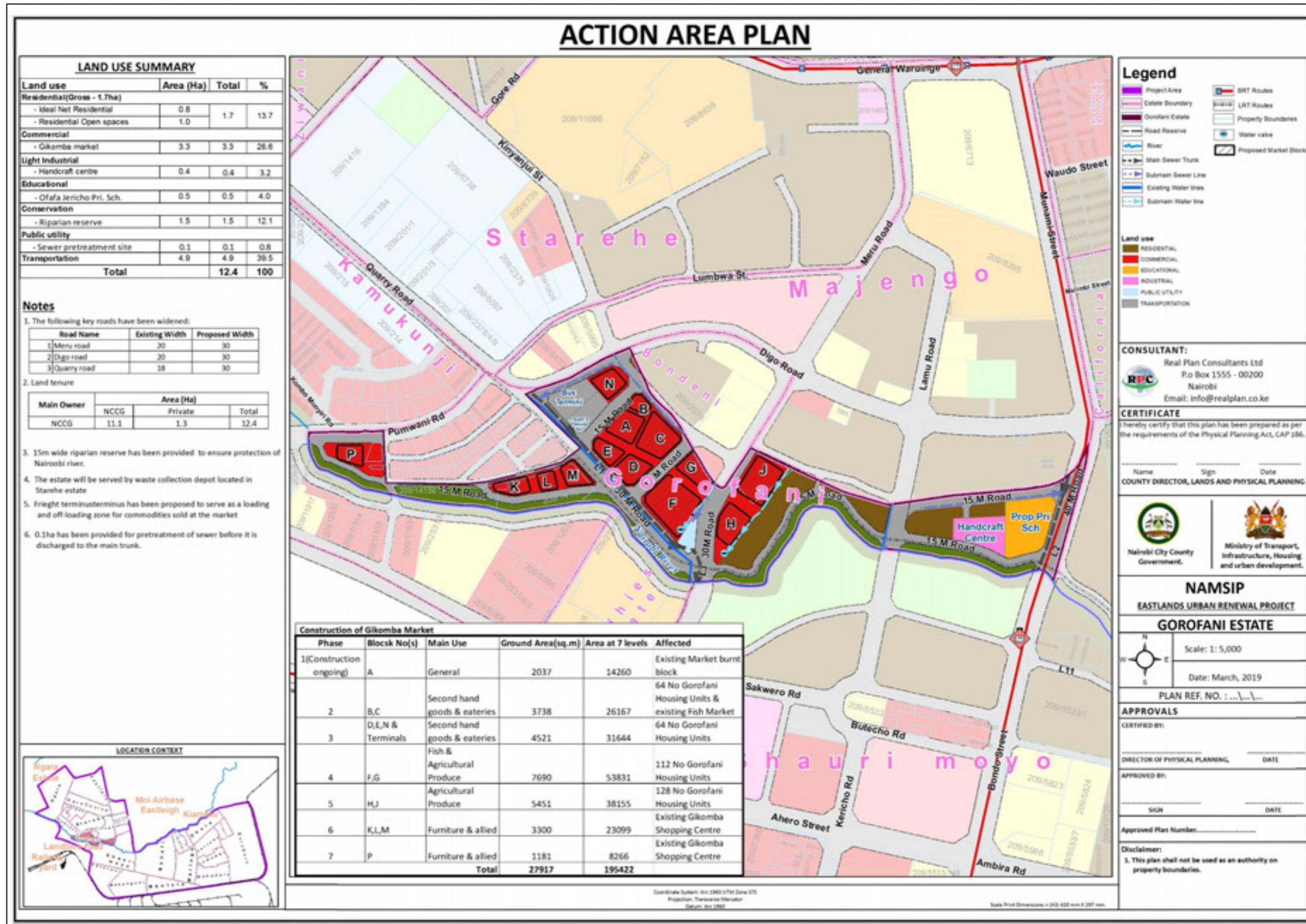


Figure 126: Proposed Action Area Plan for Gorofani

### 5.13 SHAURI MOYO

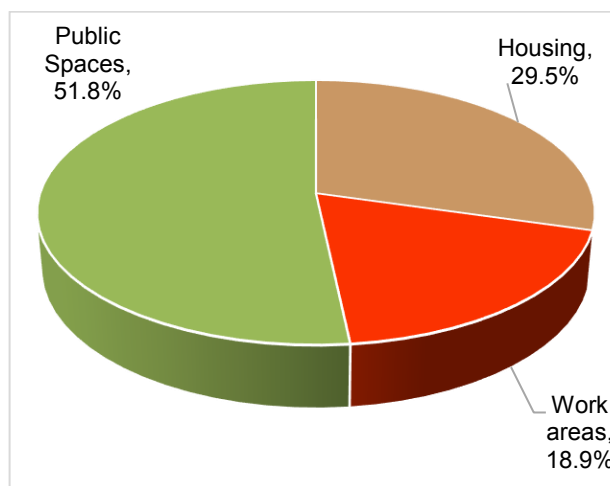
Shauri Moyo is a predominantly residential estate occupying 71.1 Ha. The housing space is 30 Ha. The light industrial zone, which accommodates the rapidly sprawling jua kali activities and garages, takes up 9.5 Ha. Other working spaces include Burma market, Shauri Moyo Shopping Centre and Rikana area cumulatively covering 5.5 Ha. The rest of the land (26.2 Ha) is occupied by public spaces.

Given its proximity to the City CBD, Shauri Moyo has attracted numerous income generating activities which need to be boosted. The work places are however poorly organized. They are mainly temporary structures characterised by inadequate working spaces, congestion and absence of requisite support infrastructure. As such, major re-organization of the land use pattern is important. Secondly, the heavy presence of private developments in the estate necessitates selective redevelopment.

Taking the above into account, land is distributed among the public spaces, work places and housing in the ratio of 36.8 Ha to 21.0 Ha to 13.3 Ha as shown in the proposed land use budget below.

Table 94: Proposed Land Budget for Shauri Moyo

Land use		Area (Ha)	%
Housing	Built-up Residential	16.5	23.1
	Courtyard Open Spaces	4.5	6.4
	<b>Subtotal</b>	<b>21.0</b>	<b>29.5</b>
Work space	Commercial	7.9	11.0
	BCR	2.6	3.7
	Industrial	2.8	4.2
	<b>Subtotal</b>	<b>13.3</b>	<b>18.9</b>
Public space	Educational	3.8	5.3
	Recreational	4.5	6.3
	Public purpose	4.2	5.9
	Transportation	21	29.5
	Public utility	0.8	1.2
	Conservational	2.5	3.5
	<b>Subtotal</b>	<b>36.8</b>	<b>51.8</b>
<b>Total</b>		<b>71.1</b>	<b>100.0</b>



#### Housing

Land dedicated to housing has significantly reduced from the current 30 Ha to 21 Ha. However, despite the reduction, the proposed housing stock has increased to 3708 from the existing 1460 units. Owing to its location along the flight funnel, the maximum allowable height in Shauri Moyo is 5 levels. The achievable housing units thus totals to 3708, 1956 units of which are to accommodate sitting tenants and 1752 are for new tenants. Their construction cost is projected at Ksh. 5.4 billion. The table below shows the distribution by unit type and cost of development.

Table 95: Proposed Housing Units in Shauri Moyo

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	908	653,402,653	203	146,517,347	1,111	799,920,000
1 BR	32	556	533,813,146	249	238,986,854	805	772,800,000
2 BR	50	321	561,973,720	599	1,048,026,280	920	1,610,000,000
3 BR	65	171	422,199,407	603	1,489,580,593	774	1,911,780,000
3 BR+ SQs	75	0	0	98	312,620,000	98	312,620,000
<b>Total</b>		<b>1,956</b>	<b>2,171,388,926</b>	<b>1752</b>	<b>3,235,731,074</b>	<b>3,708</b>	<b>5,407,120,000</b>

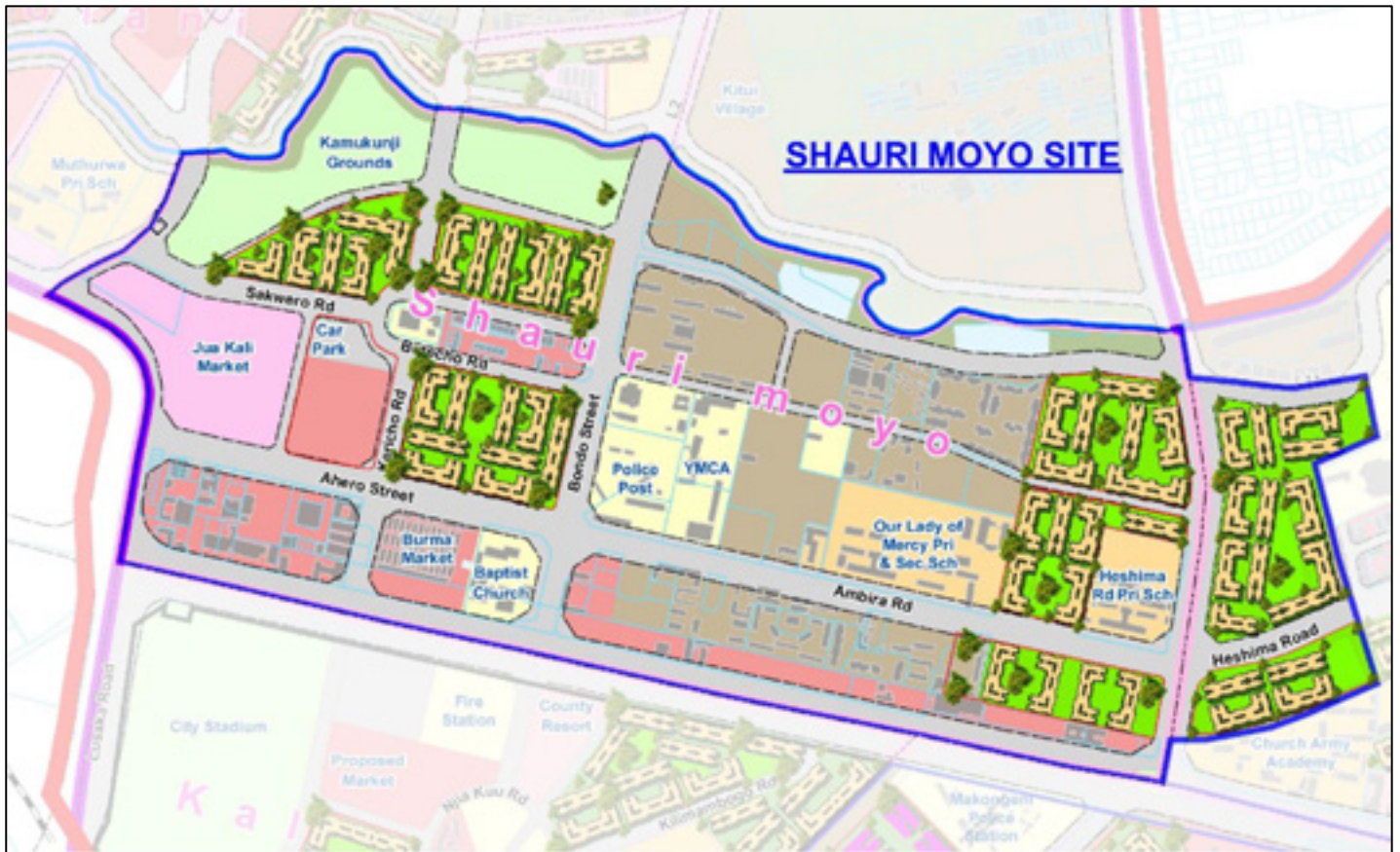


Figure 127: Shauri Moyo housing layout

### Workspace

In order to increase employment areas in the economically vibrant estate, 14 Ha has been designated for light industrial, commercial and BCR zones. These zones include Shauri Moyo Shopping Centre, Shauri Moyo/Burma Market, the proposed New Burma Market and Kamukunji Light Industry.

The existing Burma market has been earmarked for upgrading to a multi-level facility to accommodate about 9000 traders. On the other hand, the proposed market is expected to host approximately 6600 traders. The proposed Kamukunji Light Industrial area is intended to serve all jua kali artisans operating within the estate. As a multi-level facility, it is expected to accommodate 1827 workshops and showrooms. The existing Shauri Moyo shopping centre and commercial zone fronting Jogoo road have also been retained.

### Public Space

Key transportation proposals in the estate include widening of Jogoo road to 60m, Landhies, Ahero and Bondo Street to 40m; Sakwero, Lamu and Kericho roads to 30m; and all internal street to at least 12m. A new 25m road proposed to be leisure corridor also traverses Shauri Moyo estate.

About 3.8 Ha has been designated for educational use. It is occupied by Muslim Girls, Heshima Primary and Our Land of Mercy Primary and Secondary schools. These have been proposed for upgrading to accommodate the additional student population in the post redevelopment period.

The current police station and clinic have also been earmarked for expansion to enhance service delivery. Kamukunji Grounds, covering 3.5 Ha, is retained as a recreational/heritage park. In order to revitalize and increase productivity of the park, it is recommended that the park be designed to accommodate activities such as skating, historical trails and furniture.

A new water supply system is proposed with the main trunk (DN 300 HDPE pipe) running along Jogoo road and an elevated water tank positioned at Burma market. There is also a proposed waste collection depot and sewer network (with a pre-treatment site) as illustrated in the Action Area Plan for the estate.

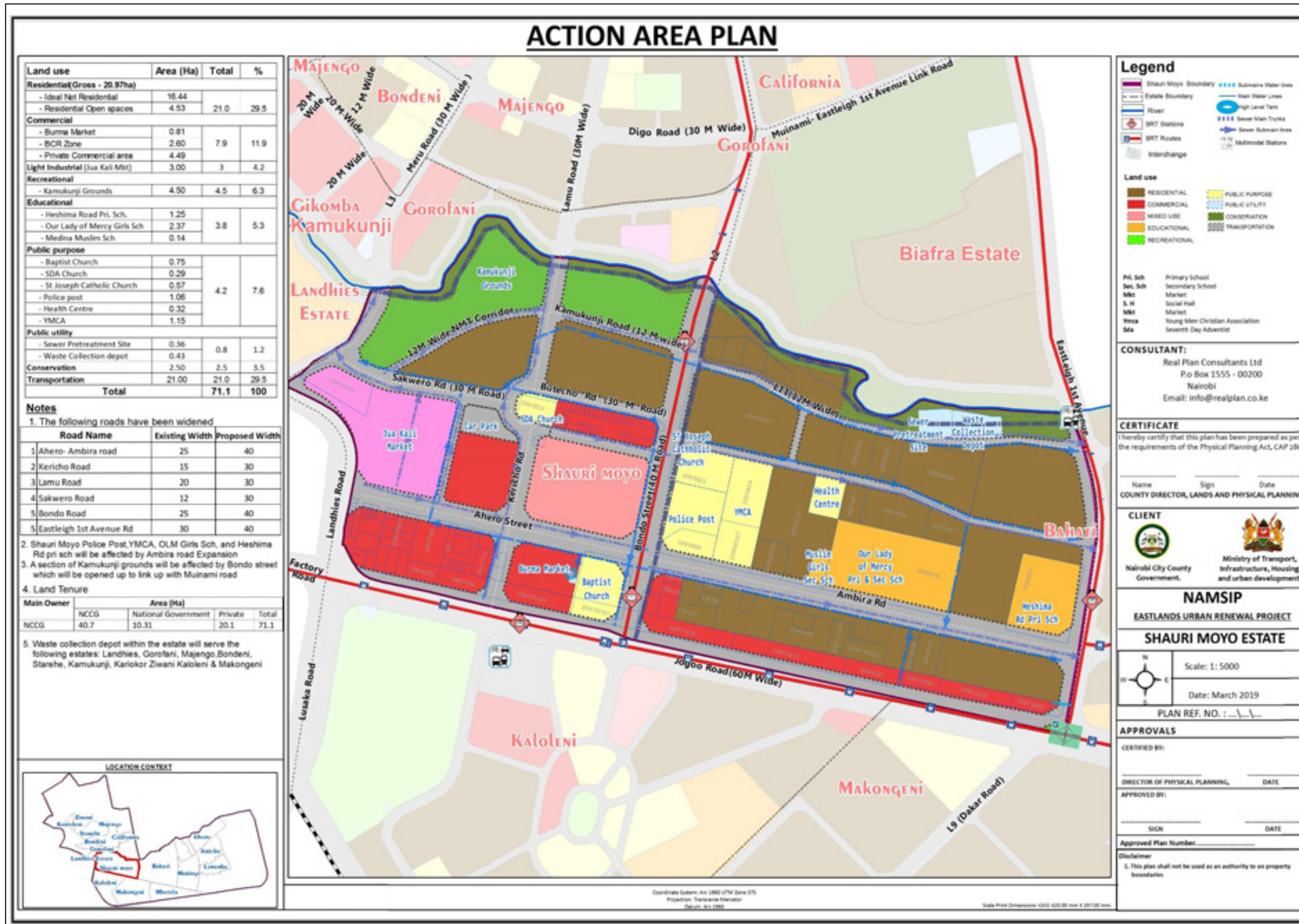


Figure 128: Proposed Action Area Plan for Shauri Moyo

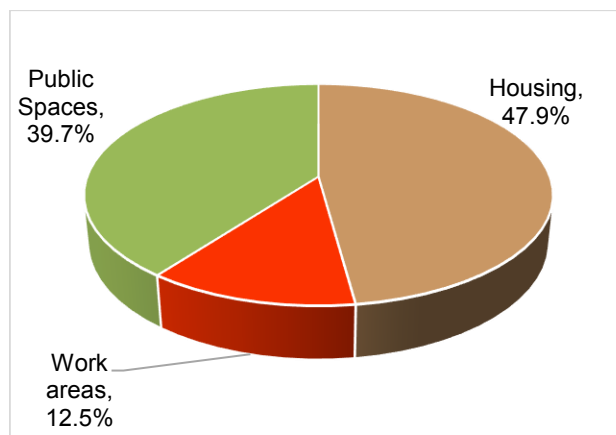
## 5.14 ZIWANI

Ziwani covers 14.6 Ha and the space under housing is 8.6 Ha. The rest of the estate encompasses public spaces cumulatively measuring 6.0 Ha. In order to increase the housing stock, Ziwani has been proposed to retain its strong residential use. The residential developments have further been recommended for densification thus necessitating the expansion of requisite support facilities.

Housing has been assigned 6.8 Ha (48%) while public spaces and work places are allocated 6.0 Ha and 1.8 Ha respectively. The proposed land budget below details out the distribution of land uses.

Table 96: Proposed Land Use Budget for Ziwani

Land use		Area (Ha)	%
Housing	Built-up Residential	3.1	22.0
	Courtyard Open Spaces	3.7	25.9
	<b>Subtotal</b>	<b>6.8</b>	<b>47.9</b>
Work Places	Commercial	0.8	5.9
	Industrial	0.9	6.6
	<b>Subtotal</b>	<b>1.8</b>	<b>12.5</b>
Public Spaces	Recreational	0.8	5.6
	Public purpose	1.4	7.9
	Conservational	0.1	0.8
	Transportation	3.7	26.1
	<b>Subtotal</b>	<b>6.0</b>	<b>39.7</b>
<b>Total</b>		<b>14.6</b>	<b>100.0</b>



Notably, the land earmarked for housing has reduced by 1.8 Ha while the portion assigned to public spaces has increased by 1Ha. Work places have been introduced allocated 1.8 Ha. Because of the need to retain the existing public facilities, selective redevelopment approach is recommended.

### Housing

At 8 levels, which is the maximum achievable height, 3601 units are achieved from the current 556 units. Out of the proposed units, 1911 units are designated for sitting tenants while 1690 are set aside new tenants. The construction cost is project at Ksh. 5.2 Billion (See the table below).

Table 97 : Proposed Distribution of Housing in Ziwani

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	896	645,168,956	201	144,671,044	1,097	789,840,000
1 BR	32	540	518,561,341	242	232,158,659	782	750,720,000
2 BR	50	311	543,648,490	579	1,013,851,510	890	1,557,500,000
3 BR	65	164	404,744,134	578	1,427,995,866	742	1,832,740,000
3 BR+ SQs	75	0	0	90	287,100,000	90	287,100,000
<b>Total</b>		<b>1,911</b>	<b>2,112,122,921</b>	<b>1690</b>	<b>3,105,777,079</b>	<b>3,601</b>	<b>5,217,900,000</b>

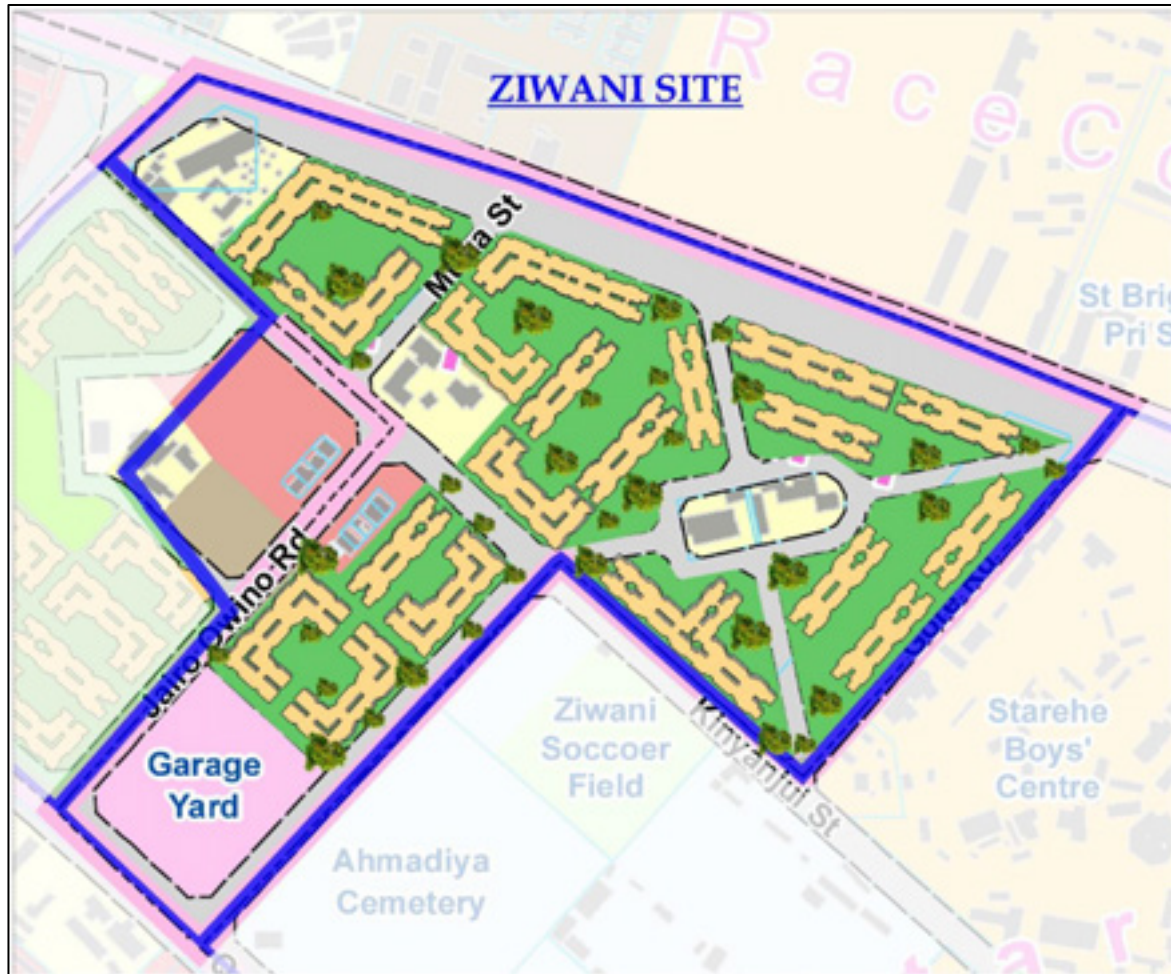


Figure 129: Proposed Ziwani estate housing layout

### **Work Places**

In order to increase employment opportunities and access to basic goods and services a shopping centre and garage yard measuring 0.9 Ha each have been provided. The garage yard is expected to be a relocation site for the garages currently operated along the Quarry road reserve.

### **Public Spaces**

Like most areas, the key transport sector proposal is road widening. In Ziwani, the roads expanded are General Waruinge to 40m, Quarry road to 30m, Jairo Owino and Kinyanjui to 18m and all internal streets to 12m.

Starehe Sub-county headquarters covering 0.5 ha has been retained. The existing health centre has also been allocated 0.3 ha and earmarked for upgrading. Similarly, Kariokor Social Hall has been proposed for upgrade to a Community Resource and Empowerment Centre. Water and sewerage networks have also been proposed as shown in the Action Area Plan below. The main trunk lines run along General Waruinge Road.

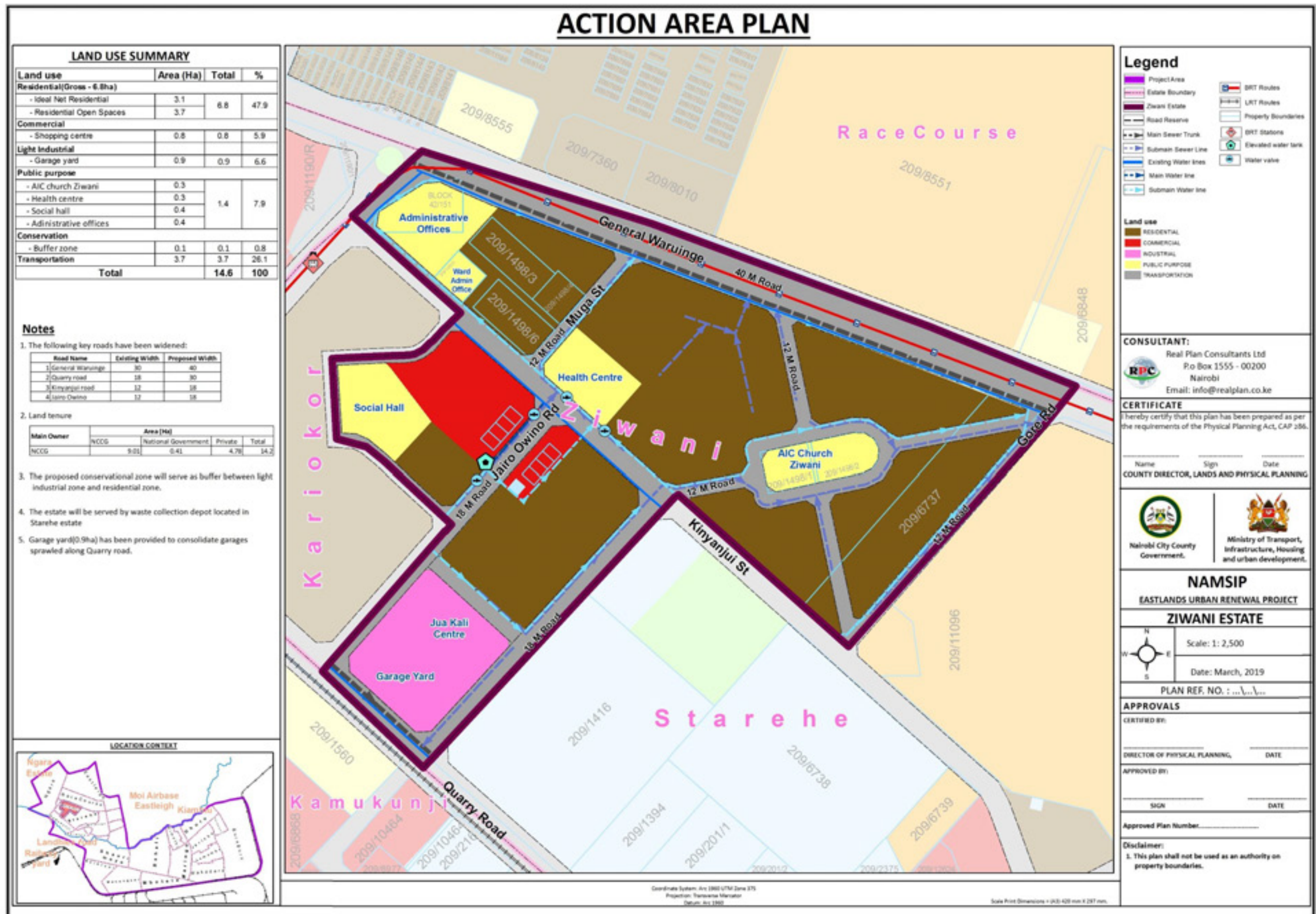


Figure 130: Proposed Action Area Plan for Ziwanigure 131: Proposed Housing Layout for Ziwani

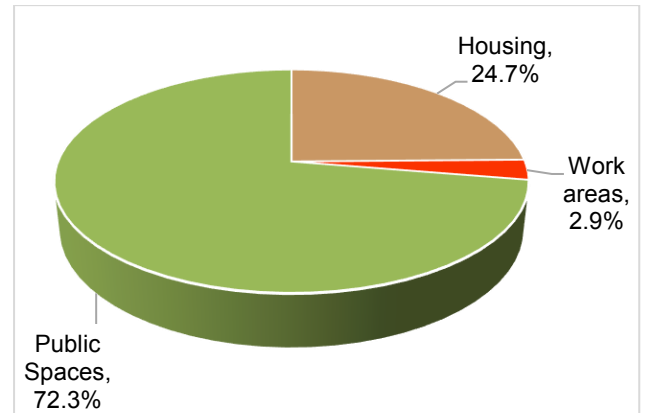
## 5.15 STAREHE

Starehe has been proposed to retain its residential, industrial, educational, public purpose, public utility and transport functions, which currently occupy 10.8 Ha, 0.3 Ha, 9.5 Ha, 3.0 Ha, 10.4 Ha and 2.8 Ha respectively. However, a few adjustments have been introduced in order to provide a decent commercial space (1.2 Ha) where neighbourhood level businesses can be operated.

The proposed land use structure thus incorporates 9.0 Ha of housing, 25.8 Ha of public spaces and 1.5 Ha of work places (See the illustration below).

Table 98: Proposed Starehe Land Budget

Land uses		Area (Ha)	%
Housing	Built-up Residential	4.7	13.0
	Courtyard Open Spaces	4.3	11.7
	<b>Subtotal</b>	<b>9.0</b>	<b>24.7</b>
Work Places	Commercial	1.2	3.4
	Industrial	0.3	0.7
	<b>Subtotal</b>	<b>1.5</b>	<b>4.1</b>
Public Space	Educational	9.6	26.5
	Public Utility	10.7	29.5
	Recreational	0.2	0.5
	Transportation	5.3	14.7
	<b>Subtotal</b>	<b>25.8</b>	<b>71.2</b>
<b>Total</b>		<b>36.3</b>	<b>100</b>



The new land use structure is expected to be achieved by selective redevelopment since the public facilities need to be retained.

### Housing

The proposed building height in Starehe is 8 levels. At this height, 4048 housing units are achievable. The units are proposed for distribution between the current and new tenants in the ratio of 2197 to 1851. It is estimated that the construction cost is Ksh. 5.7 billion.

Table 99: Proposed Distribution of Housing in Starehe

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	1,093	786,906,166	245	176,453,834	1,338	963,360,000
1 BR	32	584	561,001,144	262	251,158,856	846	812,160,000
2 BR	50	355	620,614,456	661	1,157,385,544	1,016	1,778,000,000
3 BR	65	165	406,926,043	581	1,435,693,957	746	1,842,620,000
3 BR+ SQs	75	0	0	102	325,380,000	102	325,380,000
<b>Total</b>		<b>2,197</b>	<b>2,375,447,809</b>	<b>1851</b>	<b>3,346,072,191</b>	<b>4,048</b>	<b>5,721,520,000</b>

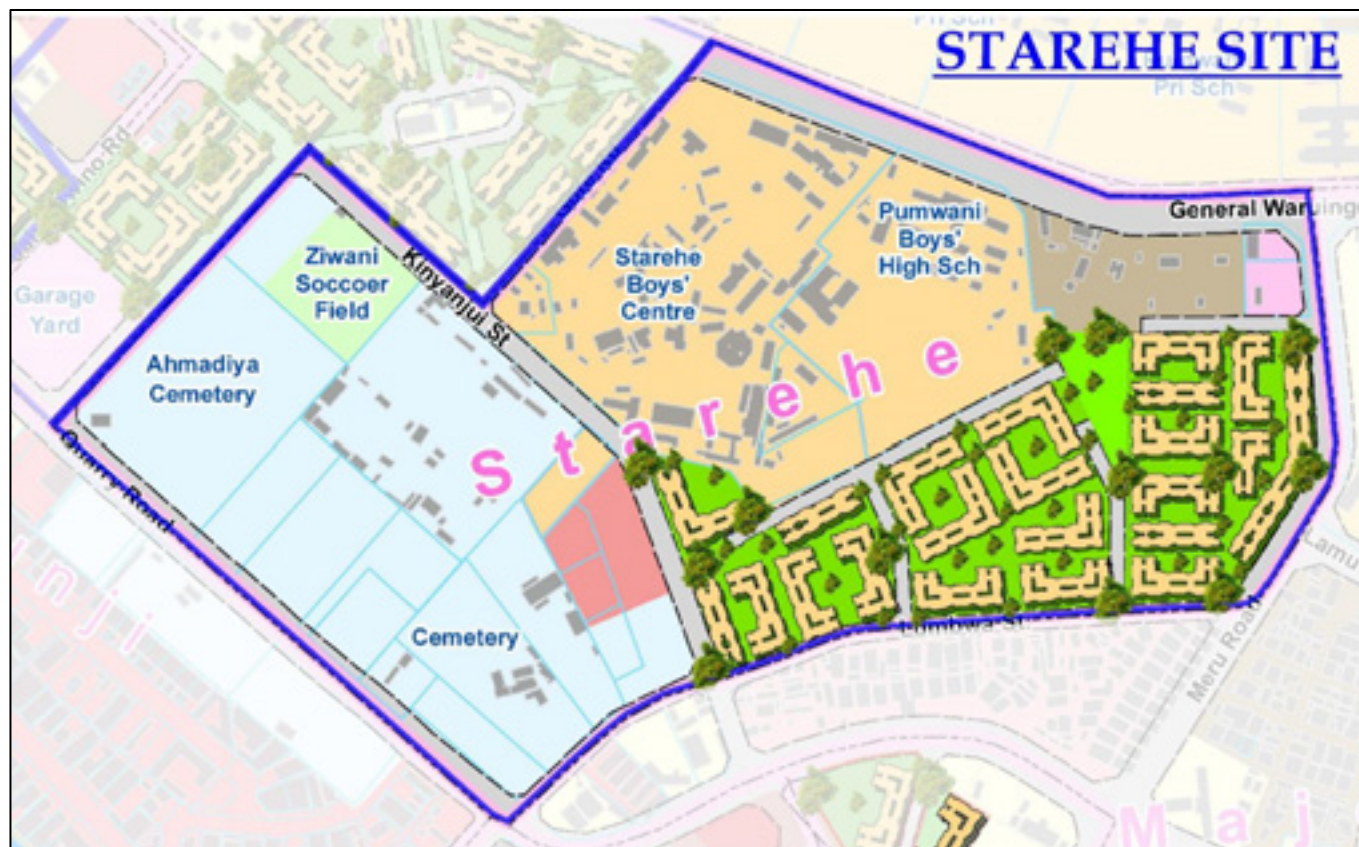


Figure 132: Starehe estate housing layout

### Work Places

Considering the high unemployment rates (28%) and the need to provide a good working environment for the informal traders within and around Starehe, a new shopping centre measuring 1.2 Ha has been proposed. It is expected to accommodate multiple business activities.

### Public Spaces

Educational and public utility zones are the main activity areas within the public spaces. Educational spaces include Starehe Nursery, Starehe Boys and Pumwani Boys High cumulatively covering 9.6 Ha. The public utilities comprise of a proposed waste collection depot and 4 cemeteries namely Kariokor World War II, Muslim cemetery, Bohra Qabrastan and Aga Khan Shia Imami Khojia Ismaili. It is important to note that the Kariokor War Cemetery was gazetted in 2014 as site of historical interest. The Ziwani Soccer Field covering 0.2 Ha has also been retained.

The transport proposals entail the widening of General Waruinge Street to 40m, Meru and Quarry roads to 30m, Lumbwa and Kinyanjui Streets to 18m while all internal streets to 12m. General Waruinge road has also been proposed as BRT route which will serve Starehe.

The estate is proposed to be supplied by abstraction from a new DN 150 HDPE pipe along Kinyanjui road. The recommended network within the estate comprise DN 50, DN 75 and DN 100 HDPE pipelines. An elevated water tank is also proposed at the nursery school.

General Waruinge - Muinami road sewer trunk main, proposed for upgrading is expected to serve Starehe estate (see the Action Area Plan below).

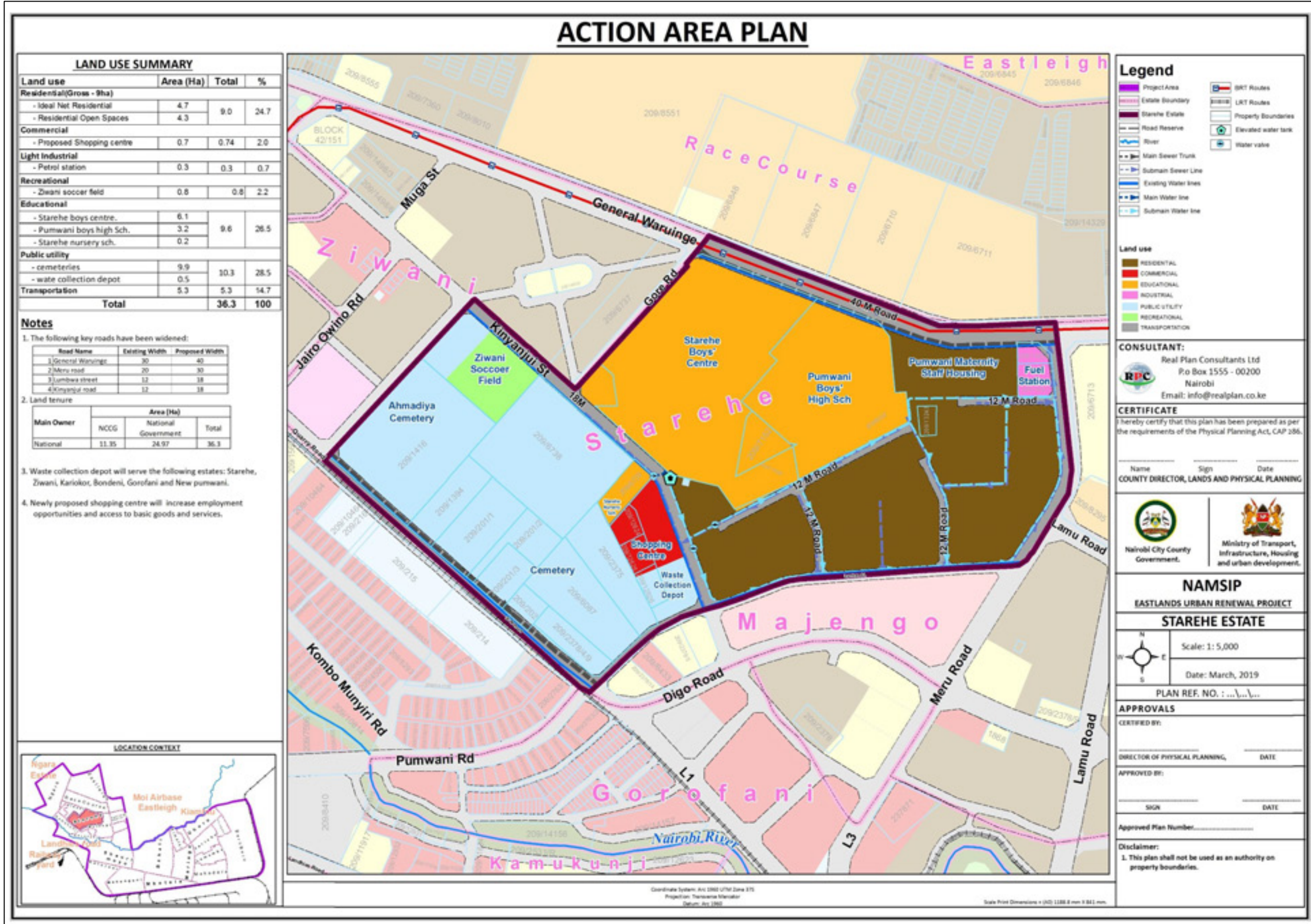


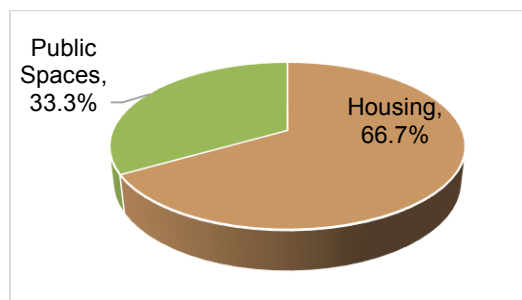
Figure 133: Proposed Action Area Plan for Starehe

## 5.16 KARIOKOR

Kariokor occupies 5.0 Ha and is proposed to maintain the current land use structure whose details are given below.

Table 100: Proposed Land Use Distribution in Kariokor

Land use		Area (Ha)	%
Housing	Built-up Residential	1.4	25.5
	Courtyard Open Spaces	2.2	41.2
	<b>Subtotal</b>	<b>3.6</b>	<b>66.7</b>
Public Spaces	Transportation	1.4	33.3
<b>Total</b>		<b>5.0</b>	<b>100.0</b>



### Housing

The housing developments in Kariokor are in fairly good condition and may only require renovation in the short term. However, in case redevelopment becomes inevitable in the future, the residential buildings can be densified to 16 floors. With this kind of improvement, a total of 2912 units is achievable. These can be distributed between the sitting and new tenants in the ratios shown in the table below.

Table 101: Proposed Distribution of Housing in Kariokor

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	604	434,621,567	135	97,458,433	739	532,080,000
1 BR	32	399	382,621,348	178	171,298,652	577	553,920,000
2 BR	50	278	486,229,436	518	906,770,564	796	1,393,000,000
3 BR	65	154	380,743,134	544	1,343,316,866	698	1,724,060,000
3 BR+ SQs	75	0	0	102	325,380,000	102	325,380,000
<b>Total</b>		<b>1,435</b>	<b>1,684,215,485</b>	<b>1,477</b>	<b>2,844,224,515</b>	<b>2,912</b>	<b>4,528,440,000</b>



Figure 134: Proposed Kariokor Estate housing layout

**Public Spaces**

The proposed transport, water supply and sewer reticulation networks cover the public spaces in Kariokor. They are proposed for upgrade to capacities that will adequately serve the additional population.

The Action Area Plan for the estate is shown overleaf.

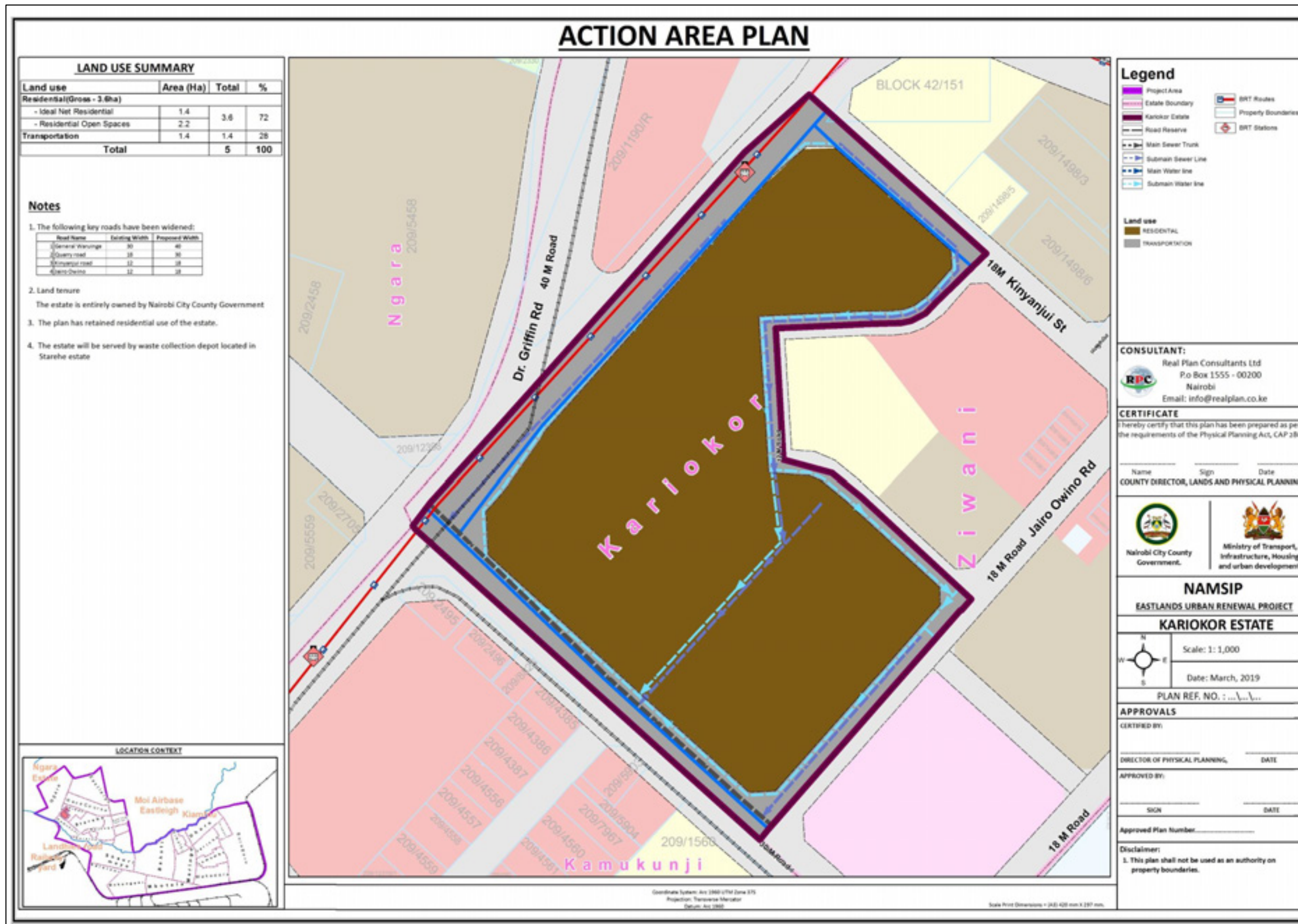


Figure 135: Proposed Action Area Plan for Kariokor

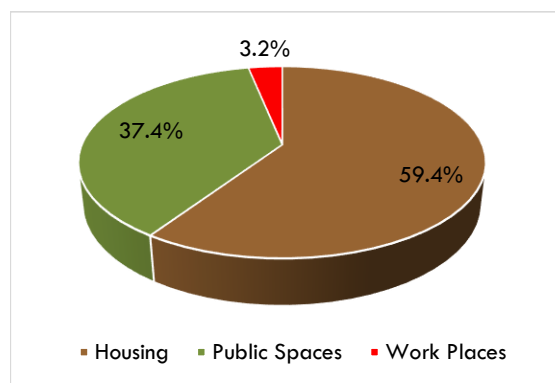
## 5.17 NEW PUMWANI

This estate popularly known as California, abuts Moi Airbase and it occupies an area 10.4 Ha. The major land use in the estate is housing (6.2Ha). This is followed by public spaces and work places at 2.5 Ha and 1.7 Ha respectively.

The proposed land use for New Pumwani largely retains the existing land use structure. The housing space has been retained at 6.2 Ha, work places reduced to 0.3 Ha and public spaces increased to 3.9 Ha. The proposed distribution of the land uses is tabulated below.

Table 102: Proposed Land Use Distribution for New Pumwani

Land use		Area (Ha)	%
Housing	Built-up Residential	6.1	59.0
	Courtyard Open Spaces	0.1	0.4
	<b>Sub-total</b>	<b>6.2</b>	<b>59.4</b>
Work places	Commercial	0.3	2.8
	BCR	0.04	0.4
	<b>Sub-total</b>	<b>0.3</b>	<b>3.2</b>
Public Spaces	Transportation	2.7	26.2
	Educational	0.7	6.6
	Recreational	0.2	1.6
	Public purpose	0.3	2.9
	<b>Sub-total</b>	<b>3.9</b>	<b>37.4</b>
<b>Total</b>		<b>10.4</b>	<b>100.0</b>



### Housing

The housing developments in New Pumwani are retained, as they exist. This is because they are in good condition and can only be renovated as need arises. The proposed redevelopment approach is thus renovation.

However, a residential block has been proposed at the area owned by the Muungano ya Wanawake group in a bid to improve the living conditions there and to densify the area. The block is proposed at 5 levels and is expected to give rise to 70 units at a cost of Ksh. 65,500,000 (See the table below).

Table 103: Proposed Housing Units in New Pumwani

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	33	23,524,848	7	5,275,152	40	28,800,000
1 BR	32	14	13,262,438	6	5,937,562	20	19,200,000
2 BR	50	3	6,108,410	7	11,391,590	10	17,500,000
<b>Total</b>		<b>50</b>	<b>42,895,696</b>	<b>20</b>	<b>22,604,304</b>	<b>70</b>	<b>65,500,000</b>

### Work Places

The work space that is within New Pumwani is the existing county market. It has been proposed that the market be densified and upgraded so that additional work area is created.

### Public Spaces

The public spaces include the existing Primary School (0.9 Ha), Desa playground (0.2 Ha) and the proposed road network. The latter is composed of Eastleigh 1<sup>st</sup> Ave and Muinami, Marimbi streets and other internal access roads. The first two have been proposed to be 40m wide and are at the Eastern and Western edges of the estate. They are proposed to be 12m wide. There is also a 9m wide access road proposed at the Southern edge of the estate to open up access to the market. Upgraded water and sewer reticulation networks have also been proposed as shown on the Action Area Plan overleaf.

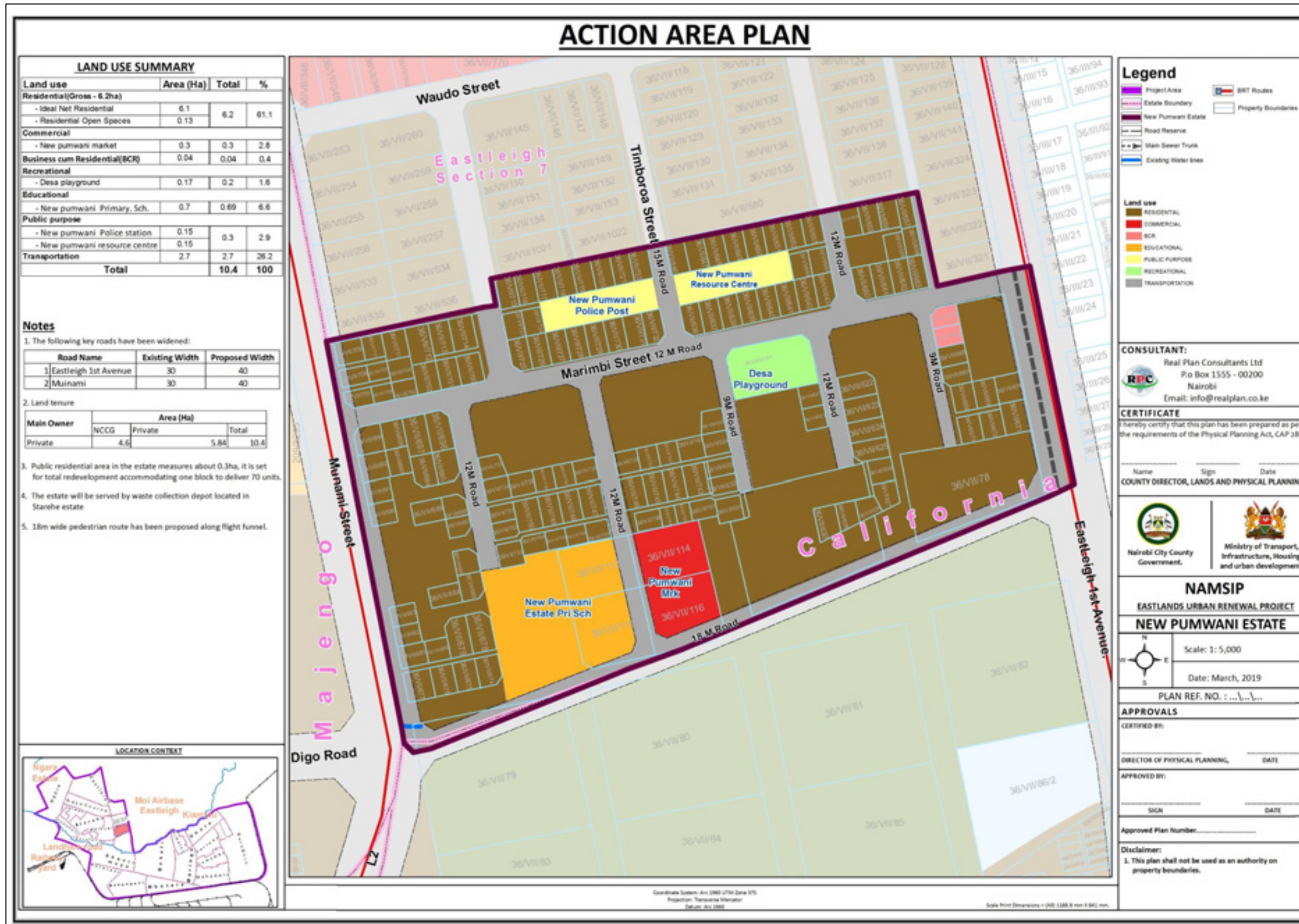


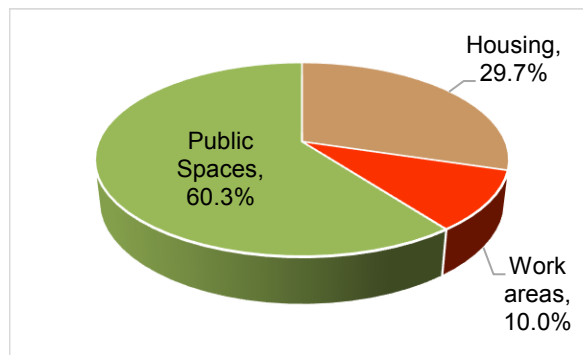
Figure 136: Proposed Action Area Plan for New Pumwani

## 5.18 MAJENGO

Majengo estate covers 29.0 Ha. Since it is very close to the CBD and forms part of the larger Gikomba node, it is proposed to contribute significantly in providing the much-needed workspaces. As such, a significant amount of space (10%) has been allocated to BCR and commercial use. Other land uses zones include residential, public purpose, educational and recreational spaces (see the table below for the proposed distribution).

Table 104: Proposed Land Use Distribution for Majengo

Land use		Area (Ha)	%
Housing	Residential	8.6	29.7
Work spaces	BCR	2.7	9.3
	Commercial	0.2	0.7
	<b>Subtotal</b>	<b>2.9</b>	<b>10.0</b>
Public spaces	Transportation	8.0	27.6
	Public Purpose	6.1	21.0
	Educational	2.9	10.0
	Recreational	0.5	1.7
	<b>Subtotal</b>	<b>17.5</b>	<b>60.3</b>
<b>Total</b>		<b>29.0</b>	<b>100.0</b>



The proposed approach is selective redevelopment since the many private developments in the estate cannot be interfered with.

### Housing

Being a largely private estate, a housing layout design has not been prepared for Majengo. However, development control guidelines have been provided to guide the property owners as they establish developments. These guidelines are detailed out in chapter six.

### Work Places

The work places provided are mainly commercial and BCR zones. These are part of the proposed Gikomba node, whose redevelopment is expected boost Eastlands' economy significantly.

### Public Spaces

The public spaces include the existing Pumwani Maternity Hospital, Pumwani and Ukumbusho Social Halls, Sanshiro ground, Christian Industrial College, Pumwani Riyadh Mosque, two churches, COTU offices, the proposed rehab centre and home for the elderly. The proposed road network, water supply and sewer reticulation system are also part of the public spaces.

The road network is composed of Lumbwa Street (15m), Meru, Digo and Lamu (30m), General Waruinge and Muinami Streets (40m) and one 12m wide access road located on the Southern edge of the estate.

The map overleaf illustrates the proposed Action Area Plan for Majengo.

## 5.19 MAKADARA RH

The entire land (1.4 Ha) in Makadara RH is currently under housing, with a total of 88 units. Given its location within a predominantly mixed use development zone, all the blocks have been proposed for BCR developments. At a maximum building height of 16, the business and residential units will be accommodated within 2 and 14 floors respectively. The residential units achievable is estimated to be 840, which can be distributed to sitting and new tenants as shown in the table below. The cost of developing the houses in Makadara RH is approximately Ksh. 1.2 billion.

Table 105: Proposed Housing Units in Makadara RH

House Type	Unit size (m <sup>2</sup> )	Units for Sitting Tenants	Cost (Ksh)	Units for New Tenants	Cost (Ksh)	Total No. of Units	Total Cost (Ksh)
Studios	24	207	148,794,664	46	33,365,336	253	182,160,000
1 BR	32	126	120,688,189	56	54,031,811	182	174,720,000
2 BR	50	73	127,665,769	136	238,084,231	209	365,750,000
3 BR	65	38	94,913,045	136	334,866,955	174	429,780,000
3 BR+ SQs	75	0	0	22	70,180,000	22	70,180,000
<b>Total</b>		<b>444</b>	<b>492,061,667</b>	<b>396</b>	<b>730,528,333</b>	<b>840</b>	<b>1,222,590,000</b>

The proposed built-up and courtyard open spaces in the BCR zones cover 0.5 Ha and 0.9 Ha respectively. The estate is expected to be served by the existing road, water and sewer networks which are recommended for upgrade to standards that will serve the new population. A bus station has also been proposed in the estate.

The proposed Action Area Plan is shown overleaf.



Figure 137: Proposed Action Area Plan for Makadara RH

## 5.20 NAIROBI RIVERFRONT DEVELOPMENT PLAN

The Nairobi River Riparian Area constitutes the fragile eco system that borders the river. The area has been demarcated and a Riverfront Action Area Plan prepared for it. The length of the Nairobi River Riparian zone within the project area is 5.92 Kilometers. The current riverbed occupies an area of 4.35 Ha while the existing observed reserve is 11.54 Ha. There are 6 existing bridges across Nairobi River at Racecourse, Dr. Griffin, Pumwani, Lamu, Eastleigh First Avenue and Eldoret roads. Other details are shown in the table below.

The Riverfront proposals include expansion of the riparian area to 16.07 Ha, representing a 40% increase. A riparian setback of a minimum of 15 meters on either side of the river is also recommended. However, there are variations in widths of the reserve, with the narrowest, medium and widest sections measuring 6.1, 7.5 and 8.7 respectively.

Components of the plan include the proposed riparian reserve and specifications of land uses. Areas where obstruction and encroachment on the riparian is evident have been identified. Determination of areas where relocation of businesses, light industries and housing will be required has also been done. The need to rehabilitate and manage the crossing points has also been identified. This is to ensure minimal pollution of the river at such points.

Additionally, 2 Motorized-crossing points (bridges) have been proposed at Bondo Street and Quarry road. A footbridge has been provided at Country bus, Gikomba area. A leisure corridor has also been proposed to serve as a buffer between the riparian zone and the surrounding developments. The existing and proposed developments along the riverfront area are tabulated below.

Table 106: Existing and Proposed Riverfront Developments

Zone No.	Zone Name	Existing Situation				Activities	Proposals
		River bed Width (m)	River bed Area (Ha)	Riparian Reserve (m)	Riparian Reserve area (Ha)		
1.	Sarakasi – Dr. Griffin Rd	6.1	0.4	11 X 2	1.9	<ul style="list-style-type: none"> <li>– Garages, Grogan area</li> <li>– Residential, NCC, Informal settlements</li> <li>– Open spaces</li> <li>– Commercial</li> <li>– Garage</li> <li>– Commercial, permanent buildings</li> </ul>	<p><b>Light Industrial and Residential</b></p> <p>Defined by:</p> <ul style="list-style-type: none"> <li>– 15m riparian reserve on both sides</li> <li>– One footbridge</li> <li>– Upgrading of the existing open spaces and informal settlements</li> <li>– 9m road</li> </ul>
2.	Gikomba - Racecourse	7.6	0.9	8 X 2	2.5	<ul style="list-style-type: none"> <li>– Commercial, Kamukunji, Gikomba - informal business stalls</li> <li>– Residential (police)</li> <li>– Garage</li> <li>– Public purpose (city highway &amp; electrical engineers)</li> <li>– Few open spaces</li> </ul>	<p><b>Retail Commercial and Market</b></p> <p>Defined by:</p> <ul style="list-style-type: none"> <li>– Direct interface</li> <li>– Tree lined Roads and Urban esplanades on both sides of the river</li> <li>– Well defined pedestrian path along esplanade</li> <li>– Urban furniture, lighting, tree lined pedestrian walkways</li> <li>– Pedestrian bridges</li> <li>– Road bridge – Quarry road</li> <li>– 15m riparian reserve on both sides</li> </ul>

3.	Kamukunji - Kanuku	6.8	0.8	5.5 X 2	2.4	<ul style="list-style-type: none"> <li>- Recreational, Kamukunji grounds and a playground in Gorofani phase 7</li> <li>- Commercial, Gorofani</li> <li>- Light industrial, artisans</li> <li>- Residential, slum, Blue estate and Kanuku Kinyango estate</li> </ul>	<p><b>Residential Eco Neighborhoods</b> Defined by:</p> <ul style="list-style-type: none"> <li>- Proximity to the River</li> <li>- Dominant Residential character</li> <li>- Well-designed recreational park, monument &amp; ceremonial picnics</li> <li>- Containment within feeder routes</li> <li>- 15m riparian reserve on both sides</li> <li>- Internal network of walkable roads and foot bridges</li> </ul>
4.	Bahati – Eastleigh	8.5	1.0	7.5 X 2	2.0	<ul style="list-style-type: none"> <li>- Residential, Bahati estate</li> <li>- Garages at the Northern side</li> <li>- Open spaces on some parts</li> </ul>	<p><b>River Front Neighborhoods</b> Defined by:</p> <ul style="list-style-type: none"> <li>- River Front road interface</li> <li>- Cycling and pedestrian promenade. Lighting and eco trails activating the river edge</li> <li>- Landscaping and water filtering treatment</li> <li>- 15m riparian reserve on both sides</li> <li>- Road bridge – Bondo rd. – Muinami road</li> <li>- Upgrading the existing foot two bridges and erection of one more foot bridge</li> <li>- Spaces of pause supported by educational information</li> </ul>
5.	Kiambui	8.4	1.1	7.8 X 2	2.6	<ul style="list-style-type: none"> <li>- Residential, Informal settlement on both sides</li> <li>- garage</li> <li>- Open spaces</li> <li>- Educational, Uhuru primary and secondary school</li> <li>- Garages and churches towards Rabai road</li> </ul>	<p><b>River Park Neighborhoods</b> Defined by:</p> <ul style="list-style-type: none"> <li>- Landscaped edge as per agreed codes</li> <li>- Transparent fencing</li> <li>- 15m riparian reserve on both sides</li> <li>- Active involvement by residents in protecting the river bank</li> <li>- Productive gardens</li> <li>- Pedestrian bridges</li> </ul>

The proposed spatial layout of the area is further shown in the figure hereinafter

# NAIROBI RIVERFRONT DEVELOPMENT

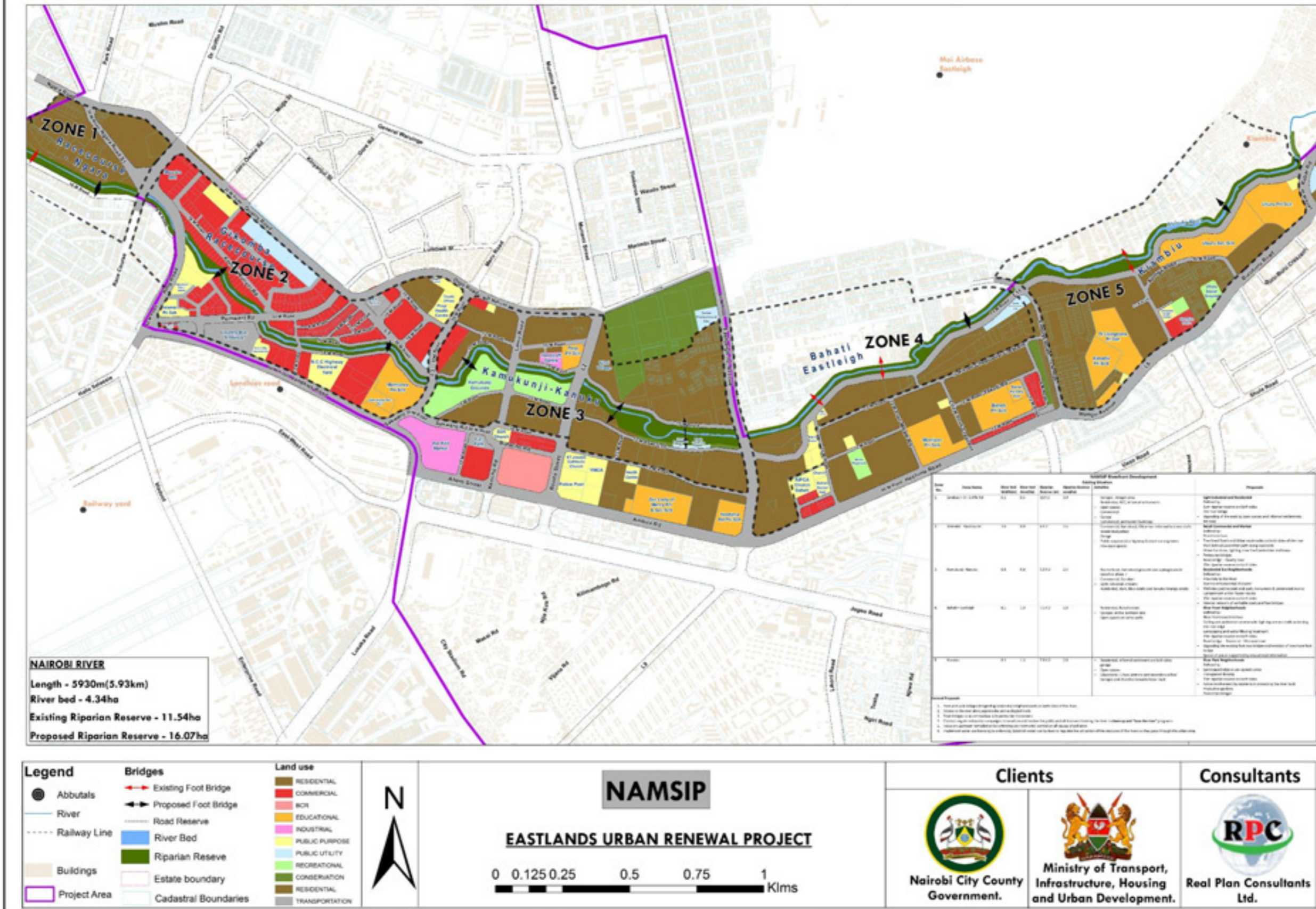


Figure 138: The Riverfront Development Plan

## **5.21 CONCLUSION**

The Action Area Plans provide guidance on the direction of development in specific localities within the project area. They bring out the areas that require intervention in the focus estates and the Nairobi River corridor. The proposals crosscut all sectors and are thus key in aiding project implementation in each locality.

## **CHAPTER SIX**

### **DEVELOPMENT CONTROL**

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The presence of private estates in the project area has necessitated the formulation of an Urban Development Framework which is meant to enhance the coordination of developments between the public estates (which have been earmarked for urban renewal) and the private ones (whose redevelopment initiatives can only be carried out by the property owners). A crucial component of this framework are the Development Control Regulations which outline the permissible development densities and land uses in the private zones. These provisions are aligned with the urban renewal proposals made in the public estates.

The need to provide the development control guidelines is informed by the observation that a lot of private developments are upcoming but without a proper guiding framework. This has led to conflicting land uses which have in turn caused poor living and working environments, social conflicts and spatial disorder.

The guidelines stipulate permitted land uses in various zones, minimum plot sizes and allowable plot ratios and coverages. They were validated by the concerned stakeholders during the Situational Analysis and Draft Plan Validation Workshops. Registered Residential Associations from the private estates were present during the consultations. These included Buruburu Estate Resident Association and Kimathi Estate Resident Associations. Other estates represented were Rabai Road, Harambee, Kenya Power housing estates in Mbotela and Maringo, Kayole Ndogo and Hamza among others.

The guidelines target the various private estate and shopping centres as discussed below.

#### **6.1 PRIVATE ESTATES**

##### **9.1.1 Kimathi**

The estate is located along Heshima road and occupies 19.8 Ha. It neighbours Bahati estate to the West, Maringo to the South and Jerusalem to the East. The estate's main access road is Heshima road. Other key roads include Eldoret and Athi roads.

Kimathi has 355 plots. The main housing typology is single family bungalows. The size of a single plot is estimated at 0.02 Ha, while permitted ground coverage and plot ratio are 50% and 0.75 respectively. It is proposed that the existing residential land use character be retained.

##### **9.1.2 Racecourse**

Racecourse is situated along General Waruinge Street. It borders Ushirika Estate to the North and Muratina road to the West and occupies about 43 Ha. There are about 408 plots and the average plot size is 0.01 Ha. The current permitted ground coverage is 50% while the plot ratio is 0.75. The main institutions in the area include Kariokor Methodist Church, Starehe Boys' Centre, Dr. Aggrey, St. Bridget, Pumwani, and Muslim Primary Schools.

The estate has been retained as a housing zone and considering the small plot sizes, the proposal is to maintain the existing ground coverage and plot ratio.

##### **9.1.3 Makadara/Hamza**

The estate is located along Jogoo road and covers approx. 54 Ha. To the South of the estate is the Makadara Railway Station, which is a potential TOD node. The estate is accessed mainly via Jogoo, Nile, Charles New and Rabai roads.

Makadara has about 734 plots and the average plot size is 0.01 Ha. The permitted ground coverage is 50% and plot ratio is 2.0. The dominant house types are flats. The private units are on county leases of 35 years. The key facilities in the area include a County Market, Nile Road Secondary, Jogoo Road, Martin Luther and St. Michael Primary Schools.

It is proposed that the estate retains its residential function with ground coverage at 75% and plot ratio at 4.0.

#### **9.1.4 Ngara**

It is situated along Murang'a road and consists of an agglomeration of estates such as Desai, Old Ngara and Bachelor Quarters. The zone covers about 81.8 Ha. Ngara is defined by Nairobi River on the South and Ring Road Ngara to the East. Key roads include Dr. Griffins Ngara, Murang'a, Desai, Quarry, Juja and Desai roads.

Ngara has a variety of housing typologies but flats are most dominant. The tallest buildings are approximately 11 floors, even though the permitted height is 4 levels. The area has approximately 946 plots with an average size of 0.04 Ha. The allowable ground coverage and plot ratio are 75% and 4.0.

The zone is proposed as a primarily residential zone with ground coverage at 75% and plot ratio of 6.0. The ratio has been increased to match the emerging development trends.

#### **9.1.5 Majengo**

Majengo is located in Pumwani area. The old houses are mainly condominiums, whose designs are based on the coastal/Islamic lifestyle of sharing living spaces. They were constructed using mud/wattle walling and iron sheet roofing. The newer houses were constructed under a renewal program and they include flats of 4 floors. There are also recently developed private buildings that as high as 10 floors.

Considering the current development trend in Majengo, the proposed land use is mainly residential with ground coverage and plot ratio of 50% and 6.0 respectively.

#### **9.1.6 Eastleigh**

The estate is accessed from Juja road and Muratina Street and it abuts Moi airbase to the South. The estate is organized in the 3-phases and only a small section falls within the project area. It has approximately 1077 plots with an average plot size of 0.1 Ha

Eastleigh was developed as a site and service scheme where bungalows were initially the main housing typologies. However, densification has been gradually taken place leading to an upsurge in high-rise business-cum-residential developments, some of which are as high as 12 levels.

In consideration for the emerging development patterns, Eastleigh is proposed as a mixed-use development zone with ground coverages of 80% and plot ratio of 6.0.

#### **9.1.7 Harambee**

The estate is located along Rabai road. To the North, it borders Uhuru estate while to the East and South is Buruburu Phase 2 and 3. Like Buruburu, Harambee is a tenant and an outright purchase scheme and has 1, 2 and 3 bedroomed maisonettes. However, currently BCR flats up-to 7 floors have emerged on plots fronting Rabai Road slowly transforming the character of the estate. However, most of the residents in the initial housing areas are against the changing skyline. Harambee has 342 plots whose average size is 0.02 ha and ground coverage of 50% and plot ratio of 0.5.

Institutions include Happy Land School and Metropolitan Hospital. Issues of land grabbing and emerging high-rise developments are a concern to the residents. The county and the National Land Commission need to address the matter to the concerns. The ground coverage of 50% has been recommended while the plot ratio at 1.0.

### **9.1.8 Buruburu**

Buruburu estate is sandwiched between Outering and Rabai roads. It borders Uhuru and Harambee estate and covers approx. 198 Ha. The estate is divided into 5 phases and it is among the largest housing schemes ever developed in the city under tenant and outright purchase schemes. The scheme was developed through donor funding and the houses constructed were mainly self-contained two, three and four-bedroom units. The estate has about 4,435 plots with an average plot size of 0.01 Ha.

The permitted ground coverage and plot ratio is 50% and 0.75 respectively. However, issues of land grabbing and emergence of infill developments consisting of flats of upto 4 floors are a concern to the residents.

Institutions include in the estate are Nairobi River Primary, Buruburu Institute of Fine Arts, SOS Technical College, Bidii, Buruburu, Thomas Burke and Baraka Primary Schools, Buruburu Girls' and Apostolic Carmel Girls' Secondary Schools, Unity College, CITAM Schools, Haven Kindergarten, Vineyard Academy, Wanja and Kim Comprehensive School and Dominique Junior Academy.

The fact that the houses in the estate were built adjacent to one another with shared walls complicates individual renewal of the units, as one needs the consent of the most immediate neighbors. The houses nevertheless are also relatively new and in good condition. For that reason, it is proposed that the status quo be maintained for the near future.

However, in the long term, and as adjacent estates gradually adopt high rise developments, it is recommended that the estate be subjected to renewal with the active participation of the residents. With the proposed legislation for land readjustments, it could be possible to increase housing densities to match the levels proposed in nearby estates.

It is in the meantime proposed that ground coverage be retained at 50% and plot ratio at 1.0 for maisonettes/bungalows and 2.5 for flats.

### **9.1.9 Mbotela**

Mbotela borders Makongeni to the West. Although estate is largely county owned, it has privately owned sections. Some of these include areas owned by Timsales, Trufoods, Cadbury, Kenya Power and Postal Corporation. Other private owned plots are sub-leased by the Nairobi County Government. The plots are of various sizes. The housing typologies are similarly mixed with flats, bungalows and maisonettes. The current ground coverage is at 50% while the plot ratio is at 2.0.

The area is proposed to retain its current residential function with ground coverage and plot ratio of 60% and 6.0 respectively.

### **9.1.10 Ushirika**

Ushirika estate is situated within Pangani area and is accessed from Muratina road. The estate is located close to Guru Nanak Secondary School, Don Bosco Secondary School and Juja Road Primary School. Like Buruburu, the houses in Ushirika were acquired through tenant and outright purchase terms. The estate has retained its original building typologies consisting of

maisonettes. The current housing heights are two floors with a ground coverage of 50% and plot ratio of 0.75.

The proposed ground coverage, plot ratio and houses are 50%, 0.75 and maisonettes respectively. In case of land re-adjustment, plot ratios can be increased to 2.5 and flats developed

#### **9.1.11 Rabai Road Estate**

Rabai Road estate is located North of Harambee estate and has direct access from Rabai and Mumias roads. The average height of the houses is two levels. The houses are typically three to four bedrooms. The proposed ground coverage is 50% while the plot ratio is 1.0 for maisonettes and 2.5 for areas with flats.

#### **9.1.12 New Pumwani (California)**

The estate is divided into blocks A, B, C and D. Blocks A & B are under Tenant Purchase scheme while C & D are entirely owned by the Nairobi City County Government. Key Institutions in the estate include New Pumwani Primary, Al-Qamar Academy (pre-unit), California Academy, Royal Junior Academy and Muzdalphati Academy.

The estate being adjacent to the Moi Airbase flight path, the maximum allowable building height is about 5 floor. It is thus recommended that the existing densities be retained. However, refurbishment of the housing and improvement of infrastructure are encouraged.

#### **9.1.13 Kayole Ndogo**

The estate is located along Rukwa road next to the shopping centre in Maringo Estate. It is characterized by small plots, which are primarily residential. It also has high-rise apartments ranging from two to five floors. The ground floors serve as shopping premises. The area is proposed as a high-density residential zone with ground coverage and plot ratio of 50% and 3.0 respectively.

#### **9.1.14 Bahati**

Bahati estate has three main private enclaves. The first is a gated estate that is situated along Nairobi River and Eastleigh 1<sup>st</sup> Avenue. It has three-bedroom apartments that are 4 floors high. The second area fronts Heshima road and high-rise BCR units are gradually emerging. The highest structures in the section are currently seven (7) floors high e.g. Bahati towers. The third section is defined by Eldoret road, Nairobi River, and Chebuvusi Crescent. It is dominated by 7-8 floor flats that are mainly BCR.

The current permitted ground coverage is 50% while the plot ratio is 0.75. To keep pace with the proposed densities in public housing and harness the full potential of private investments, new ground coverage and plot ratio of 80% and 5.0 are proposed respectively.

#### **9.1.15 Uhuru**

Uhuru estate was developed in four phases. Phase 3 and 4 were transferred to the occupiers through the tenant purchase scheme on completion of payments while phase 1 and 2 have remained county housing units. The county renewal programme will therefore focus on phase 1 and 2.

For the renewal of phase 3 and 4, development control guidelines have been proposed to guide development of the private units. The units were all developed as attached row houses with units sharing walls and were primarily one-bedroom units. Phase 3 has about 205 units while phase 4 has 328 units.

Successful urban renewal will therefore require successful participation of the residents who own the plots. This is especially because the units share common walls, and as a result of which the retention of the status quo on housing is recommended.

However, in the near future and with the enactment of the recommended land readjustment legislation, multiple units owned by different persons may be pooled together to facilitate high rise development. Pooling together will remain voluntary among willing and adjacent house owners who will deliberate, plan and work out the redevelopment modalities jointly. With land readjustment, higher development densities will be achieved with ground coverage at 80 % and plot ratio of 6.0.

The table below summaries the proposed development control regulations for the estates.

Table 107: Development Control Guidelines for Private Estates

Estate	Estimated Plot Size (Ha)	Max. Building Heights on the Ground	Current Permitted Densities		Proposals				Zone Area (Ha)
			G.C %	P.R	Use	G.C (%)	P.R	House Types	
Kimathi	0.02	1	50	0.75	Residential	50	0.75	Bungalows	19.8
Racecourse	0.01	2	50	0.75	Residential	50	0.75	Bungalows	41.5
Makadara (Hamza)	0.01	7	50	2.0	Residential	75	4.0	Flats	54.3
Ngara	0.04	11	75	2.0	Residential	75	6.0	Flats	81.8
Majengo	0.02	10	50	3.0	Residential	50	6.0	Flats	29.5
Eastleigh	0.1	10	50	2.5	Residential	80	6.0	Flats	14.7
Buruburu	0.01	7	50	0.75	Residential	50	1.0, 2.5	Maisonettes, Flats	208.6
Mbotela	0.02	5	50	2.0	Residential	60	6.0	Flats	21.2
Ushirika	0.045	2	50	0.75	Residential	50	0.75, 2.5	Maisonettes, Flats	4.6
Rabai Road	0.02	2	50	0.75	Residential	50	1.0, 2.5	Maisonettes, Flats	36.9
New Pumwani	0.02	5	80	2.5	Residential	80	2.5	Flats	10.4
Kayole Ndogo	0.02	5	50	0.75	Residential	50	3.0	Flats	1.0
Bahati	0.02	8	50	0.75	Residential	80	5.0	Flats	5.8
Uhuru Phase 3 & 4	0.01	2	50	0.75	Residential	80	6.0	Maisonettes, Flats	15.3
Harambee	0.02	7	50	0.75	Residential	50	1.0, 2.5	Bungalows, Flats	18.6
Pangani	0.045	10	50	2.5	Residential	80	6.0	Flats	66.1
Juja A & B	0.1	10	50	2.5	Residential	80	6.0	Flats	61.3

## 6.2 SHOPPING CENTRES

These are existing shopping centres where the premises built were leased out to individuals on short leases of 35 years. This is unlike in most of the housing units where the houses remained owned by the county government. Various strategies have been proposed to improve the shopping centres. They include:

- Retention of current use
- Conversion of short subleases.
- Enhanced Development Control Regulations

### (a) Retention of Current Use

Foremost all the shopping centres have been retained since they have continued to play a useful purpose in servicing the residential areas developed adjacent to them. No justification was established to warrant the change of use of the land to non-business functions.

The shopping centres retained are Gikomba, Kamukunji, Buruburu, Shauri Moyo, Burma, Jogoo road, Jerusalem. Uhuru, Maringo, Bahati 1 and 2, Kaloleni, Mbotela and Hamza. Indeed, there is need to enhance the formal workplaces so as enhance the high business potential manifested by the high number of informal business activities in the neighborhood.

### **(b) Conversion of Short Subleases.**

It is also recommended that, the short term sub leases of 35 years issued to the occupiers should be converted to long term leases of 99 years to improve security of tenure.

### **(c) Enhanced Development Control Regulations**

From a renewal perspective, it was expected that development control guidelines are to be proposed in such areas by providing regulations to guide the revitalization of the shopping centres. Specific guidelines of each shopping centre are thus highlighted below.

#### **9.2.1 Gikomba Shopping Centre**

Gikomba is by far the oldest, largest and most active shopping centre. It is situated between the Machakos Bus Station and the Gikomba market along Digo road. It borders Kamukunji to the West and Nairobi River to the South. Indeed, the latter day Gikomba market started as the business activities spilled over from this shopping centre on the one hand and from the Quarry Road market on the other. The new informal market spurred as the lucrative businesses emerged with specializations and sprawled into the neighboring estates. This has necessitated the need to expand the land earmarked for work places in the area.

The permitted ground coverage and plot ratio are 80% and 2.0 respectively. However, the existing structures go as high as eight (8) levels. It is therefore proposed that the plot ratio increases to 6.0 and the current permitted ground coverage be retained. The increase in density is also targeted to contribute towards the county government initiative of expanding the current CBD.

#### **9.2.2 Kamukunji Shopping Centre**

Kamukunji is largely mixed use with commercial activities (such as banks, wholesale shops, warehouses and go-downs) being dominant. The zone's character has been influenced greatly by the outward expansion of the CBD. It occupies 38 Ha and has 221 plots leased out by the County Government to private owners.

The average plot size is 0.05 Ha while permitted ground coverage and plot ratio are 50% and 2.0 respectively. However, the current building heights range between two to eight floors. For the reason, ground coverage is proposed at 80% with a plot ratio of 6.0.

#### **9.2.3 Buruburu Shopping Centre**

Buruburu shopping centre is located along Mumias and Donyo Sabuk Roads. The shopping centre has been one of the Nairobi's most successful shopping centres in a residential neighborhood. The centre is quite diverse with mixed commercial, residential and various institutional developments. It has emerged as one of the strongest shopping areas outside of the CBD.

The current permitted ground coverage is 80% and a plot ratio is 2.0. Of late, high-rise business structures of up to five (8) floors are most dominant. The centre has also witnessed an upsurge of informal business stalls over time. Some of these are erected along Mumias road reserve. Based on the need to adapt to the upcoming development trends and increase formal business spaces, the proposed ground coverage and plot ratio are 80% and 6.0 respectively.

#### **9.2.4 Shauri Moyo Shopping Centre**

The centre is situated within Shauri Moyo Estate and is defined by Butecho Crescent. It is comprised of several high-rise buildings with numerous temporary business stalls erected. The average plot size is estimated at 0.01 Ha while the permitted plot coverage and ratio are 80% and 2.0.

In order to respond to the increasing demand for business spaces in Shauri Moyo, the plot ratio is recommended to increase to 4.0 while the ground coverage is maintained at 80%. The shopping centre is expected to compliment the expanded Burma market, the newly proposed Kaloleni market and the Kamukunji jua kali industrial zone in creating a strong business node

### 9.2.5 Jogoo Road Shopping Area

This is mixed-use development ribbon fronting Jogoo road in Shauri Moyo. It has emerged along the former railway land running along Jogoo road. It has a numerous permanent Business-cum-Residential structures and sprawling temporary business stalls erected on the road reserve. The average land size is 0.02 Ha with permitted ground coverage and plot ratio of 80% and 2.0 respectively. The latter is proposed to be increased to 5.0.

### 9.2.6 Jerusalem Shopping Centre

The shopping centre is located at the junction of Ajuoga and Buruburu roads. It is abuts Uhuru and Jerusalem estates. The average plot size is 0.01 Ha with permitted plot coverage and ratio of 80% and 2.0 respectively. Currently, plot coverage and ratio of 80% and 2.0 are allowed. The proposal is to increase the plot ratio to 5.0.

### 9.2.7 Maringo Shopping Centre

The shopping centre is located off Rukwa road within Maringo estate. It is comprised of low-rise commercial structures whose upper floors have been converted to residential premises. The plot sizes are estimated to be 0.01 Ha while the permitted ground coverage and plot ratio are 80% and 2.0 respectively. The proposed ground coverage and plot ratio are 80% and 5.0 respectively.

### 9.2.8 Bahati Shopping Centre

There are two shopping areas in Bahati and both are located along Heshima road. In. The first zone is situated close to Bahati towers while the other is adjacent to Bahati Primary. Although most structures within the shopping centres are at most two floors high, taller BCR buildings are beginning to emerge. The average plot size is 0.01 Ha with a plot coverage and ratio of 80% and 2.0 respectively. The proposal is to increase the plot ratio to 5.0.

The table below provides a summary of the above proposals.

Table 108: Development Control Regulations for Shopping Centres

Shopping Centres	Estimated Plot Size (Ha)	Max Height on the Ground	Current Permitted Densities		Proposals				Zone Area (Ha)
			G.C (%)	P.R	G.C (%)	P.R	Land Use	Building Types	
Gikomba	0.01	8	80	2.0	80	6.0	Commercial	Flats	2.4
Kamukunji	0.01	8	50	2.0	80	6.0	BCR	Flats	38.1
Buruburu	0.01	8	80	2.0	80	6.0	BCR	Flats	5.8
Shauri Moyo	0.01	4	80	2.0	80	4.0	BCR	Flats	2.4
Jogoo Road	0.02	4	80	2.0	80	5.0	BCR	Flats	4.6
Jerusalem	0.01	2	80	2.0	80	5.0	BCR	Flats	0.6
Maringo	0.01	2	80	2.0	80	5.0	BCR	Flats	0.8
Bahati 1	0.01	6	80	2.0	80	6.0	BCR	Flats	0.8
Bahati 2	0.01	6	80	2.0	80	6.0	BCR	Flats	0.7
Uhuru	0.01	2	80	2.0	80	5.0	BCR	Flats	0.2
Kaloleni	0.01	4	80	2.0	80	5.0	Commercial	Flats	0.6
Mbotela	0.01	4	80	2.0	80	6.0	Commercial	Flats	1.0
Hamza	0.01	8	50	2.0	80	6.0	BCR	Flats	17.0

## 6.3 LAND READJUSTMENT

Land readjustment is a process where a group of separately owned land parcels are pooled together or shared for unified planning and servicing with the project costs and benefits equitably

shared between and among the contributing land owners. This process is applicable to privately owned areas like Kimathi, Racecourse, Ushirika, Buruburu, Harambee, Rabai Road and Uhuru. The achievable building heights in these estates is 16 floors. However, the average plot sizes in range between 0.01 and 0.02 Ha, making it impossible to develop buildings of such heights. Currently, buildings of only four floors and below are sustainable.

The necessity of bigger land parcels measuring at least 0.2 Ha has thus been registered. Land readjustment is thus recommended as a possible approach to densification in the mentioned estates.

The proposed re-adjustment guidelines are shown in the table below.

Table 109: Proposed Land Re-adjustment Guidelines

Estate	Estimated Plot Size (Ha)	Current			Proposed				Zone Area (Ha)
		Heights	G.C %	P.R	Min plots (Ha)	G.C%	P.R	House Types	
Kimathi	0.02	1	50	1.0	0.05	65	6.0	Flats	19.8
Racecourse	0.01	2	50	0.75	0.05	65	8.0	Flats	41.5
Buruburu	0.01	7	50	1.0	0.05	65	8.0	Flats	208.6
Rabai Road	0.02		50	1.0	0.05	65	8.0	Flats	-
Harambee	0.02	7	50	0.5	0.05	65	8.0	Flats	18.6
Ushirika	0.05	2	50	1.0	0.05	65	6.0	Flats	4.6
Uhuru	0.01	1	40	0.5	0.05	65	6.0	Flats	-

However, it is important to note that land readjustment is not provided for under the Laws of Kenya and therefore legal reforms are recommended to facilitate applications.

## 6.4 DEVELOPMENT APPLICATIONS

Given the likely impacts of various development applications such as change of use, extension of use, extension/renewal of lease and land subdivision and amalgamation, it is recommended that all applications be vetted against the proposals made in this Urban Renewal Plan. This will ensure that the approvals granted conform to the plan.

## 6.5 RENEWAL/EXTENSION OF LEASES AND SUBLEASES

### 6.5.1 Leases

It is recommended that the City Planning Department improves the conditions issued on approval of renewal/extension of leases. The approvals need to be more explicit on the appropriate use and road widening. It should be made mandatory that all applications be accompanied by a planning schedule to be endorsed by the County Director of Planning.

### 6.5.2 Subleases

Most private land in the focus estates are held on subleases of 30-35 years. The findings in the study done during the preparation of this plan indicate that the processes involving subleases are approved by the Chief Valuer, Nairobi City County Government. However, this system gives no room for the planning input, which is essential in ensuring the appropriate use of the subleased land parcels. As such, it is recommended that:

- The County Government subjects applications for renewal/extension of subleases to the requisite planning process as provided for in the Physical Planning Act (1996)
- Approvals be granted through the form PPA 2, specifying conditions of approval
- Conditions of approval to provide guidelines on land use and road widening
- New applications for sublease renewal to be given longer terms of between 50 and 99 years.

## **6.6 CONCLUSION**

This chapter presents development regulations that will guide the implementation of this plan in the privately owned properties. The aim is to ensure that the privately initiated developments are in line with the overall urban renewal direction envisaged in the neighboring public estates. The proposed plot ratios are for instance meant to ensure that the building heights within the private estates are in harmony with those proposed in the public estate.

# CHAPTER SEVEN

## URBAN DESIGN MODELS

### 7.1 INTRODUCTION

#### 7.1.1 The Importance of developing a Sustainable Urban Model for Eastlands

This chapter sets out urban design principles for the short and medium-term development and renewal of Eastlands, Nairobi. These principles complement and reinforce the overall development strategy presented in chapter five and six. It also presents models of urban development for catalytic local areas within Eastlands by integrating proposed interventions related to the ecological system, transportation, land use mix and housing imperatives.

The principles and development concepts presented here are grounded in an understanding that places and cities are shaped by their natural settings, economy, culture, social context, services and transport infrastructure. Importantly it is an understanding of cities made by and for people. Through individual and collective endeavor city inhabitants and users spark innovation and change, while the diverse offerings they make in particular places generate distinct imprints that mold the unique character and sense of place of each area of the city

Cities should be places of equity, justice and inclusivity supporting the natural environment and enhancing life chances of their inhabitants. The Renewal Programme presents a holistic way to support and guide interconnected highly functional and innovative nodes and neighbourhoods that work and a built environment that supports people's activities, lifestyle and aspirations.

The urban design principles outlined within this chapter are tools to guide and promote the development of a robust and well-integrated urban fabric. This means developing neighbourhoods in ways that respond to the context surrounding them, as well as neighbourhoods that best support and enable the local economy inside of them and the way that people best use local places and spaces. The design principles help to create a consistent language of spatial ideas that are carried out in the development of a whole area so that its different parts and different elements relate well to one another and so that the whole area is developed according to a vision of future sustainability. It is about how to develop in ways that make the area better for present and future users and residents.



Figure 139: Urban Condition in Eastlands  
- Accommodating a range of buildings and activities-

### 7.1.2 The Development Approach

Eastlands is a well-located inner-city area, historically significant, diverse, vibrant and complex. It is defined by several challenges as identified through the initial stages of this planning process. However, it displays clear development opportunities as articulated throughout this report.

The urban design framework is intended to guide the different components of the Urban Renewal Plan to support and inform a sustainable development trajectory. It complements the land use plan, local action area plans and proposed controls. This input aims to spatialize and to integrate the various sectoral proposals presented in the previous chapters, in the physical environment.

Urban Renewal is a contested and complex process that requires periodic review and monitoring to meet the needs and expectations of all affected parties and to uphold the socio-economic, ecological and political goals defined to guide this programme. Thus, the guidelines must be flexible, while being robust and appropriate to the Eastlands context.

The urban design framework sets out to guide the spatial development of the area as a whole as well as that of the different nodes and estates over time.

It is based on a set of principles that are developed for the particular neighbourhoods and growth nodes of Eastlands. This section outlines principles and development concepts related to three key urban elements: 1. The Environment, 2. Connectivity (access and transportation), 3. Built Form and Place making.

The urban design principles formulated are informed by best practices relevant to the study area. The Urban Renewal program includes several strategies, namely:

- Optimization:
- Re-blocking to achieve an optimal land subdivision and development potential within the development area.
- Intensification:

- In-situ upgrading of existing buildings to enable the intensification of residential, educational and commercial use; and infill development of predominantly mixed income/inclusionary housing to meet current demands.
- New development:
- New infill developments focused on mixed land uses (commercial, residential, industrial, etc.).
- Renewal:
- Adaptive re-use of existing structures,
- Conservation:
- Heritage and environmental conservation and upgrading.
- Enhancement of the public sphere:
- Public environment upgrading and development.

The proposed plan outlined in this report recommends the comprehensive regeneration and upgrade of services and transport infrastructure in Eastlands, and further complements the Nairobi River Rehabilitation project.

**The aim is to provide a framework for development programs that are incremental, responsive, sustainable and equitable.**

The programs will consider all the information gathered through the planning process concerning the ecological, socio-economic, physical information about the area as well as people's preferences and aspirations, aiming at meeting the key objectives of the study.



Figure 140: Street Environment in Eastlands  
- Accommodating a range of economic activities-

## 7.2 URBAN DESIGN PRINCIPLES

### 7.2.1 Aim

The purpose of the guidelines is to promote a consistent approach to the design of the components and elements that define the public realm. This is crucial for guiding the myriad of actors who develop and use Eastlands towards a common set of principles of good city form. It is about providing a framework of principles, not rules that allow for structured **local responses** and interpretation, imparting a distinct character and sense of place to each node, each precinct and each neighbourhood.

Building from the goals and objectives previously stated, the development vision is:

*To create an interconnected, vibrant and sustainable urban environment, supporting all economic activities and ways of being in the city.*

The aim is to project Eastlands as a new model of city renewal, which is “ecologically sensitive, inclusive, innovative, entrepreneurial, a place for new investments and the celebration of a unique urban culture.”

Eastlands’ heritage sites and features; the Stadium, the vibrant markets, the activated streets, private sector investment, formal commercial centres and educational and government buildings supported by a range of housing estates makes this part of Nairobi a compelling and relevant apex district to lead the way for the rest of the city.

However as indicated in this report there are compelling factors which indicate the need for urban renewal. There is a need to modernize services and transport infrastructure, to provide dignified spaces for people to work and live and to enhance the economic value of this well-located area and its neighbourhoods.

The projected population growth rate and GDP for the Kenyan economy provides a positive outlook and context for the urban renewal program. However, the current poverty levels, extent of the informal economy, environmental and socio-economic threats raise large challenges to development. The task is to deliver an integrated and inclusive program that can benefit all sectors of the Eastland community.



Figure 141: Vision for Eastlands

## 7.2.2 Eight Urban Design Principles Related to Urban Regeneration in Eastlands

Eastland is a place of opportunities. Eight guiding principles will improve the physical environment in which these opportunities flourish:

### **i. Connectivity**

Improving the movement of people, goods, vehicles and services. Is about improving information flow. Creating well-connected urban systems that integrate Eastlands to the rest of the city through efficient movement, flourishing social networks and improved opportunities for interaction between various sectors of the economy.

### **ii. Diversification**

Breaking the barriers that separate different parts of the economy and exclude the poor. Shifts the idea of informality as decay to the idea of informality as innovative, employment generating and livelihood creating and as a natural part of the overall economy. Embraces the whole economy and the diversity within it, and builds connections within various economic sectors.

### **iii. Intensification**

Making the best use of Eastlands property as a well-located area, a place of choice for business, commerce, educational and government services and facilities. Catalyzes Eastlands as a high property value zone which must optimize the value by extracting the best blend of social and market value in all new development.

### **iv. Densification**

Well-located residential areas are of most importance to the reduction of carbon emissions generated using transport to and back from work. Increases access of residents so that amenities and social services, public spaces and cultural activities are within walkable distances from their homes.

### **v. Sense of Place**

This is about the identity of a place – what makes it this place rather than that place. Identify and enhance the unique features

and activities that define neighbourhoods as being distinctive and that enhance the ways that humans relate to the physical environment and are able to attach meaning to it.

### **vi. Social and economic mobility**

Improving the life chances of the poor. Expand access to a range of affordable accommodation and to a diverse offering of employment and self-employment opportunities.

### **vii. Equity**

This is about making Eastlands a place that offers everyone opportunity. Consciously deliver physical improvements that encourage the quality of being fair and impartial, create a common platform from which people of all classes can engage with the opportunities of being in a dynamic and developing urban space.

### **viii. Social Justice**

Actively improving physical situation that have been neglected and that have hindered those chances of the poor and marginalized, so that the balance of just and fair space can be achieved. Undertake physical upgrading and improvements that actively promote the better chances of the poor and marginalized to benefit from opportunities of city living. Redress must attend to neglected areas that have marginalized the poor through a lack of access to services and infrastructure.

The above principles and the protocols fit well with the development concept of Eco-Neighbourhoods. These ideas and how they might apply to urban renewal in Eastland are developed below.

## 7.3 ECO- NEIGHBOURHOODS

The Eco District is a best practice approach that is:

“A new model of public-private partnership that emphasizes innovation and deployment of district-scale best practices to create the neighborhoods of the future - resilient, vibrant, resource efficient and just” (www.ecodistricts.org.)

The approach focuses on building areas from the local district upwards. It offers the guiding tools and protocols to do this by involving communities in the detailed planning and implementation stages of the process. It also provides tools to conduct effective participation in the decision-making process related to issues that affect how people participate in the urban economy.

### Eco-Districts Protocol

The Eco District Protocol includes six priorities for which the attached goals and objectives are outlined below.

#### 1. PLACE

**Goal:** Create inclusive and vibrant communities.

**Objectives;** Strong civic engagement; preservation and celebration of culture and history; diverse and affordable housing; and accessible public spaces and services for daily needs.

#### 2. PROSPERITY

**Goal:** Support education and economic opportunities that build prosperity and accelerate innovation.

**Objectives;** Equitable access to quality education and career pathways, a robust employment base with increasing jobs and job quality, and entrepreneurial innovation and business start-ups.

#### 3. HEALTH + WELLBEING

**Goal:** Nurture people’s health and happiness.

**Objectives;** Active living based on walkability and recreation; equitable health outcomes based on accessible, affordable health care; affordable, local fresh food; remediated toxic environments; and strong public safety.

#### 4. CONNECTIVITY

**Goal:** Build effective and equitable connections between people and places.

**Objectives;** A street network accommodating diverse ages and abilities using multiple travel modes and shared mobility options, and a high-quality digital network providing equitable connectivity and leveraged community data.

#### 5. LIVING INFRASTRUCTURE

**Goal:** Enable flourishing ecosystems and restore natural capital.

**Objectives;** Healthy soils, water, trees, and wildlife habitat; accessible nature; and natural processes integrated into the built environment.

#### 6. RESOURCE RESTORATION

**Goal:** Move towards a net positive world.

**Objectives;** Increase efficient water use; divert waste from landfills; productively reuse remediated land; and pursue energy efficiency, technology advancements, and clean, renewable energy production that reduces greenhouse gas emissions.

The above protocols present a well-structured and all-inclusive set of criteria to plan and to assess what should be delivered at the local level to build sustainable neighbourhoods.

Further to the above, the Eco-District approach is premised on three fundamental principles:

### **Equity**

Cities that embrace equity identify and acknowledge the communities most vulnerable to change. District teams must ensure their community has the opportunity to meaningfully participate, lead and thrive.

### **Resilience**

Resilience is the capacity of cities to function so that all people are able to withstand the shocks and stresses they encounter. District teams must address resilience with a broad lens that prepares for social, economic and environmental shocks and stresses.

### **Climate Protection**

Cities are responsible for most global carbon dioxide emissions, the dominant greenhouse gas contributing to climate change. District teams must build a pathway to carbon neutrality.

The Eco District protocols are relevant at all levels of planning. They are recommended for the broad level of developing the Urban Renewal plan as well as future reference to guide further detailed planning of the action area plans and in the detail design for the implementation of the nodes and precinct plans.

## **7.4 EASTLANDS URBAN RENEWAL PROGRAMME**

The renewal program recognizes that each local area and estate presents unique opportunities. These opportunities must be harnessed to build the overall urban renewal programme out of multiple local projects.

### **7.4.1 The Complex Urban Renewal Process**

Urban Renewal includes a range of development strategies including brownfield and green field developments. The processes are complex and, in many instances, unpredictable. They need to be managed through clear, shared rules and protocols co-produced by all affected parties and supported by agencies and actors that can contribute to bring the desired changes and outcomes at the local level.

For Eastlands, the priority is to optimize the use of the available land and engage the affected parties in the decision-making process. The Urban Renewal Framework proposes:

- The rehabilitation of the river basin.
- Developing an extended network of public open spaces and public amenities, integrated with the river system.
- Improving the movement and transport network.
- Renewing urban infrastructure - the renewal of the transport, road and services infrastructure.
- Development within nodes- the upgrading, intensification and redevelopment of urban fabric within nodes and the creation of special development zones to accommodate new residential, commercial and mixed-use activities.
- Expanding housing supply - In order to support the resettlement of at-risk settlements along the riverbanks it also includes an extensive programme to upgrade, densify and deliver new, social, affordable and market-related residential stock to accommodate the current and projected demand for housing.
- Promoting the use of renewable energy and green infrastructure.

- Facilitating the creation of employment and a sustainable local economy.
- Preserving heritage resources and building new cultural and education facilities.



Figure 142: Urban Grain and the Settlement Patterns in Eastlands

## 7.4.2 Eastlands Renewal Program, Key Development Principles

**1. TRANSPORT ORIENTED MIXED-USE DEVELOPMENT NODES, WITH AMENITIES TO SUPPORT HIGH TO MEDIUM DENSITY RESIDENTIAL NEIGHBOURHOODS**



**2. ENERGY SAVING AND GENERATION AND SMART SOLUTIONS TO IMPROVE PROVISION AND MANAGEMENT OF SERVICES INFRASTRUCTURE**



**3. PROVIDE A RANGE OF HOUSING SOLUTIONS INCLUDING; IN-SITU INCREMENTAL UPGRADING, NEW INFILL RESIDENTIAL DEVELOPMENTS AND MIXED USE AFFORDABLE HOUSING PROJECTS**



Figure 143: Development Principles for Eastlands

**4** HERITAGE  
CONSERVATION  
GUIDELINES TO  
PROTECT EXISTING  
HERITAGE BUILDINGS AND  
SITES



**5.** WELL DEFINED STREET  
EDGES, BUILDING  
ENTRANCES AND SPACES  
BETWEEN BUILDINGS.



**6.** PROVIDE A WELL  
DEFINED HIERARCHY OF  
PUBLIC SPACES AND  
COMMUNITY SPACES



**7.** PROMOTE  
CONNECTIVITY AND  
INTEGRATION BETWEEN  
EXISTING AND NEW  
DEVELOPMENTS



Figure 144: Development Principles for Eastlands (continued)

### 7.4.3 An urban Design Language for Eastlands – Introducing Key Principles

Eastlands is a large study area consisting of estates with a diversity of land use mix, built form, land ownership, block structure and land subdivision. Importantly it hosts varied groups and communities with thick social and economic networks. Community structures and ordinary people of Eastlands are deeply rooted in the inner-city area and need to be included in the renewal process.

The development programme envisaged, will require a concerted effort and the participation of all development sectors, private, public and community, to deliver at the local level. These actions should conform to the parameters set up through the co-production of the plans and strategies.

The following sections describe and illustrate specific proposals and recommendations of the plan.

The icons on the right represent the aspects considered that are described later in the section. Each element is discussed with the understanding that they are all interconnected and that the success of the plan will depend on the integration and overlapping of physical and non-physical layers.

#### Principle of Urban Design

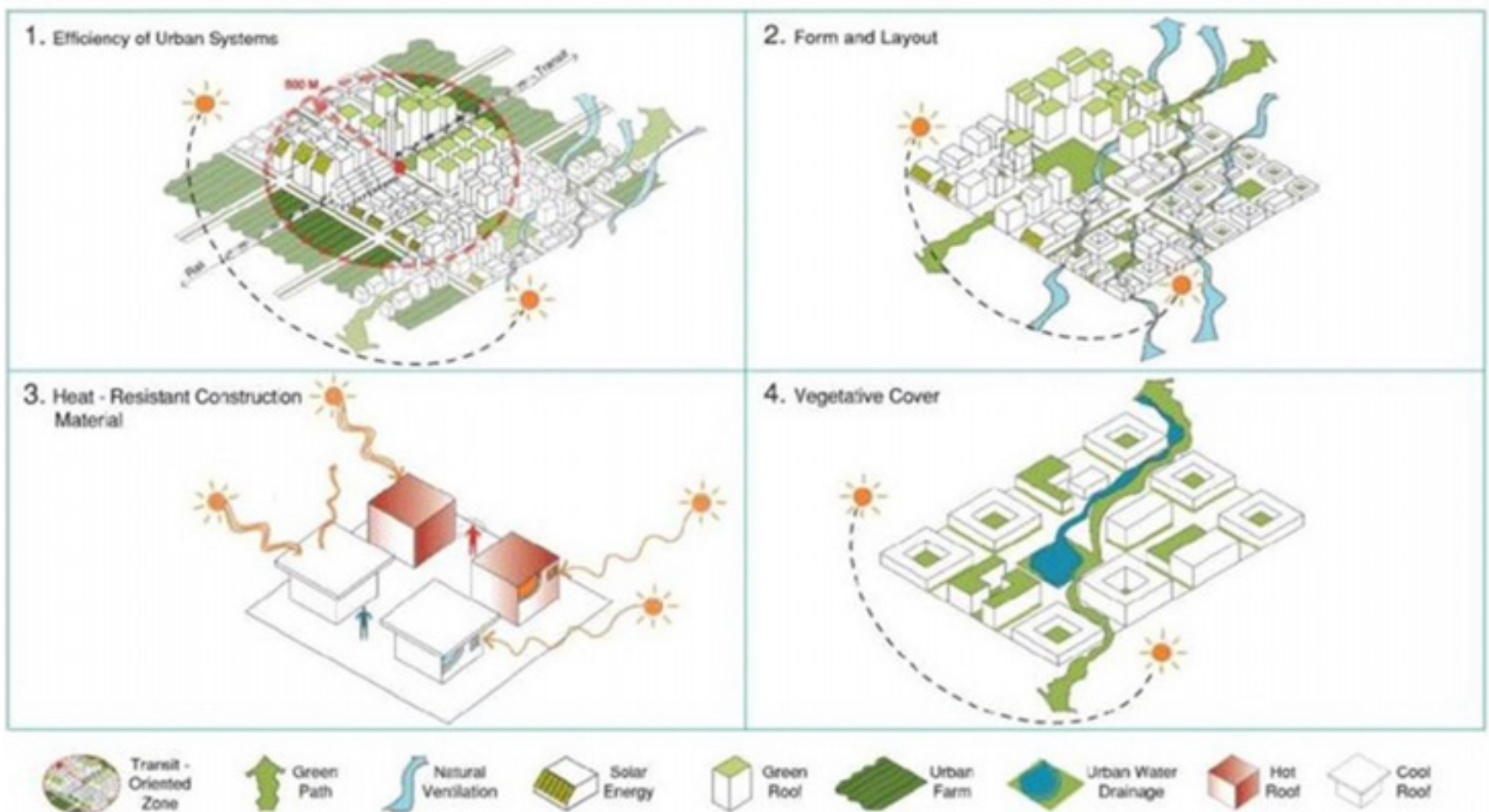


Figure 145: Diagrams from Precedent Studies illustrating the Development of Efficient Urban Systems.

# DEVELOPMENT MODELS



## 7.5 INTEGRATED URBAN STRUCTURE

The proposed new urban structure provides a legible system of connections and a road hierarchy. It defines priority zones for upgrading, redevelopment and intensification. It also defines and protects the river's edge.

High intensity nodes and development zones run along the main transportation corridors. This provides a robust structure around which plans and interventions can develop over time. Within this structuring framework, specific guidelines and incentives are introduced to promote the consolidation of strategic areas, nodes and neighbourhoods. These guidelines place particular emphasis on supporting economic development and investment to accelerate the renewal process.

This section presents proposals that will be further developed and refined at the local area level.

The urban design framework builds upon the proposals and interventions made by the ecologist, transport engineers and planners, including the land use plan and town planning controls. It is presented reflecting on the critical components of the plan, including:

1. Ecological/public space network plan.
2. Access and transportation.
3. Built Form.
4. Catalytic intervention areas and growth nodes.

The above components are given further detail in the proposed land use distribution and development controls presented in the town planning chapter. This chapter illustrates the application of the development principles and design guidelines on the growth nodes and on the representative priority estate. It demonstrates the potential to create a diverse and responsive environment to accommodate the target number of residential units, while improving the physical and socio-economic conditions of people living in Eastlands.



Figure 146: Urban Design Framework after Application of Proposed Land Use Plan & controls.

The urban design framework presents the preferred growth scenarios, modeled to accommodate the land use mix recommended in the land use plan. These parameters have been applied to the most representative catalytic growth nodes namely:

1. Gikomba Node
2. Shauri Moyo /Kaloleni Node
3. Makadara Node
4. Model residential estate/Bahati

The principles outlined for the Bahati residential estate present a model for building balanced and integrated neighbourhoods. This estate could become a public sector-led model for the development of inclusionary and affordable housing products. The model indicates that these can be redeveloped incrementally, maximizing the benefit of their location and their potential to accommodate a range of housing types to meet different needs and affordability levels. Bahati presents a unique opportunity to link development to the upgrading and rehabilitation of the riverbank.

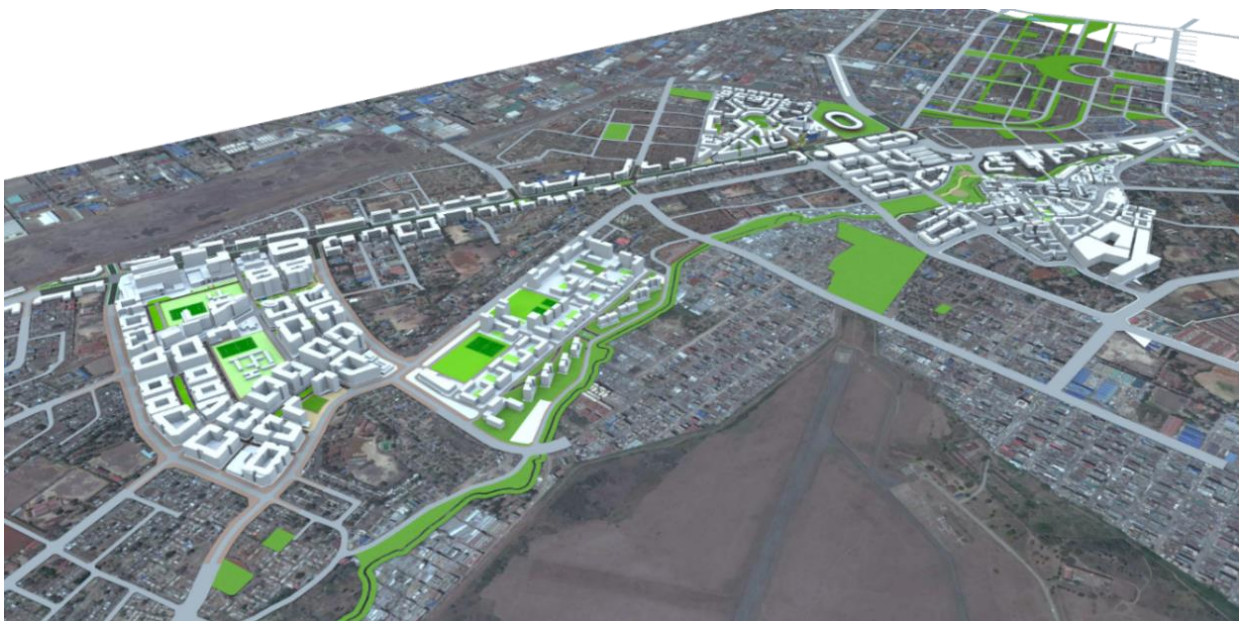


Figure 147: Proposed Development Framework in Context.

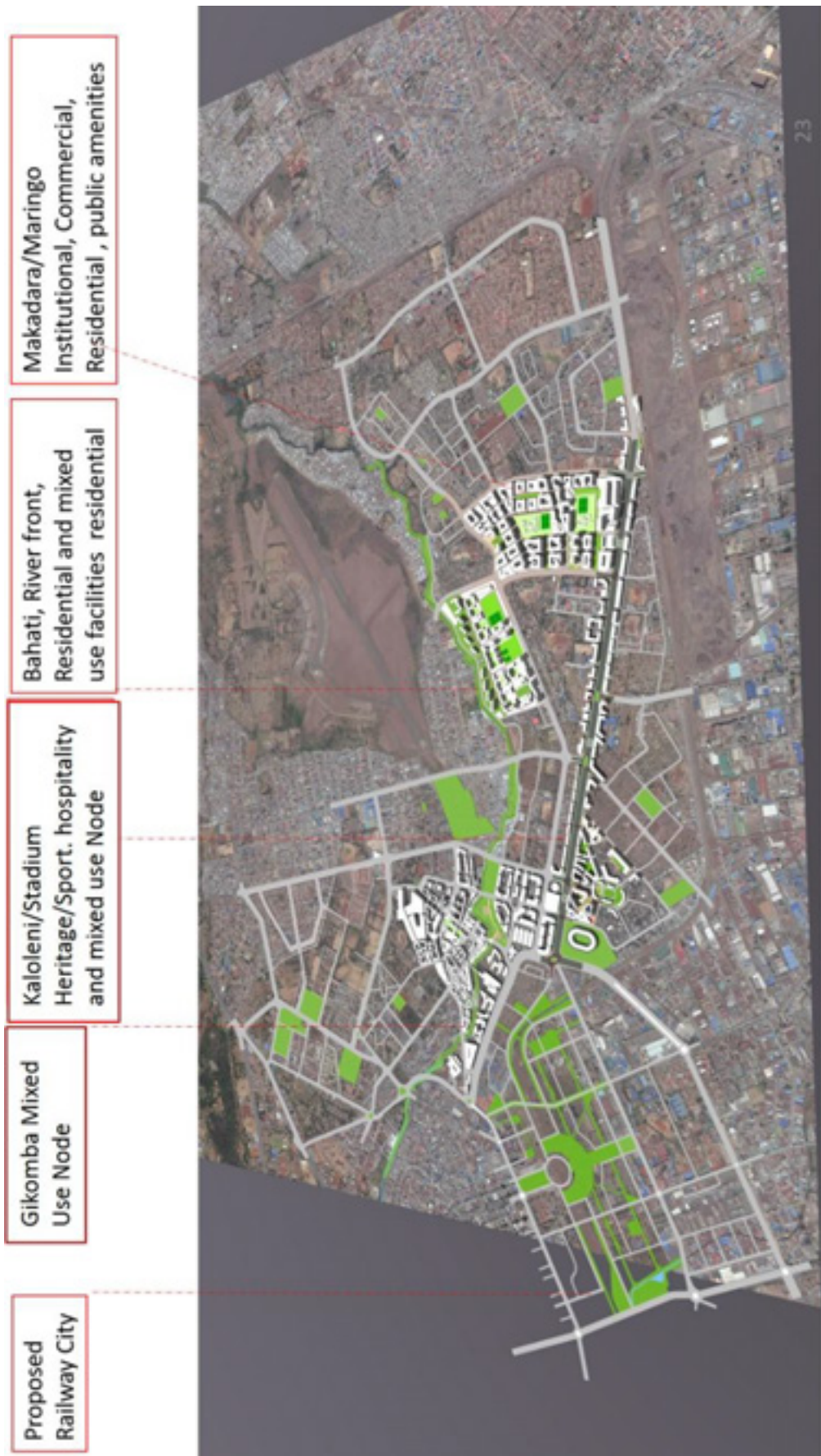


Figure 148: Eastlands - Development Anchors and Linkages.



The rehabilitation of the river system is crucial. Freshwater systems have a critical role to play. They are integral to the global hydrological cycle. They provide pathways for the circulation of essential elements. They host a significant portion of the world's biodiversity. They play an important ecological role in sustaining the planet's life-support systems.

The value of integrating the urban development plan with the River Rehabilitation Programme is in ensuring that there is sustainable growth and infrastructure developed that serves to protect the river and the riverbank.

## 7.6 ECOLOGY

### 7.6.1 Public Space Network

The public open space plan is the primary layer upon which the further layers overlap and integrate. It provides for a range of negotiated primary and secondary spaces.

Key considerations:

The principles guiding the plan for a public space network are aiming to provide:

- Integrated public open space system.
- Hierarchy of public spaces.
- Protection of environmentally sensitive areas.
- Accessible river bank providing for active surveillance improving protection of the area.
- Well defined riverbank responding to different conditions along the river's course.
- Tree lined streets and boulevards.
- New roads, pathways and bridges to improve the access to and over the river.
- Evenly distributed parks and playground areas at the local scale.

These are developed by reinforcing existing open space networks and extending these with a complementary system of public, semi-public spaces.

The river and its banks provide the green life-blood that runs through Eastlands. It both provides an edge on the Northern side and connects the area to a greater river system in the East West direction. In their current state, the Nairobi River and its tributaries are polluted and abused. The system needs to be protected and enhanced as a natural watercourse while adapting it appropriately to its passage through the heart of an intensely urban area. A new approach to the Nairobi river basin should view it as a key resource for connecting neighbourhoods, residential areas, the markets, sport, heritage and recreational amenities.

**The plan includes a lattice of primary and secondary spaces** forming an interconnected structured ecological system whose connections are tree lined streets and boulevards, neighbourhood parks and pocket parks. Heritage sites, cultural and leisure facilities form an integral part of the experience that the area can offer, to the local community and tourists. In this way it will become a city asset.

The stadium ground is an iconic precinct, a main attraction of the city and it should be developed to accommodate a range of uses to complement its sporting function and thus improve and enhance its viability, versatility and the role it can play at the local level. Urban farming can be incorporated within school grounds and institutional sites and specific areas along the river where permitted. Bridges and pedestrian promenades with pause spaces will activate the river edge forming strong connections with adjacent areas.

The public spaces should be designed and guided by best practices and principles, ecologically informed with an educational purpose to incentivize the involvement of Eastlands' communities, schools and the youth in the design, implementation and management of these spaces.

The extended open space system will require management resources. These are best provided at the local level to promote a sense of ownership of these spaces by local residents.

In giving consideration to local neighbourhoods the notion of the city as a playground is useful.

## The City as Playground: Local Area Public Space Interventions

Key considerations

Eastlands' neighbourhoods need a Public Spaces Programme:

- **To recover lost spaces.**
- **Integrate the recreation spaces into the green ecological system.**
- **To integrate communities.**
- **To stimulate interaction amongst different age groups.**
- **Improve safety and security in the public realm.**

“The City as playground” (a concept developed by architect Aldo van Eyck) is applied in this framework to introduce a programme for the development of playgrounds and Edu-parks throughout Eastlands with the direct involvement of the residents, youth and schools in each estate.

The aim is to provide amenities within each neighbourhood while engaging in an awareness campaign regarding the importance of public spaces in high-density areas of the city.

There are several education and government buildings, as well as left over spaces between buildings that could accommodate new parks and squares.

The parks could be constructed with recyclable materials and direct community involvement.

Parks that are well developed and activated can assist in building communities, promote social cohesion, provide needed amenities and improve the environmental quality of the estates.



**THE CITY  
AS PLAY  
GROUND**

Figure 149: Example of lost Spaces (Voids) within the Residential Estates.

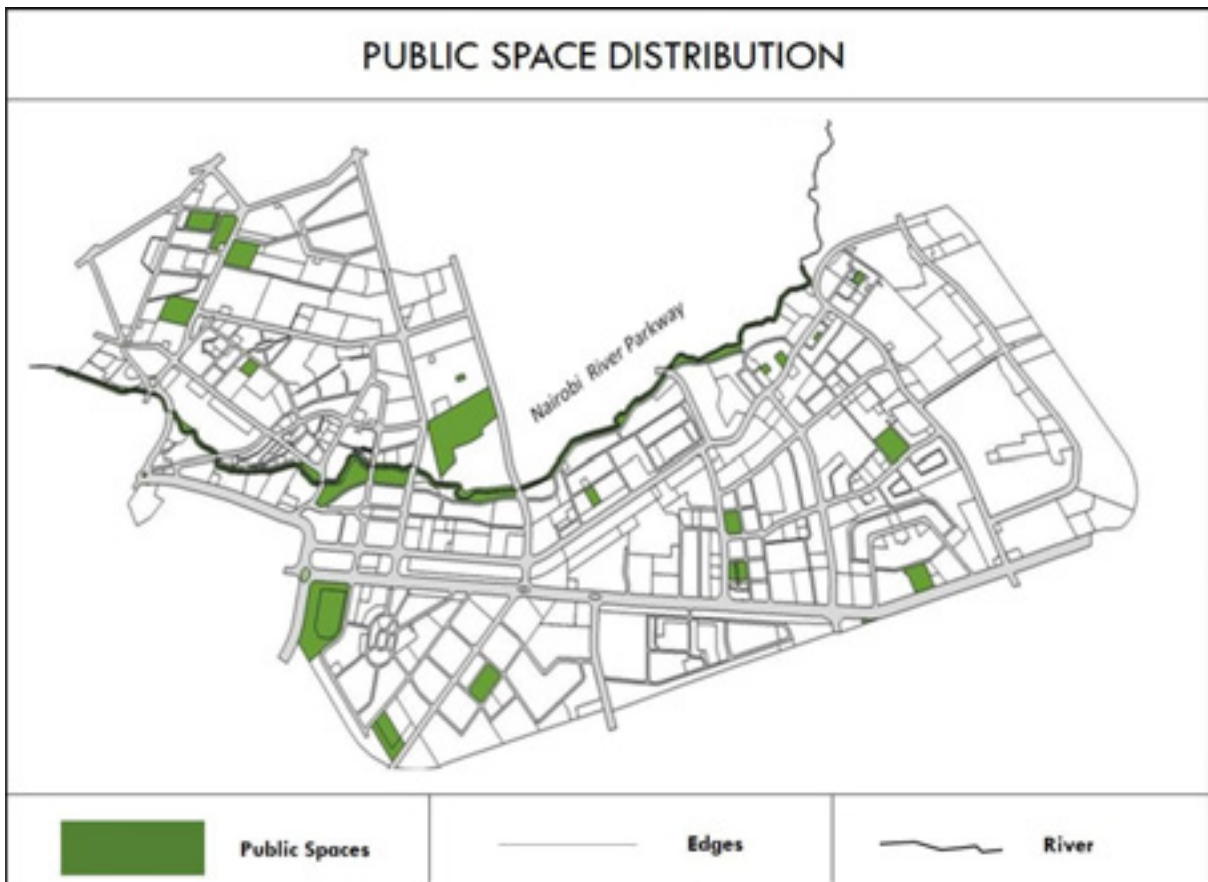


Figure 150: Public Space Distribution Plan



Figure 151: Kamukunji Grounds to be developed as a flagship public space

## 7.6.2 Riparian Zone

### Pollution in the Nairobi River.

The Nairobi River Basin is polluted, and the banks are occupied by informal settlements, posing a serious threat to the ecological system as well as for the people living within them.



Nairobi River is the main river of the Nairobi river basin, a complex of several parallel streams flowing eastwards. The Nairobi Rivers Basin meets the Athi River to the East of the city, eventually flowing to the Indian Ocean. These rivers are mostly narrow and highly polluted, though recent efforts have seen fruitful gains in cleaning up the river.



Figure 1534: a) Nairobi river, b & c) examples of river parks and trails.



Figure 154: Nairobi Riverbank occupied by Existing Informal Settlements

Key considerations: Principles of Eastlands open space development in the riparian zone

- Activate and protect the river eco-system.
- Planting of indigenous trees and landscaping to beautify the linear park space along the river following clear ecological principles.
- Define a hierarchy of public open spaces and protected and educational areas along the river.
- Define road reserves forming the edges of the riparian zone including sidewalks, parking areas, bicycle track and other amenities to provide surveillance and visibility of the river basin.
- Strategically located vehicular and pedestrian bridges over the river to improve upon accessibility permeability and amenity.

Support of the Nairobi River Basin Rehabilitation Program (NRBP)

Public spaces have multiple functions and value that goes beyond the ecological imperatives of protecting the river basin, they also can support, local economies, attract investment, provide a sense of place, be stages for cultural activities, attract tourism, improve public health, improve the environment. The Nairobi River traversing Eastlands is a resource to be harnessed and used as the focus for the provision of public recreational and leisure activities. There is an opportunity to protect it and use it as the main public space connecting Eastlands to the rest of the city. This strategy can be realized as an outcome of the capital investments which will be required to develop and implement an integrated solid waste management plan.

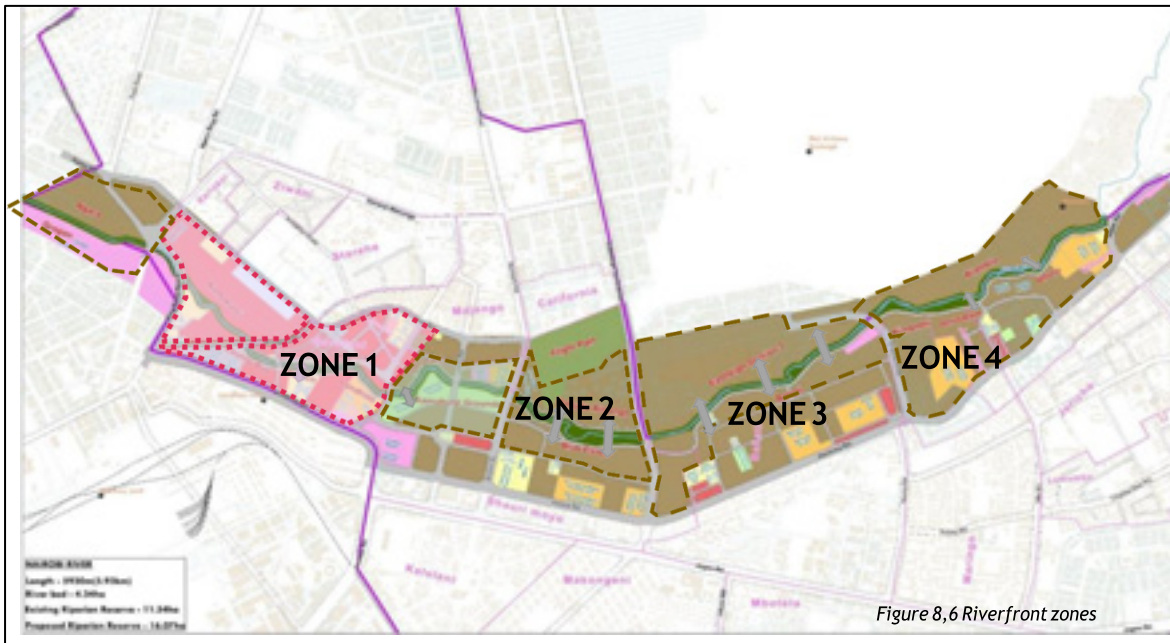
The Nairobi River Basin rehabilitation program proposes ten clear steps to address the challenges, as indicated below. This section highlights the key design considerations related to future developments fronting the river.

It also indicates ways of knitting the system together to form an integrated open space system for the area. This system is intended to offer ecological, recreational, sporting, leisure, educational and conservation spaces

Nairobi River Basin Rehabilitation Program (NRBP): a ten-point strategy:

1. Creating awareness and assessing social impacts.
2. Survey and delineation of the Riparian reserve.
3. Stop illegal discharges.
4. Complete work of 2.5 km Demo stretch.
5. Relocate unsafe economic activities and informal settlements.
6. Develop and implement an integrated solid waste management system.
7. Rehabilitate the Nairobi dam.
8. Repair and install sewerage and associated infrastructure.
9. Develop a Master Plan for economic utilization of riparian zone.
10. Landscaping and beautification of the riparian zone.

## River Bank Intervention Zones



<p><b>ZONE1: Retail Commercial and Market</b></p> <p>Defined by:</p> <ul style="list-style-type: none"> <li>• Direct interface</li> <li>• Tree lined Roads and URBAN esplanades on both sides of the river</li> <li>• Well defined pedestrian path along esplanade,</li> <li>• Urban furniture, lighting , tree lined pedestrian walkways</li> <li>• Pedestrian bridges</li> </ul>	<p><b>ZONE 2: Residential Eco Neighborhoods</b></p> <p>Defined by:</p> <ul style="list-style-type: none"> <li>• Proximity to river.</li> <li>• Dominant Residential Character</li> <li>• Containment within feeder routes</li> <li>• Internal network of walkable roads and footbridges.</li> </ul>	<p><b>Zone 3 River Front Neighborhoods</b></p> <p>Defined by:</p> <ul style="list-style-type: none"> <li>• River front road interface</li> <li>• Cycling and pedestrian promenade. Lighting and eco trails activating the river edge /.</li> <li>• Landscaping and water filtering treatment</li> <li>• Spaces of pause supported by educational</li> </ul>	<p><b>Zone 4 River Parks Neighborhoods</b></p> <p>Defined by:</p> <ul style="list-style-type: none"> <li>• Landscaped edge as per agreed codes.</li> <li>• Transparent fencing</li> <li>• Active involvement by residents in protecting the riverbank</li> <li>• Productive gardens</li> </ul>
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- Proposals:
1. Foot and cycle bridges integrating residential neighborhoods on both sides of the river.
  2. Access to River front along esplanades and ecological trails.
  3. Road Bridges to accommodate safe pedestrian movement.
  4. Conduct regular education campaigns to sensitize and involve the public and all business fronting the river in clean-up and “Love My River “programs.
  5. Focus on upstream remediation by enforcing environmental controls on all causes of pollution.
  6. Implement Water Use Licensing. Establish water use by-laws to regulate the utilization of in the resource of the rivers as they pass through the urban area.

### Proposal: A System of Riverfront Places

Developments that open to the riverfront and other public spaces along the river to activate them and improve safety and security of users by providing passive surveillance (eyes overlooking onto public spaces) are proposed.



Figure 155: Riverfront System of Places



Figure 156: Principles & Precedents of Riverfront's Interconnected Public Open Space System

**Proposal: River Park Trails and Spaces**

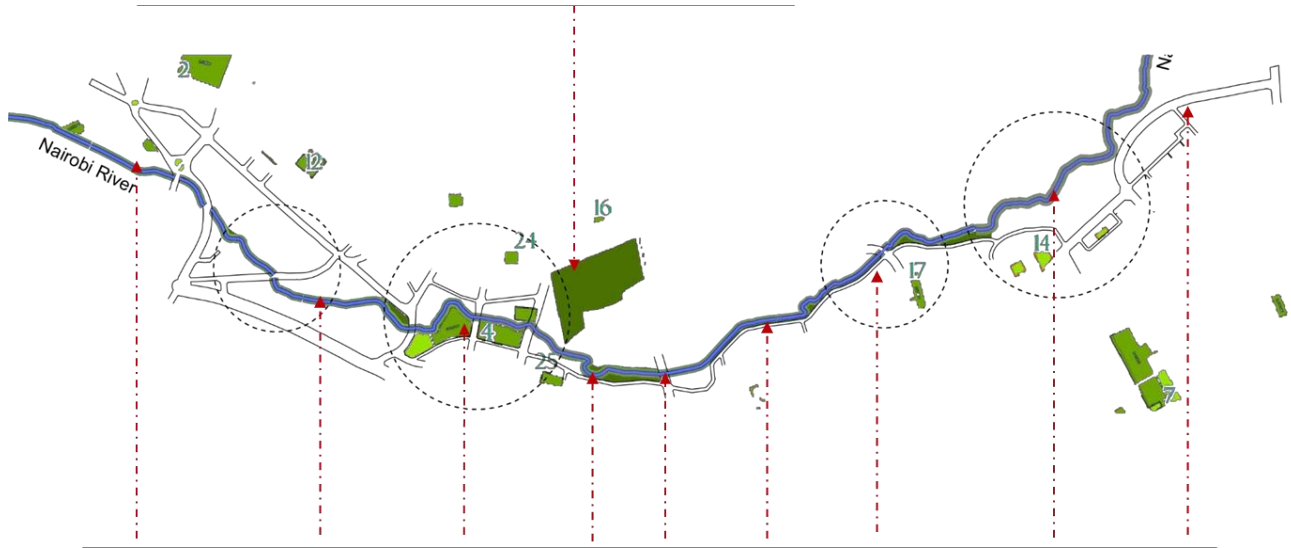


Figure 157: Proposed River Park Trails and Public Spaces

**Proposal: A hierarchy of interconnected open spaces**



Figure 158: Conceptual Public Space Network Plan



- INTERCONNECTED SPACES
- MAIN OPEN SPACE SYSTEM
- TREE LINED STREETS
- LOCAL AREA PARKS

Figure 159: a &b) Examples of upgraded Riverfront Parks and Amenities.

**Proposal: Open space in all developments**

All new developments should allocate spaces for public use, interconnected with internal green areas to improve comfort and reduce heat generation. Landscaping should constitute a minimum of 25% of all sites. They should incorporate fast growing indigenous trees to provide shade and improve the quality of the environment.



Figure 160: Proposed Bahati Private /Public Riverfront Interface



(a)



(b)



(c)

Figure 161: Hierarchy of Open Spaces

(a) Active park (b) Children's playground (c) Building-square interface.

# ACCESSIBILITY AND TRANSPORTATION



Streets comprise more than 80% of public space in cities, but they often fail to provide their surrounding communities with a space where people can safely walk, cycle, drive, take transit, and socialize. (National Association of City Transportation Officials -USA. NACTO Design Manual)

**7.7 MOBILITY**

**Key Street Design principles**

The principles extracted from NACTO emphasize the street as a critical component of the urban fabric. It is the most vibrant and democratic space in the city. It should be treated as an integral part of the public space system and not simply as a conduit to move cars, transport and goods.

**Key Considerations:**

- Safety
- Comfort
- Encourage pedestrian movement
- Accommodate NMT
- Design for universal access
- Continuous and robust finishes

**Better Streets, better Services**



**Transit creates urban places**



**A mobility service for the whole city**



**Growth without congestion**



**Safe movement at a large scale**



**Permanent economic benefits**

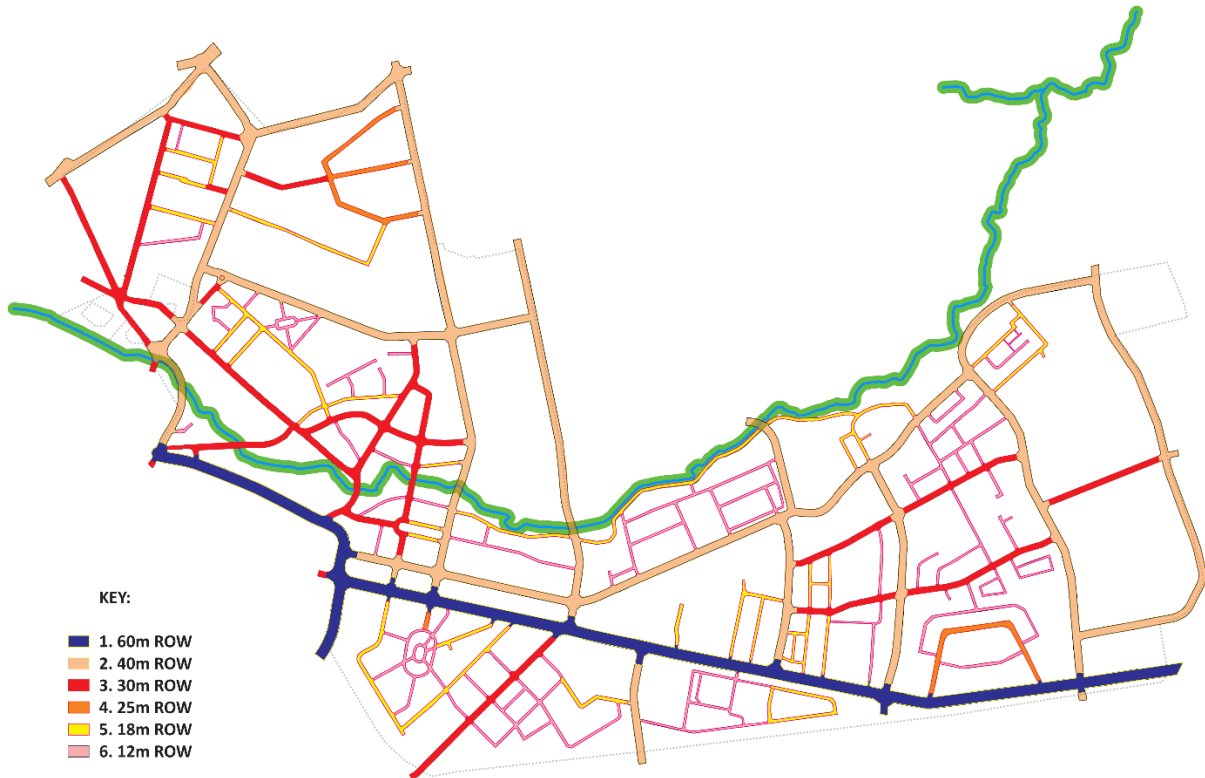


Figure 162: Proposed Road Network Hierarchy.



Figure 163: Jogoo Road as a Transit Corridor.

**NAMSIP PROPOSED ROAD HIERARCHY:  
60M WIDE R.O.W**

**Type 1A**



**DESCRIPTION:**  
High mobility with integrated transport facilities and well-defined NMT routes

**APPLICATION:**  
- Jogoo Road  
- Landhies Road  
- Lusaka Road



**EDGE CONDITIONS:**  
**Height:** As specified on the height zones plan  
**Architectural features:** Diverse and active street frontages  
**Parking:** Adequately screened from public view  
**Ground floor uses:** Commercial and entrance lobbies



**NAMSIP PROPOSED ROAD HIERARCHY:  
60M WIDE R.O.W**

**Type 1B**



**DESCRIPTION:**  
High mobility with integrated transport facilities and well-defined NMT routes

**APPLICATION:**  
- Jogoo Road  
- Landhies Road  
- Lusaka Road



**EDGE CONDITIONS:**  
**Height:** As specified on the height zones plan  
**Architectural features:** Diverse and active street frontages  
**Parking:** Adequately screened from public view  
**Ground floor uses:** Commercial and entrance lobbies



**NAMSIP PROPOSED ROAD HIERARCHY:  
40M WIDE R.O.W**

**Type 2A**



**DESCRIPTION:**  
Collector route with integrated transport facilities and well-defined NMT routes

**APPLICATION:**  
- Heshima Road  
- Eastleigh First Avenue  
- Ambira Road



**EDGE CONDITIONS:**  
**Height:** As specified on the height zones plan  
**Architectural features:** Diverse and active street frontages  
**Parking:** Adequately screened from public view  
**Ground floor uses:** Commercial and entrance lobbies



**NAMSIP PROPOSED ROAD HIERARCHY:  
40M WIDE R.O.W**

**Type 2B**



**DESCRIPTION:**  
Collector route with integrated transport facilities and well-defined NMT routes

**APPLICATION:**  
- Heshima Road  
- Eastleigh First Avenue  
- Ambira Road



**EDGE CONDITIONS:**  
**Height:** As specified on the height zones plan  
**Architectural features:** Diverse and active street frontages  
**Parking:** Adequately screened from public view  
**Ground floor uses:** Commercial and entrance lobbies



**NAMSIP PROPOSED ROAD HIERARCHY:  
30M WIDE R.O.W**

**Type 3**



**DESCRIPTION:**  
Local access road with well-defined NMT routes

**APPLICATION:**  
- Rukwa Road  
- Uaso Road  
- Kericho Road

**EDGE CONDITIONS:**  
**Height:** As specified on the height zones plan  
**Architectural features:** Diverse and active street frontages  
**Parking:** On street or adequately screened from public view  
**Ground floor uses:** Commercial and entrance lobbies



**NAMSIP PROPOSED ROAD HIERARCHY:  
25M WIDE R.O.W**

**Type 4**



**DESCRIPTION:**  
Local access road with well-defined NMT routes

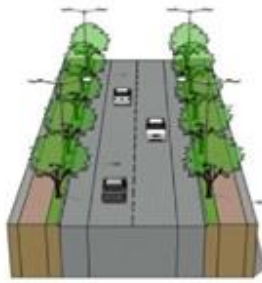
**APPLICATION:**  
- Hombe Road  
- Hamza Road  
- Mukunga Street

**EDGE CONDITIONS:**  
**Height:** As specified on the height zones plan  
**Architectural features:** Diverse and active street frontages  
**Parking:** On street or adequately screened from public view  
**Ground floor uses:** Commercial and entrance lobbies



**NAMSIP PROPOSED ROAD HIERARCHY:  
18M WIDE R.O.W**

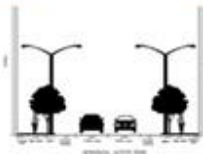
**Type 5**



**DESCRIPTION:**  
Residential access road with well-defined sidewalks

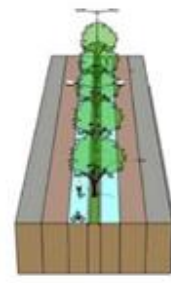
**APPLICATION:**  
- City Stadium Road  
- Kivu Road  
- Residential streets

**EDGE CONDITIONS:**  
**Height:** As specified on the height zones plan  
**Architectural features:** Diverse and active street frontages  
**Parking:** On street or adequately screened from public view  
**Ground floor uses:** Residential and entrance lobbies



**NAMSIP PROPOSED ROAD HIERARCHY:  
12M WIDE R.O.W**

**Type 6**



**DESCRIPTION:**  
Shared NMT route with well-defined pedestrian spaces

**APPLICATION:**  
- Kamukunji Road  
- Mbale Road  
- Residential streets

**EDGE CONDITIONS:**  
**Height:** As specified on the height zones plan  
**Architectural features:** Diverse and active street frontages  
**Parking:** Adequately screened from public view  
**Ground floor uses:** Commercial and entrance lobbies





### **Form Based codes**

Town planning controls guide the overall placement, scale and envelope of the buildings. The proposal is to develop specific local area design guidelines to encourage the development of responsive and people friendly environments. Buildings that activate the public realm rather than dominate the environment are preferred. Buildings that present a hostile front to the street as illustrated by the image above should be discouraged.

## 7.8 BUILDING NEIGHBOURHOODS

### 7.8.1 Local Codes and design guidelines to regulate the built form.

*The aim in this plan is to develop a legible urban environment that is safe, walkable, comfortable, inclusive of different economic activities, ecologically sound, energy efficient, robust and people-friendly.*

Eastlands consists of a number of residential and mixed-use areas, each with a particular history, land use mix and built form characteristics.

The intention is to promote the development of local codes embracing the uniqueness of each estate and urban condition. It is also to develop design tools that can be easily adopted, enforced and managed by the local municipality and agencies.

The neighbourhoods are greater than the buildings within them. The architectural character that develops in each area will reinforce the identity of each area but is not a determinant of the quality of the urban space. It should adhere to the principles promoting integrated and livable urban places and have civic manners in the way that buildings respond to the context and the public environment including the street front.

This could be introduced by developing a 'form-based code' for each local area to ensure that different buildings contribute to a high-quality public realm. Such a code is a regulation, adopted into law, emphasizes the form of buildings and how they relate to spaces. It is not just focused on zoning and separation of uses as the organizing principle for neighbourhoods. ([www.formbasedcodes.org/definition](http://www.formbasedcodes.org/definition)).

The proposed guidelines indicate generic principles that could be further refined with the participation of representative local stakeholders and community.

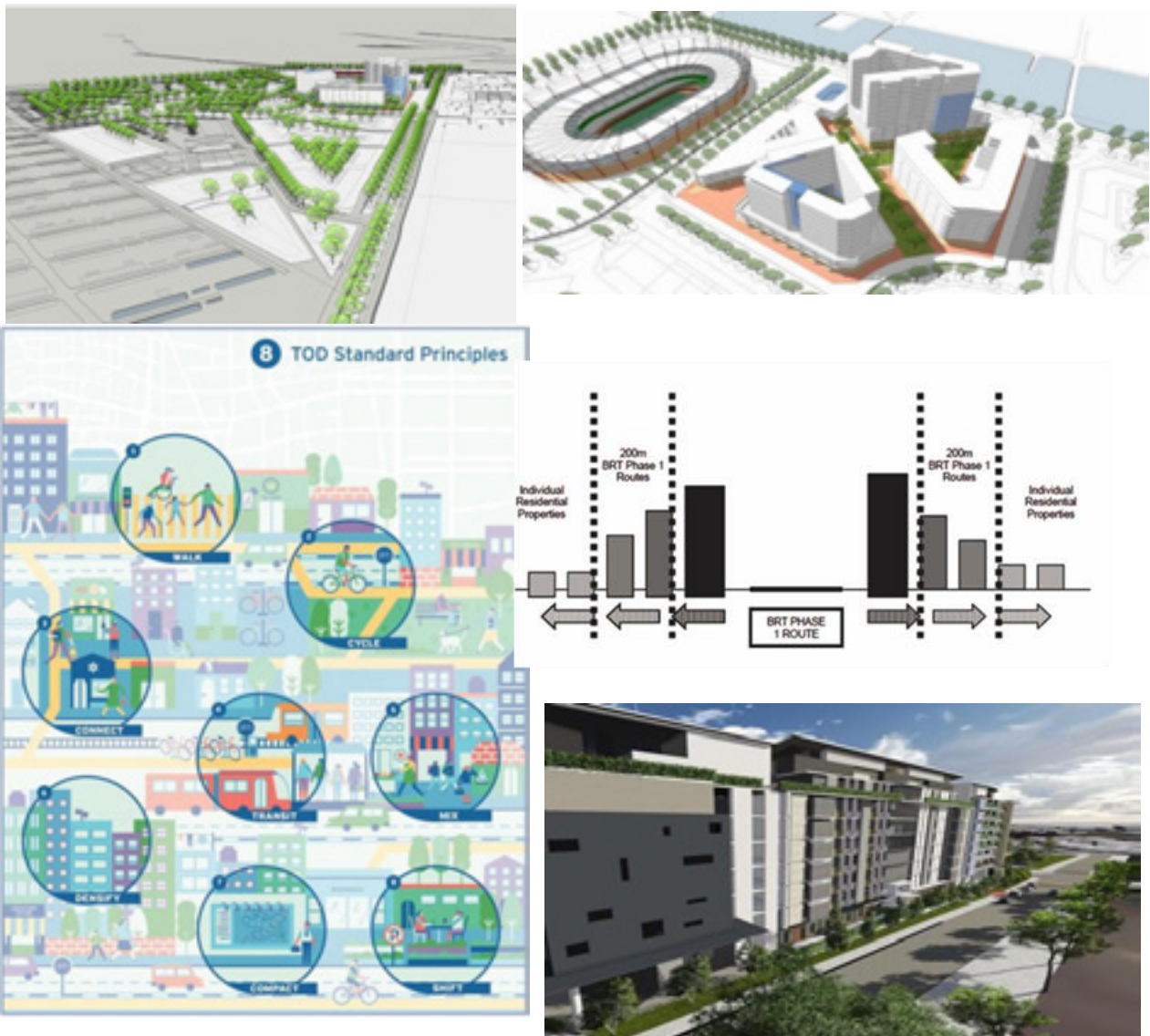


Figure 164: Transport and Built Form Considerations.

## Proposed Design Guidelines

	 <b>WALKABILITY AND PUBLIC TRANSPORT</b>	 <b>PARKING MANAGEMENT</b>	 <b>PUBLIC OPEN SPACES</b>
<b>DESIGN</b>	<p>Sidewalk width according to vehicular speed, commercial activity and presence (or not) of public transport (1.5m min, 2m min in transport routes)</p> <p>Well-defined sidewalks and safe crossings</p> <p>Enhance walkability through passive surveillance and active streets</p> <p>Respect and enhance pedestrian desire lines</p>	<p>Parking to be located at the rear or below buildings to retain active street frontage</p> <p>Divide large parking areas into smaller lots</p> <p>Favour street parking against parkades</p> <p>Parkades (if required) to have an active frontage and built form to fit the neighbourhood character</p>	<p>Clear paths and landmarks to guide pedestrian movement</p> <p>Robust and low-maintenance indigenous planting</p> <p>Low landscaping and lighting to ensure good visibility on pedestrian routes</p> <p>Multipurpose spaces and amenities to accommodate different user groups</p> <p>Positive image that reflects local identity</p>
<b>LAND USE &amp; PLANNING</b>	<p>Access to different activities and services within walking distance</p> <p>Seven minute (400-500m) walking radius to public transport</p> <p>Multi-modal transport node around Makadara Station</p>	<p>Compliance with parking ratios</p> <p>Integrate parking with other land uses</p>	<p>Accessible open space within 500m radius</p> <p>Integration of public amenities and public open spaces</p> <p>15-20% of total neighbourhood area dedicated to public open space</p>
<b>MANAGEMENT</b>	<p>Remove all physical obstacles to ease walkability and universal access</p> <p>Up-keeping of transport facilities, sidewalks and streetlights</p> <p>Enforce minimum standards for sidewalks</p> <p>Legible way finding system</p> <p>Community patrols for school children</p>	<p>Street parking contributes to activating the street environment and should be clearly demarcated and managed</p> <p>Street parking should follow clearly defined rules to protect access to property and accommodate loading on designated areas</p>	<p>Ensure open spaces have a purpose and minimise underutilized open spaces</p> <p>Activate underdeveloped and vacant land</p> <p>Co-locate public facilities and open spaces to ensure activity and better management</p> <p>Up-keeping of landscaping, lighting and amenities</p>

Figure 165: Eastlands Generic Design Guidelines.



**COMMUNITY FACILITIES**

Place building on boundary with street to minimise fences

Active street frontage to integrate community facilities with urban fabric

Well-designed open spaces that are accessible by the broader community



**PUBLIC REALM**

Passive surveillance through active frontages, opportunities for overlooking and active streets

Regular lighting poles, at 8-10m and about 3m height

Robust and easy to replace materials and features

Spaces for informal trading

Facilitate way finding with clear road hierarchy and landmarks



**BUILT FORM**

Buildings to face the streets and open spaces to improve passive surveillance

Active facades with windows, balconies and entrances visible from the street

No or 3m max. setbacks, if required, use transparent low fence

Robust and low-maintenance materials

Densification and integration of schools to maximise land use

Placed in key locations as neighbourhood activators

Mixing of activities and uses within a neighbourhood or buildings to activate the streets

Promote diverse land use

Recognise and accommodate less-formal activities

30-45% of total neighbourhood area dedicated to streets (sidewalks inclusive)

Densification (15,000-60,000 people/km<sup>2</sup>) accommodating diverse tenure and unit sizes

Diverse land use and active uses on the ground floor and street edges

Mix use buildings along along Jogoo Road, Heshima and Nyasa Roads

Recognise and accommodate less-formal activities

All town planning controls to be adhered to

Managed used of school facilities in evenings and weekends

Diversification of existing programmes according to residents' needs

Up-keeping of facilities

Manage informal trading and other private activities

Local codes and rules agreed by local stakeholders

Management systems to enforce local codes and rules

Involve local community and businesses in management and daily upkeep

Provide supporting services to match new densities

All structures to comply with National Building Regulations

Standardised elements, consistent colours and landscaping to reinforce sense of place and identity along Jogoo Road, Heshima and Nyasa Roads

Income generation recycling and waste removal programs

Figure 166: Eastlands Generic Design Guidelines (Continued)

## 7.8.2 Safety through Environmental Design

Safety and security are a major concern in Eastlands. Behavioral research into people's response to the conditions created in the physical environment shows that the use of passive surveillance and the application of safety by design principles can be an effective deterrent to crime and make a positive contribution to improving safety and security in urban areas. The following represents generic principles, applied in various urban contexts that are relevant and applicable to Eastlands:

1. Define clear boundaries and collective ownership of public spaces - instilling a sense of 'ownership' among the users of urban places and buildings, so that they identify with and take responsibility for their environment.
2. Improve surveillance and visibility - increasing levels of awareness by promoting passive surveillance and the active use of the public realm to increase the number of "eyes on the street"
3. Design for safe access and movement - providing a safe and integrated network of movement routes, linking key destinations.
4. Develop a positive image - addressing perceptions and guarding against environmental decay.
5. Create positive relationships and layered spaces – by creating positive interfaces between buildings and the public realm, a comfortable transition between public and private space, and designing buildings and spaces to make them more robust and resilient against crime.
6. Ensure good urban management and monitoring - ensuring the progressive improvement of neighbourhoods and increased perceptions of safety over time.

(Source: Design and Management Guidelines for a safer City, City of Cape Town report 2017).



Figure 167: Positive Relationships & Layered Spaces with Well-defined Interfaces between Buildings & the Public Realm.

## 7.9 EASTLANDS STRATEGIC DEVELOPMENT AREAS

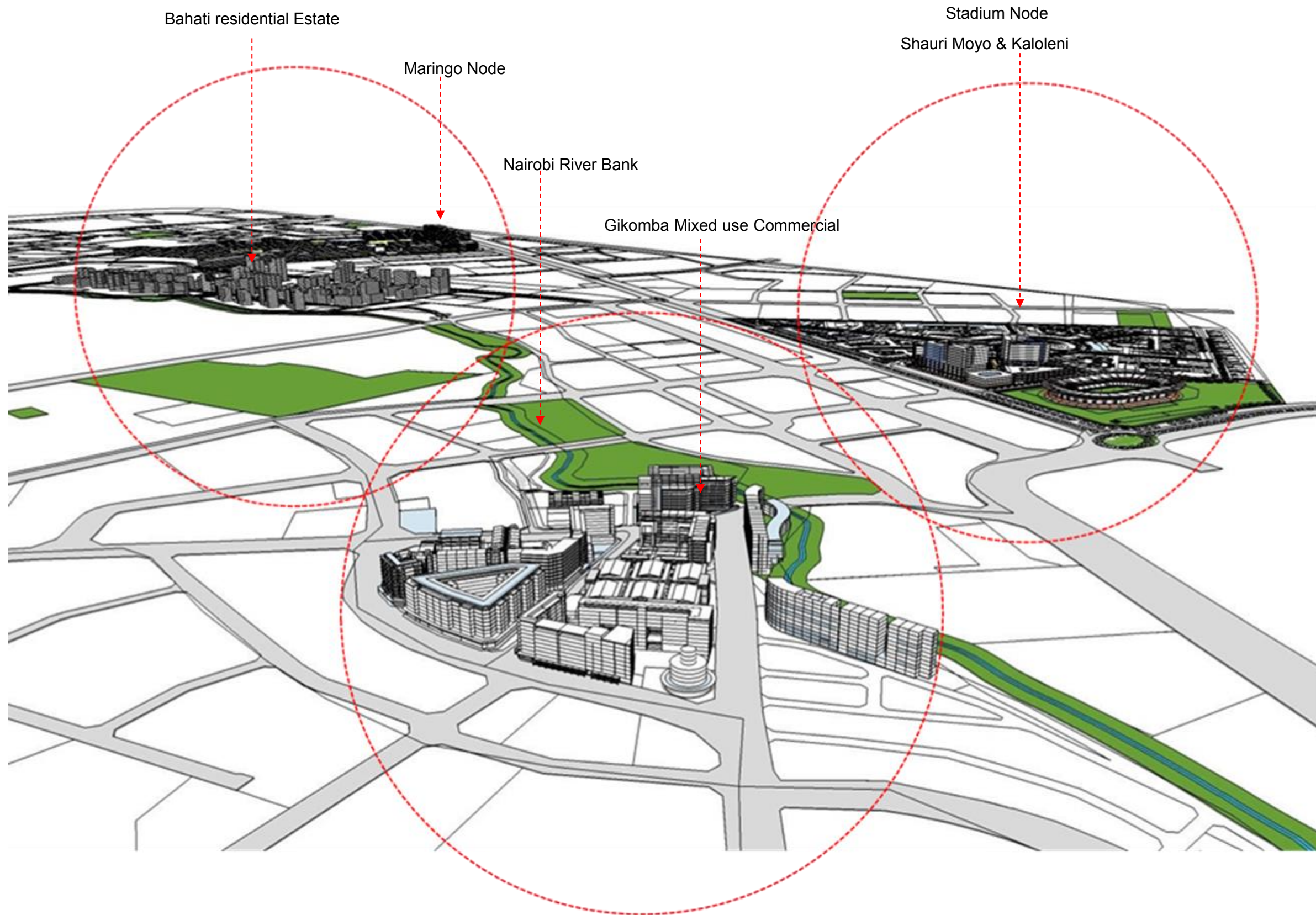


Figure 168: Strategic Development Areas.



Figure 169: Anchor Development Areas and Growth Nodes.

The development of Eastlands should stimulate investment within the nodes and intensification zones to benefit from the advantages of agglomeration and Infrastructure development. The investment in these nodes should be used to stimulate economic growth for the benefit of Eastlands' residents and the city.

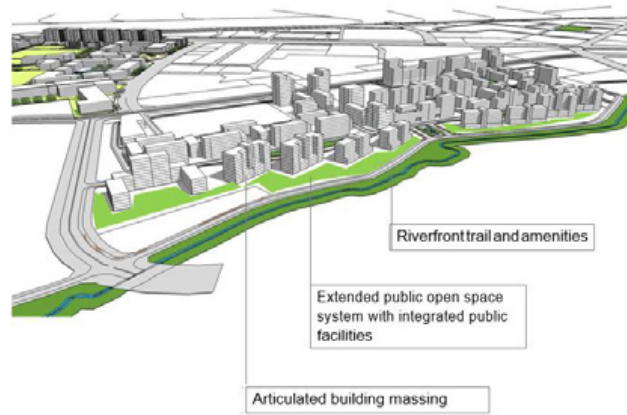


Figure 170: Integrated Development Framework and Growth Nodes

# GIKOMBA - JUA KALI NODE



### 7.9.1 Gikomba Jua Kai Node: Formal and Informal Commercial Sector

**The informal economy is a central part of the economy.**

The commercial land use distribution takes into account the current commercial sites and makes provision for the anticipated increase in the study area.

The informal economy (Jua Kali sector) is a key component of Kenyan economy. Eastlands has the oldest markets and vibrant street activities leading to the markets, along transport routes and near transport hubs.

The renewal program acknowledges the role that these economies play in providing livelihoods for a significant sector of the population.

Furthermore, the markets provide unique experiences; they are important tourist attractions and add to the vibrancy of the areas where they are located

These are vernacular business incubators and entrepreneurship academies, where people use business skills to trade and compete for their space in the city. It is also supported by informal financial systems based on vernacular practices that sustain an important sector of the economy.

From the urban design perspective, this section makes recommendations on spatial considerations to improve the performance of Market's precincts and areas. It takes into consideration the needs of entrepreneurs, consumers, and visitors. It proposes ways to improve safety and security, movement of pedestrians and goods, management and the environmental impact that uncontrolled trading has on the function and the image of the precincts within which they are located.

Informal employment is work. The land use plan recognizes the relevance of these markets and makes provision to incorporate them as an integral part of the fabric of the study area. As they add vibrancy, richness and contribute to create a more sustainable and integrated urban environment.



Figure 171 Examples of Trading Markets and Areas.

The aim is to optimize the use of the available land and to enhance it as a unique destination place in the city, which is economically vibrant and supportive of formal and less formal economies.

### Upgrading and Redevelopment of Markets and Trading Streets

Trading Markets	Key considerations in planning market renovation /expansion
<ul style="list-style-type: none"> <li>• Traditional</li> <li>• Planned</li> <li>• Mixed use /including housing above trading space</li> </ul>	<p>Aspects to be considered</p> <ol style="list-style-type: none"> <li>1. Access roads into and ease of movement within the market precinct.</li> <li>2. Logistics: Bulk supply, suitable storage delivery and distribution of goods</li> <li>3. Support facilities and Regulation               <ul style="list-style-type: none"> <li>- Health and Safety / Emergency Services &amp; Fire prevention regulations,</li> <li>- Building typology – Modernization of trading practices.</li> <li>- Security - Surveillance and monitoring</li> </ul> </li> <li>4. Management – active management of buildings and urban space</li> </ol>

Example: Gikomba Market



A large percentage of trading occurs along access streets and within informal structures.

#### Precedent

The Nairobi County government plans to construct a five-story market at Gikomba, boosting traders who have for years lacked modern stalls.

The proposed market building will have 525 stalls spread across the five floors, two lifts, back-up generators, a refrigerated cold room, fire-fighting equipment, a sewer system and surveillance cameras.

The images below are examples from Rotterdam (left) and Barcelona (right) illustrating new world trends in product and produce trading market design.



### Gikomba Market Development Potential

The proposed precinct development builds upon various initiatives and recommendations recognizing the strategic importance of this commercial and mixed-use hub. The concept illustrates the potential to integrate the development of the market into a mixed-use hub. Such a hub will integrate various uses, transport and public spaces supported by the proposed road network and transportation plan.

The river and the proposed esplanade can be a unique and dynamic feature in the development reinforcing the importance of the Nairobi River system.



Figure 172: Composite Images illustrating Proposals for Gikomba Node - Including a centrally located public square, Innovation Hub and bridges connecting the node to other districts across the river -



# SHAURI MOYO- KALOLENI NODE

## 7.9.2 Shauri Moyo - Kaloleni Node

This Gateway node presents unique opportunities to develop a mixed-use area that includes the upgrading of City Stadium to an increased capacity of 60,000 spectators, with a supporting sport academy, hospitality and conferencing facilities. The development will be reinforced by new high-density residential components, accessible from the proposed public transport network along Jogoo Road.

This node can be further structured into development precincts with specific focus benefiting from the proposed Railway City development and other adjacent initiatives attracting investment into the area.



### Stadium Precinct Strategic Development Zones

The proposed upgrade to the existing urban structure benefiting from the proposed road and public transportation infrastructure, improving regional and local access to the stadium and the proposed hotels, conference facilities and new residential sites, highlights the significance of the node as a prime heritage and destination place in the city.

The figures below indicate the envisaged transition between the existing to the proposed which will be further guided by the town planning controls approved for the area as recommended in chapter 9.



Figure 173: Kaloleni Existing Urban Structure.

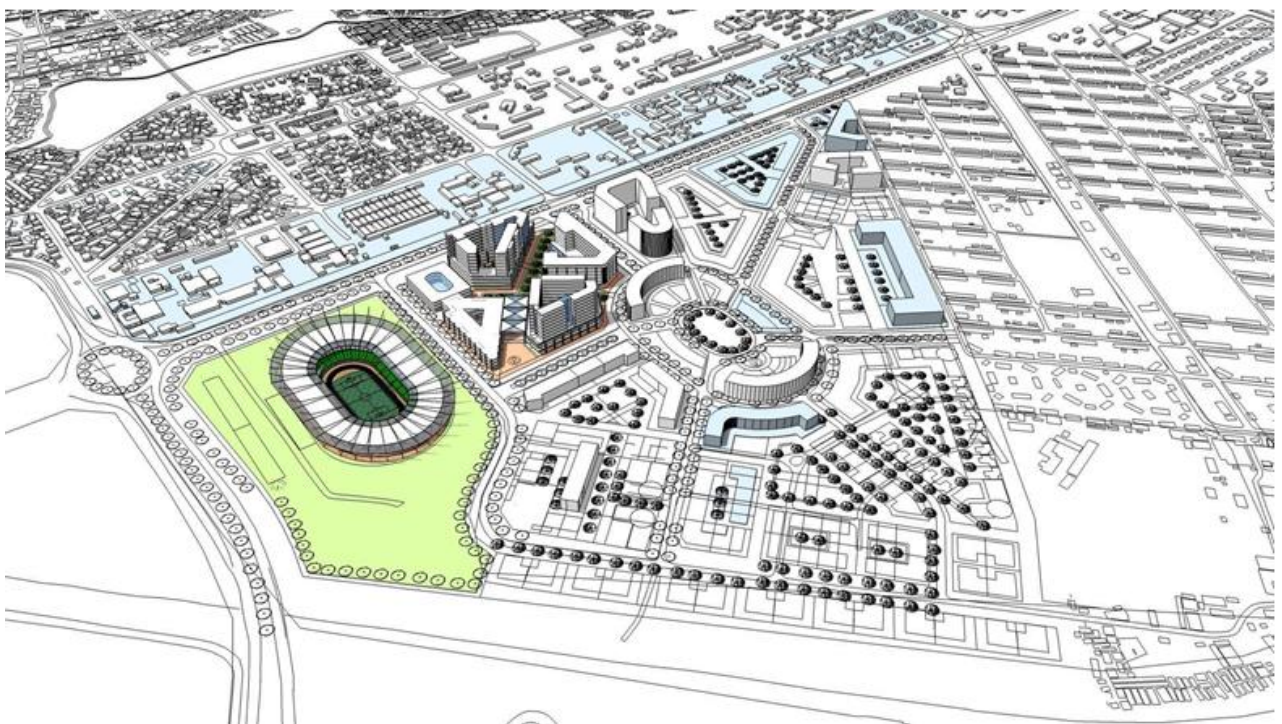


Figure 174: Stadium Node Proposed New Structure, Re-blocking and Conceptual Massing.

### **Shauri Moyo-Kaloleni Node - Residential Developments**

The incremental development and redevelopment of Shauri Moyo into the proposed high and medium density residential estates will complement and consolidate the role that this node will play in the renewal programme. Diversifying the housing options provided within the existing urban voids will ensure the area's development potential will be optimized, supported by the proposed road, public transport infrastructure along Jogoo Road and service infrastructure upgrade.



Figure 176: Stadium Precinct, Hospitality and Commercial Precinct well connected to the City Stadium.



Figure 175: Connection between Shauri Moyo-Kaloleni Node's Public Places & Railway City.



# MARINGO - MAKADARA NODE

Makadara station and proposed public environment upgrade

### 7.9.3 Maringo - Makadara Node

Maringo- Makadara Node is accessible from the proposed public transport routes along Jogoo Road, Nyasa Road, Nile Road, Uaso and Rukwa Road.

This node should be developed to include a new Government Precinct, retail, commercial, a regional hospital, transport facilities, police station and medium to high density residential supported by a balanced distribution of open spaces, parks and urban squares. Critical to the development of this node is the upgrading of the public environment surrounding Makadara railway station and the existing station facilities to serve the projected growth of this strategically located area.



Figure 177: Maringo Makadara Growth Node

The proposal is to re-block the existing land parcels into regular city blocks of approximately 0.9 Ha. This will provide the required flexibility to embark on a block by block redevelopment programme, considering the requirements in terms of job creation, provision of public facilities and housing.



Figure 178: Maringo, Proposed Land Use Distribution and Subdivision.



Figure 179: Massing Model showing Relationship between Makadara Node & Railway Station.

The proposed block structure will facilitate development over time and introduce well placed public spaces that can be managed at the precinct level to preserve the character and quality

of the area. The Node will be served by a well-integrated public transport system accommodating non-motorized transport along tree line streets and pedestrian paths. The proposed public space system presents the opportunity to be developed as place making elements defining the identity and character of the node.



Figure 180: Maringo, Proposed Public Space Distribution and Block Structure



Figure 181: Proposed Government Precinct and Public Spaces

#### **7.9.4 Bahati Residential Estate**

This residential estate presents the opportunities for infill development. Such development can consist of a number of residential precincts that are well integrated with the existing residential component, education, institutional and commercial uses. Building heights and typologies should vary responding to the edge conditions and surrounding uses. They should also take into consideration vistas and views and the relationship to the riverbank. It is recommended that the upgrading and redevelopment of this estate takes in to consideration the opportunities presented by its location and provides a diverse offering of housing products that are innovative and accommodate different demographic and socio-economic groups.



River front residential precincts should extend the open space system and green spaces to improve the environmental conditions of the neighbourhoods, create parks and places of interaction along the riverfront.



Figure 182: Bahati Residential Estate, Potential Land Parcels for Development



Figure 183: Tree Lined Streets & Public Spaces knitted within Residential Estates' Fabric.

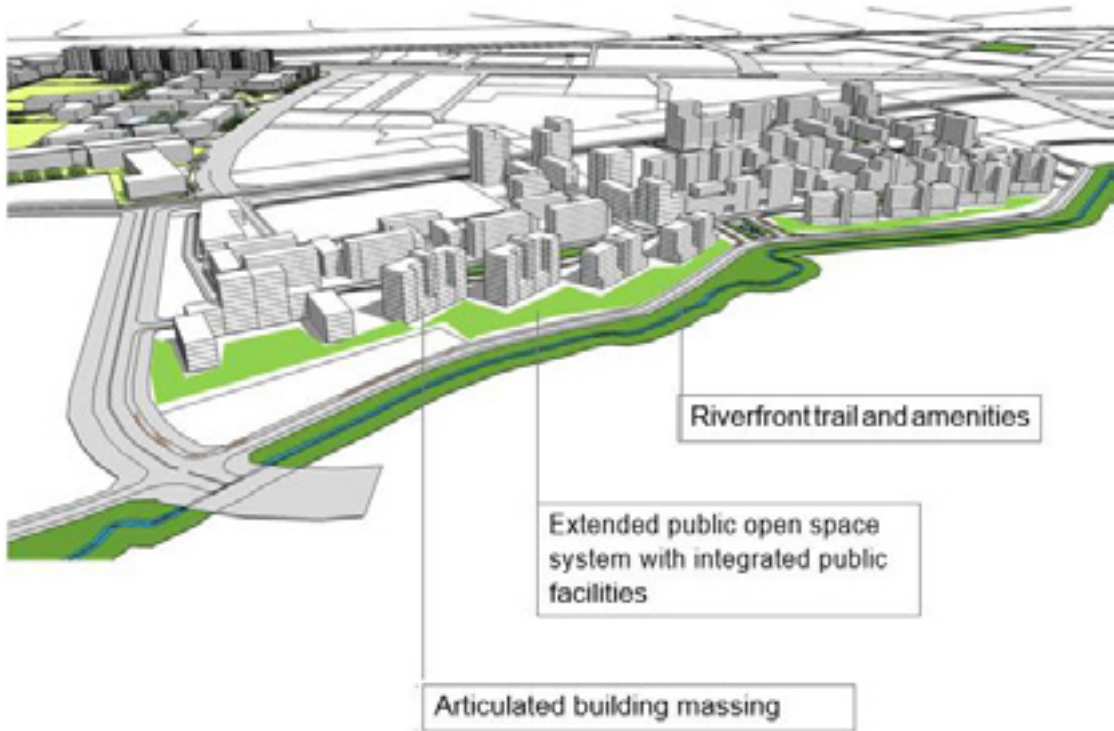


Figure 184: Development Concept for New Residential Infill along the Nairobi Riverfront.

## 7.10 CONCLUSION

The information contained in this chapter must be read in conjunction with the development controls presented in the Urban Renewal Framework and chapter 9 indicating the proposed town planning controls for the entire development area. However, it is of paramount importance that future development is guided by the urban design principles presented which are reinforcing the following aspects.

### 1. GOOD CITY FORM

Cities are defined by their total environments, levels of comfort, safety and identity not by single buildings. Future developments must conform to strict and enforceable rules that promote a coherent, investment and people friendly environment, accommodating all forms of economic activity and housing options.

Building heights and massing to be articulated including high-rise to medium rise typologies within the same development area to create a richer and more diverse condition including a range of ground floor uses in support of residential to activate the street.

### 2. URBAN BLOCK AS UNIT OF CHANGE

Application of the urban block, as recommended for the Makadara/Maringo Node as a unit of growth (fine grain to enhance permeability and connectivity) to encourage a flexible, robust and manageable renewal process. Well connected to surrounding areas within each estate making more livable neighborhoods and structured nodes and precincts.

### 3. INTEGRATED PUBLIC SPACE SYSTEM

Reinforce the proposed public space network including the upgrading of the riverbank with recreational, heritage and eco-trail parks, well connected by tree-lined streets, to the proposed Makadara/Maringo Civic Squares, Gikomba Market square and innovation Hub, the City Stadium and recreational ground. Public spaces and well-defined streets are the backbone from which to build a resilient and sustainable future for Eastlands.



Figure 185: Existing & Proposed Spaces.

## CHAPTER EIGHT

### IMPLEMENTATION FRAMEWORK

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The urban renewal project is an integrated development program that is going to be implemented in 20 years' time and even beyond. The program will require continuous planning in order to set priorities for the various components. The project should be part of the 5-year County Integrated Development Plan. In this respect, the housing component is the critical one and the other developments should be planned and implemented around this component to bring benefits to the new tenants

This chapter thus outlines the proposed development projects, which are envisioned to support development of the project area, within the context of the proposed Urban Renewal Plan. The projects are detailed out per sector and the areas where they should be implemented identified. Also included are the costs, the implementing and financing actors and implementation time lines among other things.

#### 8.1 PROJECT PROPOSALS

The total number of projects proposed is 118. They include the following:

- a. **Economic infrastructure:** These projects include the ones in the transportation infrastructure such as roads, water, energy and markets.
- b. **Investment in the productive sector projects:** These are projects in tourism as they are important in the future economic and commercial growth of the towns. Others include direct support to enterprise development, technology and innovation advancement.
- c. **Environmental infrastructure:** These include investments in solid/chemical waste management, sewerage and water systems, and investment for environmental sustainability.
- d. **Critical social Investments** such as in health, housing, and recreation.

The details of the projects are further given per sector.

##### 8.1.1 Sectoral Distribution

The highest proportion (31%) of these projects include transport sector projects, followed by community facilities at 27%. The remaining 42% of the projects are taken by, water and sanitation, energy, health, and education sectors among others. The table below summarizes the sectoral distribution of the projects in Eastlands

Table 110: Sectoral Distribution of Project Proposals

Sector	No. of Projects	% of Total
Transport	37	31.4
Community facilities	32	27.1
Water and sanitation	21	17.8
Education	8	6.8
Storm water management	8	6.8
Health	6	5.1
Energy	3	2.5
Housing	1	0.8
Environment	1	0.8
Commerce and industrialization	1	0.8
<b>Total</b>	<b>118</b>	<b>100.0</b>

The details of these projects are given per sector as follows.

**a. Transportation Sector**

The projects in this sector entail road construction, road expansion and provision of various transport infrastructures and they sum up to 37. Twenty-two (22) transportation projects crosscut the estates and nodes. The main implementers and financiers of transportation projects include KURA and the County government.

**b. Water and Sanitation Sector**

The number of water and sanitation projects is 21. They involve construction of water and waste management networks. The proposed water and sewerage reticulation system crosscut all the estates and include new pipes and elevated tanks.

**c. Energy Sector**

There are 3 project under this sector. These projects traverse the entire planning area, as they will be implemented through all the estates.

**d. Health Sector**

The number of projects within this sector are 6. Five of them involve upgrading the existing health facilities to fit the status of health center and 1 involve construction of a Level 4 Hospital in Maringo estate.

**e. Education Sector**

The education sector projects basically entail constructing and equipping schools. The total number of projects within this sector are 8. The proposals involve construct of new education facilities, land acquisition for expansion of the 3 schools and stream increment in 35 schools.

**f. Housing Sector**

The project under this sector is one and it involves redevelopment of houses in all public estates.

**g. Environmental sector**

The main environmental sector project is Nairobi River revitalization. Its implementation is to be guided by the proposed Riverfront Development Plan.

**h. Community Facilities**

This sector has 32 projects. They include construction and improvement of social halls (3), rehabilitation centers (4), and homes for the elderly (2), libraries (2), security facilities (8) and improvement of recreational facilities (10).

**i. Projects involving the Youth, Women and People with Disabilities (PWD)**

These projects constitute those that are intended to benefit the above-mentioned groups. They are mostly under community facilities. The social halls have been upgraded to CORE centers. These centres will provide ICT hubs through which the youth can access online jobs. The halls will also provide space for adult classes that both women, the youth and People with Disabilities can easily access.

**8.1.2 Spatial Distribution**

In respect to the spatial distribution of these projects, Maringo estate enjoys the highest percentage (9%), followed by Lumumba (7%), Kaloleni and Makongeni (6% each). The estates with the least number of projects are Jericho, Starehe, Ziwani, Eastleigh and New Pumwani. Among the remaining projects, 28 traverse different estates. The table below is a summary of the spatial distribution of the projects.

Table 111: Spatial Distribution of Project Proposals

Area	No. of Projects	% of Total
Entire planning area	24	20.3
Inter-estate projects	22	18.6
Maringo	11	9.3
Lumumba	8	6.8
Kaloleni	7	5.9
Makongeni	7	5.9
Makadara	5	4.2
Shauri Moyo	4	3.4
Bahati	4	3.4
Majengo	4	3.4
Outside Planning area	3	2.5
Mbotela	3	2.5
Bondeni	3	2.5
Uhuru	3	2.5
Kariokor	2	1.7
Jerusalem	1	0.8
Jericho	1	0.8
Starehe	1	0.8
Ziwani	1	0.8
Eastleigh	1	0.8
New Pumwani	1	0.8
Pangani	1	0.8
Buruburu	1	0.8
<b>Total</b>	<b>118</b>	<b>100.0</b>

### 8.1.3 Catalytic Projects

Catalytic project are intended to spur investments and economic growth of the project area and the city. Such projects include the following:

1. Establishment of Makadara Secondary Node
2. Redevelopment of Gikomba market
3. Expansion of Kamukunji Jua kali market
4. Redevelopment of other existing markets/shopping centres and introduction of new ones
5. BRT corridors
6. Quarry road
7. Missing links to industrial area
8. CORE centres

The Makadara node is expected to offer the services of a CBD at the local level. This will reduce overreliance on the main CBD thereby cutting down the traffic congestion currently experienced along Jogoo-Landhies corridor. The expected impact is faster movements to work places and thus reduced loss of working hours. The node will also accommodate numerous work places from which significant incomes and revenues will be generated.

Redevelopment and expansion of Gikomba and Jua Kali markets are envisaged to increase work areas and improve functionality thereof. The employment opportunities to be created in

Gikomba are for instance estimated to double the current ones. The new estimate is 62,814 opportunities, vis a vis the current, which is 37,510.

In Kamukunji Jua Kali industries, 300% increment of working space is proposed. This will translate to 1827 business spaces, in which about 9135 employment opportunities will be created. This is about 228% increase of employment opportunities, given that the current number of employees is estimated at 4,000.

The redevelopment of the rest of the markets and shopping centres will equally have immense economic impacts. Overall, the initiative will give rise to 6 times more employment opportunities, additional Gross Monthly Income of Ksh 4,390,784,820 and 124 times higher annual revenue. Improved functionality in these business nodes is expected to be influenced by the proposed infrastructural improvements.

The proposed BRT corridors and missing links to Industrial area will enhance connectivity between the project area and major employment zones (CBD and Industrial area) in the city. This is not only expected to improve traffic movement but also enhance economic linkages between the three areas. Quarry road extension will in particular enhance connectivity between the North Western and the Southern spheres of the project area and improve access to Gikomba market. This will in turn improve economic interactions thereon.

Finally, the CORE Centre strategy is envisaged to stimulate economic empowerment of the youth and other members of the community. As centres of skill development, the facilities will act as platforms for building capacity among the beneficiaries and making them fit for employment. As areas for business investments, the centres will facilitate generation of direct incomes to the otherwise unemployed community members. They will also enhance active engagement of the youth who tend to idle and engage in criminal activities.

## 8.2 PROJECT COSTS

The total project cost is estimated at Ksh. 211 billion. The budgetary allocations vary from one sector to another because of the difference in the nature and number of projects. Housing sector for instance takes the biggest part (86%) of the budget while the smallest portion goes to the storm water management sector (0.01%). The table below is a summary budgetary allocation for the projects in each sector.

Table 112: Project Budget Allocations

<b>Sector</b>	<b>Approximate Cost (Ksh)</b>	<b>%</b>
Housing	181,171,150,000	85.80
Transport	10,019,231,456	4.75
Project management	10,000,000,000	4.74
Commerce and Industrialization	4,073,125,000	1.93
Water and Sanitation	3,877,800,000	1.84
Energy	580,000,000	0.27
Community Facilities	530,000,000	0.25
Health	413,000,000	0.20
Education	356,400,000	0.17
Environment	100,000,000	0.05
Storm Water Management	30,660,000	0.01
<b>Total</b>	<b>211,151,366,456</b>	<b>100.00</b>

A detailed account of the project costs is attached in the annexes

## **8.3 ACTORS**

### **8.3.1 Project Implementers by Sector**

The key players in the implementation of this project include the Ministry of Transport, Infrastructure, Housing and Urban Development, Nairobi Metropolitan Department, Nairobi City County Government, various semi-autonomous government agencies, contractors, financiers, various professionals such as architects, and more importantly the people living in the estates. The roles that each actor is expected to play are indicated herein below.

#### **(a) Ministry of Transport, Infrastructure, Housing and Urban Development**

This ministry will be involved the development of houses, markets and other infrastructure through its relevant agencies.

#### **(b) Nairobi City County Government (NCCG)**

The county government is expected to be the most involved in project implementation since it needs to play one role or another in all the projects. Different roles will be undertaken by the various sections as follows.

##### **(i) Office of the Governor**

The office of the governor and the entire county administrative arm will be expected to mobilize investors (both local and foreign) who will be involved in the PPPs during the implementation of the projects. It will also provide funds to the technical departments to facilitate the implementation of departmental projects.

##### **(ii) County Assembly**

The County Assembly will approve this plan before its implementation commences. The process will be spearheaded by the planning committee.

##### **(iii) Technical Departments**

The County Government, through its technical departments will develop new and improve existing public social facilities such as schools, health facilities, markets and recreational facilities among others.

The Housing Department will particularly be in charge of social housing provision. City Planning Department on the other hand will be involved in development control in order to ensure that the provisions of this plan are adhered to. All development applications will be vetted and recommended for approval by the Planning Technical Committee.

##### **(iv) City Management Board**

The process of constituting the City Management Board for Nairobi is currently underway. Once in place, the board will collaborate with various technical departments in the management of the affairs of the city and ensure provision of all infrastructure and services.

#### **(c) Ministry of Lands and Physical Planning**

Various departments of the Ministry of Lands and Physical Planning will be involved in the implementation of this plan as outlined below.

##### **(i) Department of Physical Planning**

The Department of Physical Planning will be involved in the approval of this plan (and subsequent amendments) before its implementation begins.

##### **(ii) National Land Commission (NLC)**

NLC is mandated to manage all public land on behalf of the State. The bulk of the land in the project area is public since it belongs to Nairobi City County Government. The administration

and management of this land will thus be controlled by NLC. It will help to spearhead the matters relating to the disposal of public land within the project area.

**(iii) Department of Surveys**

The department of surveys will be involved in the surveying and titling of public land such as (road reserves, schools and health facilities) and in the processing of lease titles to private land owners.

**(d) Semi-Autonomous Government Agencies**

The semi-autonomous government agencies to be involved include the following.

**(i) KURA**

KURA will develop and upgrade roads, NMT facilities and storm water drainage channels on corridors that belong to them.

**(ii) Nairobi City Water and Sewerage Company**

Nairobi City Water and sewerage Co. (NCWSC) will provide water and sewerage networks and ensure adequate supply of both domestic and non-domestic water.

**(iii) National Environmental Management Authority (NEMA)**

NEMA will approve and issue EIA licenses for individual projects proposed under this plan. It will also monitor the management of waste and regulate noise and emissions the project area.

**(iv) Water Resource Authority (WRA)**

WRA will be engaged in the management of Nairobi River and its riparian reserve.

**(v) Kenya Power**

Kenya Power will be responsible for development of electricity networks and supply of electric power.

**(vi) Kenya Railways**

Kenya Railways will provide railway transport facilities and services.

**(vii) Kenya Civil Aviation Authority (KCAA)**

Considering the presence of Moi Airbase close to the project area, KCAA will vet and provide site specific guidelines on permissible building heights for upcoming building blocks.

**(viii) National Housing Corporation (NHC)**

NHC is expected to participate in the construction of public housing.

**(ix) National Construction Authority (NCA)**

National Construction Authority will be involved in ensuring the construction of safe and quality developments

**(e) Private Sector Agencies**

The private sector agencies include land owners, private developers (both individual and corporate) Business Associations, professional entities and Resident Associations/ Estate Committees. They will be involved in implementing projects in the housing, health, business, light industry and education sectors as detailed out below. These take about 18% of the project proposals.

### **(i) Land Owners**

The land owners will provide land where the various developments will be constructed. Some of them will be involve in the actual establishment of some of the developments, especially buildings.

### **(ii) Private Developers**

The private developers (both individual and corporate) will construct and manage residential buildings, private schools and health facilities among others.

### **(iii) Private Companies**

There are private companies that will assist in providing specialized services to the members of the public. A good example is Safaricom Public Limited Company, which will provide communication networks such as fibre optics.

### **(iv) Resident Associations and Estate Committees**

Examples of Resident Associations in the project area include Kaloleni, Buruburu and Kimathi Residents Associations. Together with the Estate Committees, they will assist in the identification and enumeration of project beneficiaries, mobilization of resources for implementation of community level developments and estate management, safeguarding the developments in each estate and community policing.

### **(v) Business/Market Associations**

The Business/Market Associations such as Gikomba Traders and Kamukunji Jua Kali Trading Associations will assist in mobilizing resources for development of market shades and payment of collective services (such as solid waste management) at the markets.

### **(vi) Professional Entities**

Professionals entities include individuals, companies and professional associations. The first two will be involved in design and construction of individual projects across the sectors while the latter will provide quality checks on the services provided by the professionals.

### **(f) Financial Agencies**

These include Insurance firms, SACCOs, Pension Funds and NGOs, International financial partners (such as World Bank), National Social Security Fund (NSSF), banks, Kenya Water Trust Fund, Constituency Development Fund, Kenya Mortgage Financing Company and Housing Finance Group. Each agency will contribute funds for developing the proposed projects in the sectors relevant to it.

The table below provides a summary of the institutional responsibilities for the various actors in implementing the proposed projects under each sector.

Table 113: Implementation Responsibility of Institutions

<b>Sector</b>	<b>Nature of projects</b>	<b>No. of projects</b>	<b>Implementing Institution(s)</b>	<b>Role of Implementing Institution</b>
Transportation	Road expansion projects	22	KURA MOTHUD NCCG NLC	- Financing the projects - Maintenance of the roads - Contracting experts - Maintenance of the roads - Identification and acquisition/ purchase of land
	Transit stations	3		

	BRT Corridors	10	Planners, Architects, Engineers EIA experts,	<ul style="list-style-type: none"> <li>- Planning and design of roads and surrounding land uses</li> <li>- Project Environmental Impact Assessments</li> <li>- Actual construction works</li> </ul>
	Freight terminals	2		
Housing	Housing development (125,508 units)	1	State Dept of Housing & Urban Dev't/County government/ KISIP	<ul style="list-style-type: none"> <li>- Contracting experts</li> <li>- Maintenance of the houses</li> <li>- Planning, Design, EIA &amp; Construction works</li> <li>- Potential housing development partners</li> </ul>
			<ul style="list-style-type: none"> <li>- Planners, Architects, EIA experts &amp; Contractors</li> <li>- Insurance firms, SACCOs, Pension Funds and NSSF among others</li> <li>- Residents/NGOs/CBOs (Private Sector)</li> </ul>	
Water and Sewerage	Rehabilitation of water piping network	1	Nairobi City Water and Sewerage Company/	<ul style="list-style-type: none"> <li>- Financing the project</li> <li>- Identifying and acquisition of land</li> <li>- Contracting experts</li> <li>- Help in financing water projects</li> </ul>
	Elevated water storage tanks	10	NCCG	
	Rehabilitation of sewer lines	1		
	Secondary sewer Pretreatment facilities	6	Kenya Water Trust Fund/ WARUAs	
Solid waste management	Solid waste collection 154 bins (each with a carrying capacity of 20 tons)	1	NCCG	<ul style="list-style-type: none"> <li>- Development of solid waste management infrastructure</li> <li>- Actual waste management</li> <li>- Oversight on waste management activities</li> </ul>
	Biogas processing plant and slurry factory	1	Residents/NGOs/CBOs (Private Sector)	
	Material Recovery Facility (Metal, glass and plastic waste)	1	NEMA	
Storm water management	Storm water drainage network	1	Nairobi City County Government and KURA	<ul style="list-style-type: none"> <li>- Project financing</li> <li>- Planning and design works</li> <li>- Construction</li> </ul>
	Storm water infiltration basins	4	Planners and Engineers	
	Detention and retention basins	2		

	Storm water vegetative swales	1	Contractors	
Energy	Expansion of electricity network	1	Ministry of Energy/ County Government	<ul style="list-style-type: none"> <li>- Financing the project</li> <li>- Provision of e capital intensive energy infrastructure</li> <li>- Supply of electricity</li> <li>- Electrical installation works in the residential houses &amp; business premises</li> </ul>
	48000 solar panels	1	Kenya Power	
	608 solar water heaters	1	Residents and business people (Private Sector)	
Education	Newly proposed education facilities	4	Ministry of Education, Science Technology/ County Gov't	<ul style="list-style-type: none"> <li>- Funding the projects</li> <li>- Contracting experts and supervising works</li> <li>- Helping in funding the projects</li> <li>- Operation of private and APBET schools</li> </ul>
	Land acquisition for Expanded schools	3	Constituency Development Fund	
	Stream increment in 31 schools	1	Private sector	
Health	Newly proposed	1	Ministry of Health/ County Government	<ul style="list-style-type: none"> <li>- Financing the project</li> <li>- Contracting experts</li> <li>- Supervising c construction work</li> <li>- Planning, Design and Construction works</li> <li>- Operation of private health facilities</li> </ul>
	Upgrade of existing facilities	5	Planners/ Architects Contractors  Private sector	
Community Facilities	New social hall	1	County Gov't	<ul style="list-style-type: none"> <li>- Funding the projects</li> <li>- Contracting experts and supervising works</li> <li>- Maintenance of facilities</li> <li>- Helping in funding the projects</li> <li>- Constructing and running some of the community facilities</li> </ul>
	Upgrade of 11 social halls	1		
	Land acquisition for expansion of 1 social hall	1		
	Rehabilitation centers	4	Constituency Development Fund	
	Homes for the elderly	2		
	Upgrade of existing libraries	2	Private institutions/ Religious institutions / private individuals	
	Equipping of 14 existing security facilities	1	Planners/ Architects Contractors	<ul style="list-style-type: none"> <li>- Planning, Design and Construction works</li> </ul>
	New police stations	2		
	Expanded stadia	3		

	New fire station.	1		
	Fire hydrants and engines within sub-county offices in Bondeni and Maringo	1		
	Newly proposed recreational facilities	3		
	Upgrade of existing recreational facilities	10		
Environment	Nairobi River Revitalization	1	Ministry of Environment and Natural Resources/ County government  NEMA and WRA	- Financing the projects  - Oversight on management of the river and riparian land
Commerce and Industrialization	Market Redevelopment  (Gikomba, Kariokor, Uhuru, Burma, Jericho, Jua Kali Kamukunji, New Burma and proposed Kaloleni and furniture markets	1	Nairobi City County Government and UDD  Planners and Engineers  Contractors	- Project financing  - Planning and design works - Construction
			Residents/NGOs/CBOs (Private Sector)	- Contribution of resources.

### 8.3.2 Institutional Arrangements

As noted earlier, the parties that will inevitably be involved in this project are numerous. Proper coordination of the complex web of activities will thus be a prerequisite to project success. It is therefore advisable that a **Project Management Unit (PMU)** be set up to coordinate the project activities.

The PMU has numerous functions such as the provision of an overall vision of the program goals and objectives to the team members; draws down detailed schedules of activities, milestones, and deliverables of the project team, and identifies the resources available; identifies the roles and responsibilities of each member of the project team; defines the specific deliverables due from each team member, at each stage of the project; establishes the protocol, procedure, and methods to communicate project information and issues among members of the team; and simplifies communication, record-keeping and reporting.

With regards to project governance, the PMU will set policies, regulations, functions, process, and procedures and responsibilities that define the establishment, management and control of projects, programmes and activities.

The PMU would manage and allocate resources accurately across projects. It would also manage priorities based on timelines, budgets, resource loads and lists out potential problems and chances of deviance from the project methodology, the probability of such occurrences, the possible impact, and possible solutions. The PMU will in addition areas where legal and Institutional Issues require strengthening or developing.

The PMU can also have an independent section whose functions include Monitoring the implementation of the project. M&E can help improve the performance of the project to achieve the desired results. It also improves management of outputs, outcomes and impact. It is mainly used to assess the performance of projects, and institutions working with the project. Project implementation process can be managed by the PMU managers, the implementing team or by a private company. The credibility and objectivity of monitoring and evaluation reports depend very much on the independence of the evaluators. Their expertise and independence is of major importance for the process to be successful. The PMU will develop a system of tracking project inputs and outputs and develop indicators.

## **8.4 PROJECT FINANCING MODELS**

Notably, the total cost of this project is high. It is thus necessary that a combination of financing models be applied in order to ensure that the project is successfully implemented.

### **8.4.1 Sources of Funding**

Given that no dedicated budget has hitherto been earmarked for this programme, access to finance is going to be a major factor. The pivotal role that the private sector and parastatal organizations could play is also limited. This is partly due to inadequate information about available private and parastatal funds, and also due to limited capacity to engage the private sector, and restricted capacity to engage and make deals with these external organizations.

However, some of the organizations providing finance for housing include the Housing Finance Company, Commercial Banks, Cooperatives, Savings and Credit Cooperative Organizations (SACCOS), and Micro-Finance institutions. Most of these providers charge an average interest rate of 20% per annum for a maximum term of 20 years, which is costly particularly for accessing low-cost housing. (Republic of Kenya Sector Plan for Population, Urbanization and Housing 2013 – 2017). The most viable and feasible funding sources are as follows.

#### **a) Funding by National Government**

According to the 2018 Budget Policy Statement, the government plans to provide at least five hundred thousand (500,000) affordable new houses to Kenyans by 2022 in order to improve their living conditions. The Eastlands project plans to provide 125,508 housing units of various typologies. These units should benefit from the national budget allocation. The 2018/19 budget estimates allocated Ksh. 6.0 billion for social housing for the whole country. The Eastlands project should be allocated some of these funds in order to get the project off the ground. The balance can be sourced from other financiers.

#### **b) County Government Matching Funds**

The revenue base of the county Government may not be adequate to fund the housing construction programme. The County will receive from the national share of revenue about Ksh. Ksh 15.7 billion during fiscal year 2018/19. The amount of the internally generated revenue is estimated at Ksh. 20 billion. However, locally collected revenues are less by a big margin. During mid FY 2017/18, Ksh. 3.1 billion had been collected against a target of Ksh. 19.8 bn. With this depressed resource envelop and huge recurrent obligation, and high debt of Ksh 59 billion), it is unlikely that there will be funds left for high-rise construction. The County Government allocated Ksh. half a billion for urban renewal and Ksh. 576,000 for urban planning for the financial year 2018/19 (CFSP). However, the County can act as an enabler to this project. While it might not have adequate financial muscle to participate in the construction of the housing units, it can use land to leverage private sector investment.

Joint ventures can be built through land as the contribution of the Nairobi County. Examples of ventures are renewal of multimillion-shilling projects by M/S Jabavu Village Limited in Ngong Road, M/S Lordship Africa in Old Ngara Estate, M/S Kiewa Group Limited in Pangani Estate, M/S Sovereign Group Limited in Uhuru Estate and M/S Stanlib Kenya Limited in New Ngara Estate awarded in 2016.

### **c) Kenya Mortgage Financing Company**

The 2016 Residential Mortgage Market Survey conducted by the CBK revealed that high cost of houses, high interest rates on mortgages, high incidental cost of mortgages, low levels of income, difficulties with property registration and titling and lack of access to long-term finance are the major inhibiting factors to the growth of the Kenyan mortgage market. Furthermore, there is little standardization of loan underwriting, documentation or servicing procedures.

The KMRC is an initiative of National Treasury and World Bank that will support the affordable housing agenda by providing secure, long-term funding to the mortgage lenders, thereby increasing the availability and affordability of mortgage loans to Kenyans. Only about 26.1% of Kenyans in urban areas were residing in their own dwellings according to a 2015/16 survey by KNBS. Rapid urbanization has resulted in a large informal housing and slum dwellings; nearly 61% of urban households live in very poor-quality housing

Provision of adequate housing for the low-income groups is a perpetual problem in cities. Kenya faces a critical shortage of housing units due to several factors including the limited availability of mortgage finance and developer finance.

KMRC will receive seed money from the National Treasury and some international financial institutions to get it started. Local financial institutions have also been requested to participate through subscription in form of equity capital to KMRC. It is unlikely that these commercial entities will accept less than 10 percent on return on investment.

This GOK and International lending firms together with local financial institutions is poised to ease mortgage rates in the general mortgage industry. It is however unlikely to be favorable to sitting tenants in the Eastlands and the informal settlements. Financial institutions consider factors such as risk and cost minimization. The formal Loan System is not conducive to low income households thus a big obstacle to the low-income people purchasing homes. Low-income households require a different business model that is suited to their needs and which calls for new ways of thinking and doing business.

### **d) Public Private Partnerships (PPP)**

In 2013, Kenya enacted the PPP Act which paved the way for capital and infrastructure projects to benefit from PPP arrangements. PPPs involve long-term contracts where private partner bears significant financial risks. Key Pillars of the legal PPP Framework are the Constitution of Kenya, PPP Policy Statement Nov. 2011, the PPP Act No. 15 of 2013, PPP Regulations (several), Public Finance Management (PFM) Act, 2012, and County Governments Act, 2012.

Public Private Partnership model funds public infrastructure projects such as a housing, roads water supply and sanitation, and power supply among others. It is a contractual arrangement to build, construct or provide a service in partnership with the government. In the case of the urban renewal initiative, the housing component, water and sewerage are the projects that require funding partnerships. The public partner will be the National Government or the County Authorities.

The private partner can be a privately owned business, a public parastatal such as the National Social Security Fund (NSSF), the National Housing Corporation (NHC), the National Health Insurance Fund (NHIF) and Savings and Credit Cooperative Organizations (SACCOs). SACCOs have built large reservoir of financial resources that could be tapped for the housing component, but good terms should be provided to attract them to invest in this venture.

The conditions in PPP Act have been a constraint to the development of infrastructure in the country. The housing component requires ready cash since this is a quick win projects. The inherent long process in concluding PPP contract is a major disincentive to this project

The process starts with project identification, PPP approval, pre-qualification competitive bidding, evaluation/ negotiation, approval by PPP committee, approval by the cabinet, notification to the successful bidder, financial close and formalization of concessionary agreement. PPP projects by County Governments must be approved by the national government. The PPP process may not produce funds for the initial prioritized housing projects but could be used for projects coming in the latter years.

#### **e) Incremental Renewal Tax**

An alternative way of funding the Eastlands project is to levy increased property taxes on all houses in the Nairobi County. The accrued funds would be used to fill funding gaps for predetermined urban renewal programmes and projects. However, this will require a legal framework including public participation for which the outcome may not be clear. The option can however be pursued since this is a long term programme

#### **f) Municipal Bonds**

The County government of Nairobi City can raise funds through municipal bonds to finance urban infrastructure. These are debt obligations that a county can issue to raise resources from capital markets to finance urban infrastructure. The bonds would be underwritten by county revenues. Repayment of the bond is therefore from taxation and other general revenue sources. Bonds have a price to pay part of which is dependent on macroeconomic stability.

In 2010, the then Nairobi County Council planned to issue a Ksh. 100 billion bond to improve roads, medical facilities, schools and social halls. The plan did not materialize due to various handles some of which were high debt levels, and lack of positive cash flows. In addition, the legal and regulatory framework on how to access funding from capital markets had not been developed. The Capital Markets Authority which is charged with this responsibility is yet to formulate a proper regulation framework specifying the purpose, types, and procedures of borrowing that County Governments can borrow. While the Constitution 2010 allows county government to borrow, the legal framework has not been developed. This mode of funding cannot be relied upon in the short to medium term.

#### **g) Foreign Investors**

Foreign investment in the real estate sector is available. However, it is attracted by secure and limited amount of political risk and uncertainty. Global and regional institutional real estate funds can be accessed at reasonable interest rates. Investment decisions are based on the expected returns, demand for housing, economies of scale, and production and capital costs, among others.

The population of Nairobi, which is estimated to grow to about 6.1 million by 2025 and a rising middle class will require increasing number of housing units that is apt to attract foreign investment particularly in the large cities. Some of the countries that have shown interest in investing in the sector are China, India, and South African companies. As an incentive, the

government should provide free land, build access roads and provide water and sanitation facilities, power to the estates. The provision of would address a major impediment to home ownership in Kenya.

#### **h) Site and Service Scheme**

This option is not contemplated in the case of Eastlands. Under this option, people are given a chance to rent or buy a piece of land and build their own homes using money from a low-interest loan. The government links the city with transport and other essential services such as water, sewage, electricity and a variety of other individual as well as community services.

#### **i) Tenant Purchase**

This is an option that would be suited for the 61,068 units representing 48% of the units. These units are meant for sale at a discounted interest rate. It would generate significant revenue to cover the costs of construction and marginal profits for the developing unit. Various interest rates options have been proposed. The tenant purchase option could be operationalized by either the National and County **government in their respective areas.**

#### **j) Savings and Credit Cooperative Organizations (SACCO)**

Savings and Credit Cooperative Organizations play a major role in providing funds for housing for their members. SACCOs have substantial financial resources and can be encouraged to fund the part of the housing component. In 2016 Kenya's SACCOs had nearly 3.5 million members and combined total assets of Ksh 393 billion (US\$ 3.8 billion)". This is a substantial amount of assets that can be leveraged to facilitate the growth of the affordable housing market (Wood, 2018). However, the minimum interest rate that SACCOs charge members is 12 percent per annum.

### **8.4.2 Institutional Shares of the Financial Responsibility**

The projects in various sectors will be funded by different agencies as outlined below. It is however worth noting that some of these projects will be jointly funded by two or more institutions.

- 1. Normal Government Programmes:** The renewal programmes will include, construction of new houses or rehabilitation/renovation, upgrading of markets and construction of new market stalls/malls. However, there are projects that will be carried out with enhanced budgets from the National or the county government. Public funding in the forms of grants can also be used as a potential source of project finance.
- 2. Road Construction and Rehabilitation:** The funding of roads construction in the estates will be implemented by NCCG who will enter into agreements with the identified agencies.
- 3. Water and Sanitation Services:** The provision of water and sanitation services will be the responsibility of the Nairobi County Water and Sewerage Company.
- 4. Health Improvement Programme:** The improvement of the health infrastructure and drug supply is under the County government since health is a devolved function. Expansion and rehabilitation of classrooms remains the responsibility of the national government. Local funds such as CDF, Bursary funds can be used to improve educational standards of the inhabitants of the estates.
- 5. Market Improvement:** The improvement of markets will be the responsibility of the county government since investment in this area will enhance the revenue capacity of the county treasury. Loans could be sourced and paid from proceeds from the rents.

6. **Beautification Activities:** Green spaces and other beautification initiatives directly falls under the county government.
7. **The Housing Programme:** The housing component, though the most expensive is a quick win in the renewal programme. Without timely availability of funds, the project may not succeed.

The biggest share of the budget (87.9%) is to be covered jointly the Private Sector, National and County Governments. It amounts to approximately Ksh. 185.6 billion and includes the costs of projects under housing and commerce/industrialization sectors. The second highest proportion of the budget (approx. Ksh 10 billion) is taken by the transport sector projects, which are to be financed by KURA & NCCG. The management of the entire project is expected to be financed by the national government and it will cost approximately Ksh. 10,000,000,000 (4.7% of the budget).

The details of institutional budget share proposal are summarized in the table below:

Table 114: Institutional Shares of the Financial Responsibility

Institution	No. of projects	Cost (Ksh)	% of Total Budget
NCCG, National Government & Private Sector	10	185,600,675,000	87.90
KURA & NCCG	45	10,049,891,456	4.76
National Government	1	10,000,000,000	4.74
NCCG, NCWSC & Private Sector	21	3,877,800,000	1.84
NCCG & Private Sector	38	1,043,000,000	0.49
Kenya Power, National Government & Private Sector	3	580,000,000	0.27
<b>Total</b>	<b>118</b>	<b>211,151,366,456</b>	<b>100.0</b>

Notably, NCCG is expected to be the highest contributor of the financial resources required in the implementation of this plan. This is as a result of the fact that they are to be involved in many projects across the sectors.

## 8.5 PUBLIC PRIVATE PARTNERSHIP (PPP) STRATEGY

Considering the need for concerted efforts in the implementation of this plan, PPPs are recommended. It is however notable that operation of PPPs requires a strategic plan of action given the diversity of matters and parties to be involved.

In this PPP strategy, the following have been brought out:

- Potential PPP projects
- Potential public institutions (which are the contracting authorities) and private parties to be involved in various projects
- PPP arrangements for different partnerships
- Procedures for implementing the PPP projects

### 8.5.1 Potential Projects and Partners

The projects which can be implemented through PPPs are tabulated below. The potential partners, their roles and partnership arrangements are also outlined.

Table 115: Potential Projects and Partners

Project	Areas	Partners	Roles	Partnership Arrangement
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Construction of 125,508 houses	<ul style="list-style-type: none"> <li>• Starehe</li> <li>• Shauri Moyo</li> <li>• Makongeni</li> </ul>	State Department for Housing & Urban Development	<ul style="list-style-type: none"> <li>• Contracting authority</li> <li>• Provision of land</li> <li>• Financing of the construction works (Partial)</li> </ul>	Build-Operate-and-Transfer
		Individual and corporate investors	<ul style="list-style-type: none"> <li>• Construction of an agreed number of houses</li> <li>• Collection of rents and sale of houses (where applicable) for a specified period of time</li> </ul>	
	All County Government estates	Nairobi City County Government	<ul style="list-style-type: none"> <li>• Contracting authority</li> <li>• Provision of land</li> <li>• Site servicing</li> </ul>	
		Individual and corporate investors	<ul style="list-style-type: none"> <li>• Construction of an agreed number of houses</li> <li>• Collection of rents and sale of houses (where applicable) for a specified period of time</li> </ul>	
BRT & LRT Corridors and construction of transport, and water sewer networks	Entre project area	<ul style="list-style-type: none"> <li>• State Department for Infrastructure (KURA)</li> <li>• State Department for Transport (Kenya Railways)</li> <li>• Nairobi City County Government</li> </ul>	<ul style="list-style-type: none"> <li>• Contracting authorities</li> <li>• Oversight role on the works done by the private parties</li> <li>• Post-construction management of the infrastructure</li> </ul>	Build-Transfer-and-Operate
		Corporate investors (Private partners)	<ul style="list-style-type: none"> <li>• Construction of infrastructure</li> <li>• Collection of service fees from consumers for an agreed period of time</li> </ul>	
		Matatu SACCOs	<ul style="list-style-type: none"> <li>• Provision of BRT buses and operation of public transport businesses to generate income</li> </ul>	
Nairobi River Revitalization	Nairobi River Riparian area	Nairobi City County Government	<ul style="list-style-type: none"> <li>• Contracting authority</li> <li>• Oversight role on the activities undertaken by the private party</li> <li>• Collection of the concession fee payable to county government</li> </ul>	Concession
		WRA	<ul style="list-style-type: none"> <li>• Provision of guidelines for protection of the waters</li> </ul>	
		Corporate investors (Private partners)	<ul style="list-style-type: none"> <li>• Implementation of the proposals made for the riparian area</li> <li>• Management of the area</li> <li>• Provision of environmentally friendly and income generating services along the corridor</li> </ul>	
Solid Waste management	Entre project area	Nairobi City County Government	<ul style="list-style-type: none"> <li>• Contracting authority</li> <li>• Provision of required infrastructure</li> <li>• Oversight on activities of the private parties</li> </ul>	Management contract
		NEMA	<ul style="list-style-type: none"> <li>• Oversight on waste management activities</li> </ul>	
		Corporate investors and CBOs (Private partners)	<ul style="list-style-type: none"> <li>• Actual collection and transportation of the waste to designated points</li> </ul>	

			<ul style="list-style-type: none"> <li>• Collection of service fees from consumers for an agreed period of time</li> </ul>	
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### 8.5.2 PPP Project Implementation Process

The process of implementing PPP projects will involve the following steps.

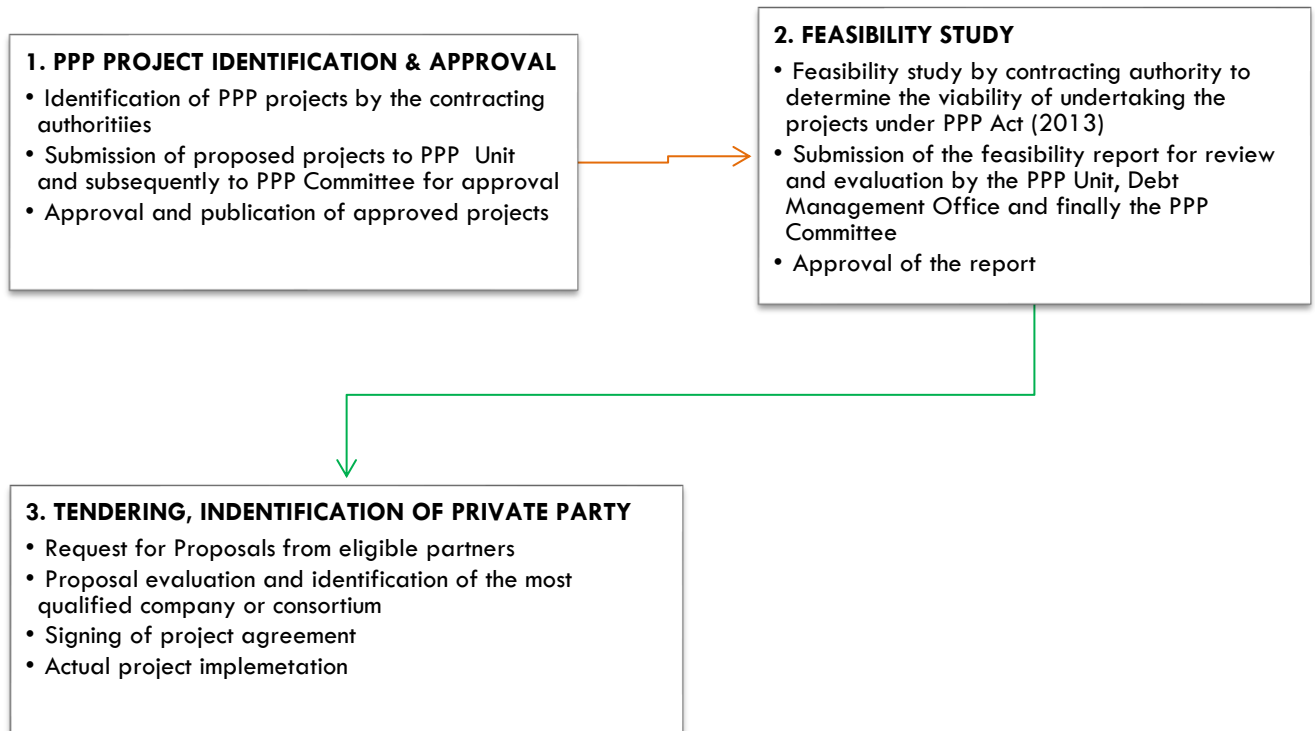


Figure 186: PPP Project Implementation Process

## 8.6 RESETTLEMENT STRATEGY

The resettlement strategy is an outline of the sequence in which the redevelopment process will take place and the manner in which beneficiaries will be re-settled afterwards. Two groups of Project Affected Persons (PAPs) are considered. These are tenants and traders.

### 8.6.1 Resettlement of Tenants

The housing component of this will start with the three priority estates thus Starehe, Shauri Moyo and Makongeni. Starehe, Shauri Moyo estates are owned by the National Government. This will be part of the Big 4 Agenda. In order to forestall skepticism among the sitting tenants and to avoid high relocation costs and inconveniences, it is proposed that construction should start in open spaces to enable allocated tenants or buyers to move to the new houses thereby giving way for demolitions. The strategy for resettling is summarized in the matrix overleaf.

Table 116: Proposed Resettlement Strategy for Tenants

PROJECT LEVEL PHASING	ESTATE	ESTATE LEVEL PHASING	AREA DESCRIPTION	UNITS DELIVERED	TARGET BENEFICIARY	COSTS (Ksh)	TIME FRAME
1.	Starehe	1	Meru Road section	1,776	<ul style="list-style-type: none"> <li>Starehe sitting tenants-709</li> <li>Matopeni - 500</li> <li>Balance- 567 units</li> </ul>	5,721,520,000	2019
		2	Starehe central section	1,568	<ul style="list-style-type: none"> <li>Gorofani Sitting tenants - 590</li> <li>Bondeni Sitting tenants- 968</li> <li>Balance - 704 units</li> </ul>		
	Shauri Moyo	1	Government section (P-shaped block) next to Heshima primary school	1505	<ul style="list-style-type: none"> <li>Shauri Moyo sitting tenants-1,188</li> <li>Balance 317 units to accommodate Shauri Moyo residents from County sections</li> </ul>	5,407,120,000	
		2	County estate section bounded by Ahero and Bondo street and Kamukunji grounds	1575	<ul style="list-style-type: none"> <li>Total units delivered is 1575 vs demand of 4860 hence Deficit of 3285 units but 317 already accommodated in Government section above, hence actual deficit is 2968</li> </ul>		
		3	Public works bounded by 1 <sup>st</sup> Avenue Eastleigh and Heshima Avenue	628	<ul style="list-style-type: none"> <li>628 of the 2968 without houses to be accommodated here. Deficit 2340</li> </ul>		
	2.	Bahati	1	Area bound by Heshima road to the North, Jogoo road to the South and TB Clinic to the East	5968	<ul style="list-style-type: none"> <li>Bahati sitting tenants</li> </ul>	
2			Area bound by Heshima road to the South next to Morrison road and Bahati primary school	5533	<ul style="list-style-type: none"> <li>Bahati Tenants and extensions</li> </ul>		
3			Section along Nairobi River	4867	<ul style="list-style-type: none"> <li>Bahati Tenants and extensions</li> <li>Excess of 10434 units</li> <li>2340 tenants without houses in Shauri Moyo to be accommodated in Bahati</li> <li>Balance 8094 units</li> </ul>		
3.	Maringo	1	BCR blocks within proposed node opposite Makadara Law Courts	2296	<ul style="list-style-type: none"> <li>2296 Sitting tenants node</li> </ul>	20,818,800,000	
		2	Area bound by Nile road to the East and Rukwa road to the South	6256	<ul style="list-style-type: none"> <li>1904 sitting tenants</li> <li>Excess of 4352 units</li> </ul>		
		3	Area along Nyasa road and opposite Makadara Law Courts	5520	<ul style="list-style-type: none"> <li>Excess units</li> </ul>		
4.	Ziwani	1	Section in between General Waruinge and Starehe buys centre	961	<ul style="list-style-type: none"> <li>300 residents to relocate to Starehe last phase</li> <li>Deliver 661 units to remaining Ziwani residents</li> </ul>	5,217,900,000	2020-2024
		2	Section along Kinyanjui street(within it health centre)	1430	<ul style="list-style-type: none"> <li>840 sitting tenants</li> <li>Excess 590</li> </ul>		
		3	Section within shopping centre	1209	<ul style="list-style-type: none"> <li>307 sitting tenants</li> <li>Excess 902</li> </ul>		
5.	Bondeni/Gikomba	1	Redevelopment of Gikomba market and associated infrastructure		<ul style="list-style-type: none"> <li>Traders in the expansive informal market</li> </ul>		
	Bondeni	2	Residential zone in Bondeni action plan	704	<ul style="list-style-type: none"> <li>Bondeni Sitting Tenants</li> <li>968 units of Bondeni accommodated in phase one Starehe</li> </ul>	850,260,000	
	Gorofani	1	Phase 6	-	<ul style="list-style-type: none"> <li>590 sitting tenants</li> <li>Relocate residents of phase 6 to Starehe</li> </ul> Options <ul style="list-style-type: none"> <li>Relocate to Bondeni</li> </ul>	1,042,260,000	

					<ul style="list-style-type: none"> <li>Relocate to Starehe</li> <li>Relocate to Gorofani</li> </ul>		
		2	Section in between Lamu road and Eastleigh first avenue (Phase 7)	360	<ul style="list-style-type: none"> <li>Excess units</li> </ul>		
		3	Section in between Sakwero Road and Lamu Road(Phase 6)	472	<ul style="list-style-type: none"> <li>352 units for Gorofani phase 2,3,4</li> <li>120 excess units</li> </ul>		
			Widening of Jogoo and Landhies corridor to expressway and BRT route		<ul style="list-style-type: none"> <li>Relocation of business along Jogoo Road</li> </ul>		
6.	Jericho	1	Section along Shule road and Buruburu road	4240	4240 out of 4851 sitting tenants to be accommodated	22,759,080,000	
		2	Section along Rabai Road and Buruburu Road	11,104	<ul style="list-style-type: none"> <li>Remaining 611 sitting tenants accommodated</li> <li>Excess 10,493</li> </ul>		
		3	Section near Jericho market	240	Excess units		
	Lumumba	1	Section along Nile Road Next To Ofafa Jericho education complex	3246	<ul style="list-style-type: none"> <li>3246 Sitting tenants</li> </ul>	18,523,800,000	
		2	Section in between Charles new and Rabai Road	6246	<ul style="list-style-type: none"> <li>918 remaining tenants to be accommodated</li> <li>Excess of 5328</li> </ul>		
		3		3020	<ul style="list-style-type: none"> <li>Excess units</li> </ul>		
7.	Uhuru	1	Section Along Buruburu Road	1500	<ul style="list-style-type: none"> <li>1500 sitting tenants</li> </ul>	12,376,380,000	
		2	Section along Rabai Road and next to Church of Christ in Africa	3500	<ul style="list-style-type: none"> <li>928 units for sitting tenants</li> <li>Excess 2572</li> </ul>		
		3	Section along Rabai Road opposite to new mission Hospital	3416	<ul style="list-style-type: none"> <li></li> </ul>		
8.	Jerusalem	1	Entire estate	4,288	<ul style="list-style-type: none"> <li>1632 Sitting tenants</li> <li>Excess of 2656 units</li> </ul>	6,181,040,000	
9.	Mbotela	1	Block next to Apollo Primary School	3600	<ul style="list-style-type: none"> <li>3600 Mbotela sitting tenants</li> </ul>	10,907,240,000	
		2	Block along Industrial Area and Jogoo road	3632	<ul style="list-style-type: none"> <li>Excess of units</li> </ul>		
10.	Kaloleni	1	Section along Jogoo road to the North and City Stadium to the West	0	<ul style="list-style-type: none"> <li>200 Sitting tenants near NCC Environment offices to be relocated to Mbotela's excess units</li> </ul>	13,980,140,000	2025-2030
		2	Section along Stadium road and next to stadium	2047	<ul style="list-style-type: none"> <li>681 sitting tenants</li> <li>1366 Excess units</li> </ul>		
		3	Section directly opposite the social hall	4258	<ul style="list-style-type: none"> <li>4258 Excess units</li> </ul>		
		4	Section in between county resort city and educational complex	3023	<ul style="list-style-type: none"> <li>3023 Excess units</li> </ul>		
11.	Makongeni	1	2 first blocks next to Kaloleni primary school and along Dakar road	2000 hostels	<ul style="list-style-type: none"> <li>2000 students</li> <li>No relocation. Hostels to be built on open spaces</li> <li>If relocation is a must residents to go to Kaloleni excess units</li> </ul>	23,453,240,000	
		2	2 blocks immediately after Makongeni police station	2930 hostels	<ul style="list-style-type: none"> <li>2930 students</li> </ul>		
		3	Section in between Dakar Road and St. Joseph Apudo	3482	<ul style="list-style-type: none"> <li>1354s sitting tenants</li> <li>Excess 2128 units</li> </ul>		
		4.	Section next to public square(sports complex and shopping centre	5247	<ul style="list-style-type: none"> <li>Excess units</li> </ul>		
		5	Section along Dakar Road and opposite True foods	4098	<ul style="list-style-type: none"> <li>Excess units</li> </ul>		
		6	Section opposite KPLC substation	3237	<ul style="list-style-type: none"> <li>Excess units</li> </ul>		
		7	Dakar Road				
		8	Likoni Road				
12.	Kariokor	1	Entire estate		<ul style="list-style-type: none"> <li>Improve infrastructure</li> </ul>		Immediate
		2.	Section directly opposite the shopping centre	1656	<ul style="list-style-type: none"> <li>Current 240 NCCG tenants</li> <li>Excess 1416 units to accommodate new tenants</li> </ul>	4,528,440,000	Long term
		3	Section along Dr. Griffins	1256	<ul style="list-style-type: none"> <li>Excess units</li> </ul>		Long term
13.	Makadara RH	1	All the three blocks	840	<ul style="list-style-type: none"> <li>Current 88 NCCG tenants</li> <li>Excess 752 units to accommodate new tenants</li> </ul>	1,222,590,000	

14	New Pumwani	1	Maendeleo ya Wanawake section	70	• Maendeleo ya Wanawake tenants	65,500,000	
	<b>TOTAL</b>			<b>125,508</b>		<b>Total : 181.1 B</b>	

### 8.6.2 Resettlement of Traders

This strategy is prepared to guide the relocation of traders in both the existing and the proposed markets. Special attention has also been given to those who operated businesses informally within road and riparian reserves because they interfere with functionality and quality of these spaces. Further details of relocation per market are given below.

#### Gikomba Market

It is proposed that the resettlement of Gikomba traders be done in phases shown in the table and map below.

Phase	Block No(s)	Areas covered
1	A (Construction ongoing)	Area previously occupied by the burnt market block
2	B,C	A section of Gorofani estate & existing Fish Market
3	D,E,N & Terminals	A section of Gorofani estate
4	F,G	A section of Gorofani estate
5	H,J	A section of Gorofani estate
6	K,L,M	Existing Gikomba Shopping Centre
7	P	Existing Gikomba Shopping Centre

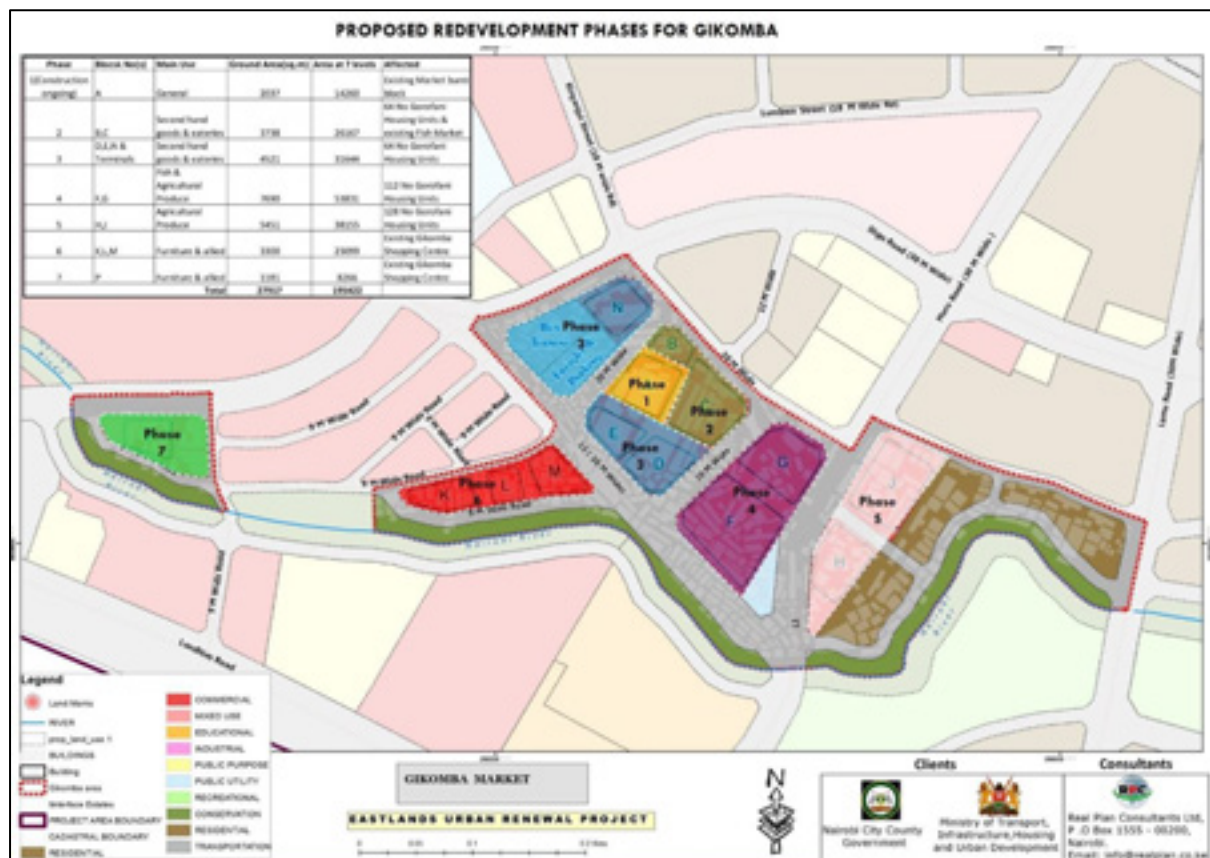


Figure 187: Proposed Redevelopment Phases for Gikomba

#### Shauri Moyo/Burma Market

The existing Shauri Moyo Market is proposed as a one-phase development which will accommodate the current traders and any additional ones. The New Burma market is proposed that the area accommodates the current roadside traders so as to pave way for proper circulation. It is expected to be among the first projects during the implementation of the project proposals.

### **Kamukunji Jua Kali Light Industry**

The market is located in Shauri Moyo Estate, along Landhies road. The light industrial zone has been expanded to approximately 3.35 Hectares from 1.49 Hectares, representing an increase of 224.8%. In addition, the market is bound by Sakwero road to the North, Bondo Street to the East, Ahero Street to the South and Landhies road to the West. The development of the project is proposed to be carried into three phases as shown below.



Figure 188: Proposed Redevelopment Phases for Jua Kali Light Industrial Zone

### **Mwariro, Furniture and Kaloleni Markets**

Each of these markets is expected to be developed in one phase. The target beneficiaries in Mwariro, Kaloleni and the furniture market are the hawkers currently in the CBD, the traders at City Stadium informal market and the furniture traders operating along Jogoo Road respectively.

### **Jogoo Road /Uhuru Market**

It is recommended that its redevelopment be carried out in three phases as shown below.

**PROPOSED REDEVELOPMENT PHASES FOR JOGOO ROAD MARKET**



Figure 189: Redevelopment Phases for Uhuru Market

In light of the above discussions, a resettlement matrix is presented overleaf. It outlines the achievable business spaces and the traders to be accommodated in each of the markets.

Table 117: Proposed Resettlement Strategy for Traders

Market Name	Phase	Area Description	Achievable Stalls	Target Beneficiaries
<b>Mwariro Market</b>	<b>1</b>	Borders Ring Road Ngara to the North, Quarry Road to the East, Kombo Munyiri Road to the South and Ring Road to the West	<b>350</b>	Current hawkers in the CBD
<b>Gikomba</b>	1	Area previously occupied by the burnt market block	1,528	General merchandize traders
	2	A section of Gorofani estate & existing Fish Market	2,804	Traders dealing in Second hand goods & eateries
	3	A section of Gorofani estate	3,390	Traders dealing in Second hand goods & eateries
	4	A section of Gorofani estate	5,768	Traders dealing in Fish & Agricultural Produce
	5	A section of Gorofani estate	4,088	Agricultural Produce traders
	6	Existing Gikomba Shopping Centre	2,475	Furniture traders
	7	Existing Gikomba Shopping Centre	886	Furniture traders
	<b>Total number of stalls</b>			<b>20,938</b>
<b>New Burma</b>	<b>1</b>	The proposed new Burma market is delineated to the South by Ahero Street, to the North Sakwero road, Kericho road to the East and Kamukunji Jua Kali to the West.	<b>6,600</b>	Roadside traders dealing with: - Vegetables Cereals Clothes etc.
<b>Shauri Moyo</b>	<b>1</b>	Bound by Ahero Street to the North, Kericho road to the West, Jogoo road to the South and Shauri Moyo Baptist Church to the East.	<b>9,000</b>	Traders dealing with:- Meat cereals & vegetables clothing , Car wash, Shoe cleaners , Restaurants etc.
<b>Kamukunji Jua Kali Industry</b>	<b>1</b>	Takes the space occupied by Landhies estate adjacent to Kamukunji Primary school	<b>94</b>	Jua kali artisans
	<b>2</b>	It is bordered by Sakwero road to the North, Landhies road to the West and Kamukunji Road to the East.	<b>460</b>	Jua kali artisans
	<b>3</b>	Bordered by Ahero street to the South, Kamukunji Road to the West, Sakwero road to the North and New Burma to the East.	<b>1,273</b>	Jua kali artisans
	<b>Total</b>			<b>1,827</b>

<b>Furniture Market</b>	<b>1</b>	Situated along Jogoo Road in Maringo Estate.	<b>861</b>	Furniture dealers along Jogoo road and informally in the estates.
<b>Jogoo Road /Uhuru Market</b>	<b>1</b>	Existing market blocks	<b>478</b>	Existing traders dealing in small-scale textile and leather light industrial activities
	<b>2</b>	The burnt block E and the section along Jogoo road and adjacent to St. Anne's Girls secondary.	<b>823</b>	Groceries, food and second hand clothing traders currently operating in the informal market section
	<b>3</b>	Site for the new market complex	<b>960</b>	New traders - Operators of leather/ textile, school uniforms, second hand clothing, food, electronics, accessories, green grocer/ fruits/ vegetable and dry cereal stalls
	<b>Total</b>		<b>2261</b>	
<b>Kaloleni Market</b>	<b>1</b>	Adjacent to City Stadium. Situated within Kaloleni residential area.	<b>2,500</b>	Vegetables, Shoes, Chicken, green groceries, sport equipment, bicycles, clothes, artifacts etc.

## **8.7 POST-NAMSIP IMPLEMENTATION FRAMEWORK**

In order to ensure smooth implementation of this plan, a framework outlining the post planning course of action has been proposed. This is presented in the table overleaf.

Table 118: Post NAMSIP Implementation Framework

ACTIVITY	ACTORS	TIME IN MONTHS	1	2	3	4	5	6	REMARKS
1. Policy review <ul style="list-style-type: none"> <li>Review and formulation of National and County Government policies:</li> <li>Affordable housing policy delivered</li> <li>Approval of Urban renewal policy</li> <li>Review of public participation policy</li> <li>Legislation on land readjustments</li> <li>Policy on conversion of short term County leases to long term leases</li> <li>Formulate appropriate tenancy agreement</li> <li>Deliver National Building maintenance policy</li> </ul>	<ul style="list-style-type: none"> <li>NCCG</li> <li>State department of housing</li> <li>Short term (3 months)consultancy</li> </ul>	Continuous							<ul style="list-style-type: none"> <li>To guide housing access process</li> <li>To ensure sustainability for the housing project</li> <li>To secure the properties and create modalities for not transferring the units</li> </ul>
2. Formation of Project Steering Committee	Client	Immediate							<ul style="list-style-type: none"> <li>To oversee the entire project implementation process</li> </ul>
3. Formation of Estate Committee	Estate reps.	Immediate							<ul style="list-style-type: none"> <li>To create ownership of the project</li> </ul>
4. Enumeration Surveys	Short term consultancy Client NCCG	Short term							<ul style="list-style-type: none"> <li>To develop a data base of the project affected persons</li> <li>To come up with criteria for identification of beneficiaries</li> </ul>
5. Gazettement of cut off dates	Client and NCCG	Immediate							<ul style="list-style-type: none"> <li>To ensure effective implementation of the project</li> </ul>
6. Creation of assurance and security	Client, NCCG, Estate Committee								<ul style="list-style-type: none"> <li>Through signing of Memorandum of agreement, several social safeguards will be formulated.</li> </ul>
7. Formation of Project Management Unit (PMU) <ul style="list-style-type: none"> <li>Project structure</li> <li>Communication protocols for promoting business cooperation and institutional innovations</li> <li>Assess the rate of return of the project investment</li> </ul>	Client and NCCG	Short term							<ul style="list-style-type: none"> <li>County can start with 3 offices at sub county level</li> <li>Once units are built then ward level offices can be established.</li> <li>Involve the City Planners and architects, estate officers to staff the project management authority.</li> </ul>
8. Formation of urban renewal trust fund	NCCG	Continuous							<ul style="list-style-type: none"> <li>To run the activities of project management authority.</li> </ul>
9. Formation of self-management committees at estate level	NCCG, Estate officers, Residents associations, Local area leaders	Short term							<ul style="list-style-type: none"> <li>The neighbourhood will be divided into sub areas each comprising of approximately 100 units.</li> <li>The County enters into an agreement with the self-management committees. Within the contract the tenants are given responsibilities which are later turned into costs that act as subsidy to their repayment of the unit's i.e. cleaning of stair cases, care of gardens, parking lots and the maintenance.</li> </ul>
10. Documentation and Gazettement of all estate heritage units for preservation-to be undertaken as a project on its own. i.e. Units in Kaloleni, Bahati, Jericho etc.	Short term Consultancy	Short term							<ul style="list-style-type: none"> <li>To preserve heritage</li> <li>To document the soft infrastructure of the area</li> <li>To develop and nurture the tourism component of the site</li> </ul>
11. Undertake community empowerment workshops	Project Management Unit	Continuous							<ul style="list-style-type: none"> <li>Social and economic empowerment of the residents</li> <li>Marketing of the project to the citizens</li> </ul>
12. Formulation of an engagement framework for implementation e.g. the sale of sites programme to private sector for development (Entering into public private partnership to deliver some units	<ul style="list-style-type: none"> <li>Project Management Unit</li> <li>Investors</li> <li>Business Companies</li> <li>Community Based Organizations</li> </ul>	Short term							<ul style="list-style-type: none"> <li>To encourage public private partnership</li> </ul>
13. Entering into partnership with special purpose agencies that have narrow responsibilities	<ul style="list-style-type: none"> <li>Project Management Unit</li> <li>Investors</li> <li>Community Based Organizations</li> </ul>	Continuous							<ul style="list-style-type: none"> <li>To ensure effective implementation of subject plans e.g. rehabilitation of Nairobi River</li> </ul>
14. Review of project	Project Steering committee	Continuous							<ul style="list-style-type: none"> <li>To ensure project success</li> </ul>

## 8.8 INFRASTRUCTURE DEVELOPMENT PROGRAM

This program outlines the sequence in which the various infrastructure proposals are to be implemented.

### 8.8.1 Transportation Projects

#### 1. Pipeline Projects

Several transport projects have been planned within and around the study area which are likely to be implemented within the planning period. Some of the proposals that have been reviewed and/or analysed are summarized in the table below:

Table 119: Pipeline Projects by various Transportation Planning Agencies

No	Policy/ Report	Medium term 2024-2030	Long term 2031-2036 (and onwards)
1	JICA - Viaduct	Factory rd.	-
		Viaduct	-
		Enterprise Rd	-
2	JICA NIUPLAN	Juja Rd BRT	Juja Rd LRT
		-	Jogoo Rd LRT
3	Railway City	-	Workshop road extension
		-	Enterprise rd. extension
		-	New East-West rd. within R/Way City
4	MRTS Harmonization Plan	Jogoo MRTS corridor	Jogoo - Ruai Extension
		Juja MRTS corridor	Juja - Ruai Extension
5.	NMT Policy	Jogoo road corridor to the CBD (10 Km) from Outer Ring – Jogoo – Landhies – Haile Selassie, with bicycle parking at the KR station (100 slots capacity)	-
		Juja road corridor to the CBD from Outer Ring – Ring Road Ngara – Races course and terminates at Landhies round-about (10 Km)	-
		Mumias South road, through Rabai road, across KR lines to Tanga road to Lungalunga road (6 Km)	-
		First Avenue Eastleigh from Juja across Jogoo road to Likoni up to enterprise road (6 Km)	-

#### 2. Proposed Implementation Matrix

The transport proposals shall be implemented based in three phases: short term (2019-2023), medium term (2024-2030) and long term (2031-2036). The phasing was done with assumptions discussed in Chapter 4.2.3 above.

The implementation matrix presented below summarizes the proposals already discussed thus far. The table shows the location, the problem to be solved, the mitigation proposal or action plan, the implementers/and timeframe for implementation of the project.

Table 120: Implementation Matric for the Transport Proposals

Transport system	Problem	Proposal /Action plan	Implementers/Actors	Timeframe
Jogoo road / Landhies corridor	Traffic congestion and poor operating conditions (LOS)	1. Acquire land for the interchanges and viaducts	KURA/ NLC KURA/ NLC	Short term Short term
		2. Acquire 60m corridor along Landhies rd. for future expansion	KURA	Medium term
		3. Additional service lanes along Jogoo rd. / Landhies at selected high activity locations to limit direct access		
		4. Elimination of at-grade junctions and replace with grade separated junctions; replace City Stadium RA with viaduct	KURA	Medium term
		5. Implement viaduct to Enterprise road and expansion of Factory rd.	KURA/ JICA	Medium Term
Inefficient public transport system	High accident rates among NMT Lack of cyclist facilities	6. Construction of the proposed BRT Southern line	MoTIH&UD MoTIH&UD	Medium term Long term
		7. Upgrade BRT to LRT		
Ahero-Ambira-Wangu-Heshima-Buruburu Road Corridor	Traffic congestion and poor operating conditions (LOS)	8. Provision of crossing facilities such as footbridges not more than 2 Km apart	KURA	Short term
		9. Provide segregated cycle lanes and improve walkway surfacing	KURA	Short term
		1. Acquisition of ROW for road expansion and BRT implementation	County	Short term
Inefficient public transport system	Lack of cyclist facilities and inadequate NMT facilities	2. Widen roads and realign staggered junctions	County	Short term
		3. Introduction of ITS / traffic lights at junctions	County	Medium term
Outering Rd	Inefficient public transport system	4. Implement BRT	MoTIH&UD / County	Medium term
		5. Provide segregated cycle lanes and widen walkways to 2m	County	Short term
Ring Road Ngara / Racecourse Rd	Traffic congestion and poor operating conditions (LOS)	6. Convert Ahero Street into pedestrian only route	County	Short term
		7. Implement BRT and construct interchange stations	MoTIH&UD MoTIH&UD	Medium term Long term
Ring Road Ngara / Racecourse Rd	Traffic congestion and poor operating conditions (LOS)	8. Upgrade to LRT	KURA/ NLC KURA	Short term Medium term
		1. Acquisition of ROW for road expansion and BRT implementation		
		2. Grade separation at Juja Rd. / Ring Rd. Ngara I/S		

	Inefficient public transport system	3. Implement BRT	MoTIH&UD / County	Medium term
	Lack of cyclist facilities and inadequate NMT facilities	4. Provide segregated cycle lanes and widen walkways to 2m	KURA	Short term
Juja Rd.	Traffic congestion and poor operating conditions (LOS) Poor road condition	1. Acquire 60m corridor for future expansion 2. Widen road to 4-lanes	KURA / NLC KURA	Short term Medium term
	High accident rates among NMT	3. Provision of crossing facilities such as footbridges not more than 2 Km apart	KURA	Short term
	Inefficient public transport system	4. Implement BRT and construct interchange stations 5. Upgrade to LRT	MoTIH&UD MoTIH&UD	Medium term Long term
	Lack of NMT and cyclist facilities	6. Provide segregated cycle lanes and walkways	KURA	Short term
Nyasa rd. / Nile rd.	Traffic congestion and poor operating conditions (LOS) Poor road condition	1. Acquisition of ROW for road expansion and BRT implementation 2. Widen roads and realign staggered junctions 3. Introduction of ITS / traffic lights at junctions	County County County	Short term Short term Medium term
	Inefficient public transport system	4. Implement BRT	MoTIH&UD / County	Medium term
	Lack of NMT and cyclist facilities	5. Provide segregated cycle lanes and widen walkways to 2m	County	Short term
		6. Convert Ahero Street into pedestrian only route	County	Short term
Eastleigh First Avenue	Traffic congestion and poor operating conditions (LOS) Poor road condition	1. Acquisition of ROW for road expansion and BRT implementation 2. Grade separation at Jogoo and Juja rd. I/S 3. Introduction of traffic controls at other junctions	KURA / NLC KURA KURA	Short term Medium term Short term
	Inefficient public transport system	4. Implement BRT	KURA	Short term
	Illegal parking and informal businesses operating on traffic lanes and walkways	5. Implement policies on parking and	KURA	
	Lack of NMT and cyclist facilities	6. Provide segregated cycle lanes and widen walkways to 2m	KURA	

		7. Convert Ahero Street into pedestrian only route		
Kinyanjui Street	Poor operating traffic conditions (LOS) Narrow alignment	1. Acquire 40m corridor for future expansion 2. Widen road to 7 m by 2-lane road	County County	Short term Medium term
	Inefficient public transport system	3. Implement BRT	MoTIH&UD / County	Medium term
	Lack of cyclist facilities and narrow and dilapidated walkway	4. Provide segregated cycle lanes and widen walkways to 2m	County	Short term
Digo Rd.	Traffic congestion and poor operating conditions (LOS) Poor road condition	1. Acquisition of ROW for road expansion 2. Widen roads and realign staggered junctions 3. Introduction of ITS / traffic lights at junctions	County County	Short term Short term
	Inefficient public transport system	4. Implement BRT	MoTIH&UD / County	Medium term
	Lack of NMT and cyclist facilities	5. Provide segregated cycle lanes and widen walkways to 2m	County	Short term
	Lack of parking facilities	6. Proposed roadside parking along this road. 7. Proposed parking silo	County County	Medium term
General Waruinge Street	Traffic congestion and poor operating conditions (LOS) Poor road condition	1. Acquisition of ROW for road expansion to 40m 2. Introduction of ITS / traffic lights at junctions	KURA KURA	Long term
	Inefficient public transport system	3. Implement BRT	MoTIH&UD / County	Long term
Nairobi Riverfront Rd.	Congestion along Jogoo Rd. Encroachment/ pollution on river	1. Acquisition of ROW for road expansion to 40m 2. Introduction of ITS / traffic lights at junctions 3. Provide segregated cycle lanes and widen walkways to 2m		

### 3. Administrative Proposals

The roads in within and around the Eastlands area administrators are under the maintenance of various authorities as outlined below.

Table 121: Transport Network Administration

No	Road Functional Level	Administrator	Examples
1.	Urban arterials and collectors	KURA	Outering Rd., Jogoo Rd., Juja Rd., Eastleigh First Avenue
2.	Local Access Roads and some distributor roads	County Government	Ahero Street, Ambira, Heshima, Buruburu, Mumias Rd, Rabai Rd., etc.
3.	Proposed MRTS system in the Harmonization Plan	NAMATA (MoTIH&UD)	Proposed BRT system along Juja Rd, Outering Rd

It is envisaged that the road administration will remain the same during and after construction of the proposed transport network. It is therefore important to consider both the long-term strategic plans for the various administrators to avoid duplication, while also considering post implementation maintenance plans.

### 4. Transport Policy and Legal Framework Changes

The following policy changes should be considered during the implementation and the operational phase of the project:

1. Implementation, operations, pricing and management of the MRTS network and the transit system as a whole requires legal and policy changes such as right of pricing management;
2. Policy changes that encourage modal shift from private modes such as dedicated transit lane regulations, price incentives etc.;
3. Introduction of restricted zones such as pedestrian-only zones, freight vehicle restrictions, etc.;
4. Congestion taxes and parking fees to discourage private cars in certain areas such as high activity areas such as markets;
5. Strict regulations for implementation of ROW and various facilities by preventing encroachment, obstructions, hawking etc. on pedestrian and cyclist lanes.
6. Policies to encourage PPP ventures for additional infrastructure funding for construction and management of facilities.

#### 8.8.2 Storm Water Drainage Network

The proposed storm water drainage network is primarily located within the road reserves, hence, availability of land should not be a major issue. It is recommended that the proposed primary and secondary drainage channels be implemented as part of the road design and construction works. All local access roads should also be provided with side drains that are connected to the secondary network which drain into the primary network.

The proposed detention basins (which are four in number) should be implemented in the medium term by NCCG as part of the larger infrastructure implementation framework. However, appropriate land should be set aside at the project on-set.

### 8.8.3 Other Infrastructure

The rest of the proposed infrastructural facilities are proposed to be implemented alongside the houses and the sequence thereof is thus expected to be aligned to the proposed phasing of housing projects per estate. This is summarized in the table below.

ESTATE	PHASES OF HOUSING DEVELOPMENT	ESTATE SECTION	INFRASTRUCTURE PROPOSALS	TIME FRAME
Starehe	1	Meru Road section	<ul style="list-style-type: none"> <li>• Construction of nursery</li> <li>• Improvement of Meru road</li> </ul>	2019
	2	Starehe central section	<ul style="list-style-type: none"> <li>• Widening of Lumumba street</li> <li>• Development of open spaces within courts</li> </ul>	
Shauri Moyo	1	Government section (P-shaped block) next to Heshima primary school	<ul style="list-style-type: none"> <li>• Acquisition of Landhies estate to Industrial use</li> </ul>	
	2	County estate section bounded by Ahero and Bondo street and Kamukunji grounds	<ul style="list-style-type: none"> <li>• Development of light industrial park (Kamukunji)</li> <li>• Development of Burma market</li> <li>• Development of Kamukunji grounds</li> </ul>	
	3	Public works bounded by 1 <sup>st</sup> Avenue Eastleigh and Heshima Avenue		
Bahati	1	Area bound by Heshima road to the North, Jogoo road to the South and TB Clinic to the East	<ul style="list-style-type: none"> <li>• Establishment of Nyumba ya Wazee</li> <li>• Expansion of Bahati Social Hall</li> <li>• Establishment of service node</li> <li>• Establishment of Culture and heritage resource center</li> <li>• Acquisition of Bahati Playground</li> <li>• Establishment of a public square</li> <li>• Construction of a BRT Station</li> </ul>	2020-2024
	2	Area bound by Heshima road to the South next to Morrison road and Bahati primary school		
	3	Section along Nairobi River		
Maringo	1	BCR blocks within proposed node opposite Makadara Law Courts	<ul style="list-style-type: none"> <li>• Construction of furniture market(Warehouses)</li> <li>• Construction of TVET College and ICT hub</li> <li>• Construction of fire station</li> <li>• Construction of public park</li> <li>• Construction of Level 4 hospital</li> <li>• Construction of County Offices</li> </ul>	

			<ul style="list-style-type: none"> <li>• Bus station and silo parking</li> <li>• Community center/Social Hall</li> <li>• Redevelopment Kayole Ndogo shopping center</li> </ul>
	2	Area bound by Nile road to the East and Rukwa road to the South	
	3	Area along Nyasa road and opposite Makadara Law Courts	
Bondeni/Gikomba	1	Redevelopment of Gikomba market and associated infrastructure	<ul style="list-style-type: none"> <li>• Quarry road missing link</li> <li>• Development of Gikomba market</li> <li>• Development of a Bus and good terminus</li> <li>• Development freight termini</li> <li>• Expansion of Bondeni Dispensary</li> <li>• Improvement of Digo Road</li> <li>• Construction of a fire station along Digo Road</li> <li>• Rehabilitation of Nairobi River</li> </ul>
Bondeni	2	Residential zone in Bondeni action plan	<ul style="list-style-type: none"> <li>• Development of a public square (CORE centre, shopping centre and health facility)</li> </ul>
Gorofani	1	Phase 6	
	2	Section in between Lamu road and Eastleigh first avenue (Phase 7)	<ul style="list-style-type: none"> <li>• Construction of a primary school</li> <li>• Construction of handicraft centre</li> <li>• Rehabilitation of Nairobi River</li> </ul>
	3	Section in between Sakwero Road and Lamu Road(Phase 6)	
Jogoo and Landhies corridor		Entire corridor	<ul style="list-style-type: none"> <li>• Acquisition of Land</li> <li>• Widening of Jogoo road</li> <li>• Establishment of a BRT route</li> </ul>
Jericho	1	Section along Shule road and Buruburu road	<ul style="list-style-type: none"> <li>• Expansion of Jericho Social Hall</li> </ul>
	2	Section along Rabai Road and Buruburu Road	<ul style="list-style-type: none"> <li>•</li> </ul>
	3	Section near Jericho market	<ul style="list-style-type: none"> <li>• Improvement of estate internal street</li> </ul>
Lumumba	1	Section along Nile Road Next To Ofafa Jericho education complex	<ul style="list-style-type: none"> <li>• Expansion of Ofafa Jericho educational conference</li> </ul>
	2	Section in between Charles new and Rabai Road	<ul style="list-style-type: none"> <li>• Expansion of Lumumba Social Hall</li> <li>• Expansion of Camp Toyoyo</li> </ul>

			<ul style="list-style-type: none"> <li>• Expansion of Rabai Road Primary School</li> <li>• Construction of a police post</li> <li>• Construction of a car park</li> </ul>	
Entire planning area		Along Nairobi river from Buruburu Road	<ul style="list-style-type: none"> <li>• Construction of 25m road along Nairobi River</li> <li>• Construction of LRT Route</li> <li>• Establishment of public park along the road</li> </ul>	
Uhuru	1	Section Along Buruburu Road	<ul style="list-style-type: none"> <li>• Expansion of Buruburu Road</li> </ul>	
	2	Section along Rabai Road and next to Church of Christ in Africa	<ul style="list-style-type: none"> <li>• Expansion of Rabai Road</li> </ul>	
	3	Section along Rabai Road opposite to new mission Hospital	<ul style="list-style-type: none"> <li>• Improvement of estate internal street</li> </ul>	
Mbotela	1	Block next to Apollo Primary School		
	2	Block along Industrial Area and Jogoo road		
Kaloleni	1	Section along Jogoo road to the North and City Stadium to the West	<ul style="list-style-type: none"> <li>• Construction of fire station</li> <li>• Construction of conference facility and resort city</li> <li>• Construction of an open air Market</li> <li>• Construction of BRT station, bus park</li> <li>• Expansion of City Stadium to International Standards</li> </ul>	2025-2030
	2	Section along Stadium road and next to stadium	<ul style="list-style-type: none"> <li>• Construction of educational complex</li> <li>• Expansion of health centre</li> <li>• Expansion of social hall</li> </ul>	
	3	Section directly opposite the social hall		
	4	Section in between county resort city and educational complex		
Makongeni	1	2 first blocks next to Kaloleni primary school and along Dakar road		
	2	2 blocks immediately after Makongeni police station	<ul style="list-style-type: none"> <li>• Develop sports complex at Makongeni</li> <li>• Develop shopping centre</li> <li>• Expand health centre</li> <li>• Expand shopping centre</li> </ul>	
	3	Section in between Dakar Road and St. Joseph Apudo	<ul style="list-style-type: none"> <li>• Expand St. Joseph Apudo</li> <li>• Expand Makongeni Sec. school</li> </ul>	

	4.	Section next to public square(sports complex and shopping centre	
	5	Section along Dakar Road and opposite True foods	
	6	Section opposite KPLC substation	
	7	Dakar Road	<ul style="list-style-type: none"> <li>• Construction of an overpass</li> <li>• Improvement of Dakar road</li> </ul>
	8	Likoni Road	<ul style="list-style-type: none"> <li>• Improvement of Likoni Road</li> </ul>
Makadara RH	1	All the three blocks	<ul style="list-style-type: none"> <li>• Improve access roads</li> <li>• Construct proposed Bus Station</li> </ul>
New Pumwani	1	Maendeleo ya Wanawake section	<ul style="list-style-type: none"> <li>• Development of proposed 9m road</li> </ul>

## 8.9 LAND ACQUISITION

The total area of land that will need to be acquired from private owners is 18.87 Ha. This covers plots that are affected by road widening, newly proposed public facilities and expansion of NCCG housing in Makadara RH. They are shown on the map overleaf.

### 8.9.1 Acquisition for Road Widening

The roads to be widened have been specified in the plan and the road reserves of the existing major roads will be increased by 33.5%. The owners of the abutting land are expected to surrender areas affected by the road widening proposals and they will do so when making development applications such as change of use, extension of use, extension/renewal of lease and land subdivision and amalgamation. The affected areas will be surrendered free of cost.

Surrenders made during development application will aid in the incremental achievement of the desired road widths both by the county and the national governments. However, in case road development commences before all land owners release the required land surrenders, the government may have to acquire the remaining sections.

A second strategy is for the national or county government to acquire the affected areas from the private land owners. This should happen especially where a road development project is to take place and voluntary surrenders through development application has not led to the release of the affected land.

Based on the proposals made in this plan, a total of 18.03 Ha is to be acquired for road widening. Further details are tabulated below

Table 122: Land to be Acquired for Road Widening

No.	Road Name	Area affected (Ha)
1	Jogoo Rd	2.93
2	"Riverfront Rd"	2.50
3	Mumias South Rd	2.26
4	Muratina Rd	1.95
5	Eastleigh 1 <sup>st</sup> Avenue	1.16
6	General Waruinge	1.01
7	Juja Rd	0.71

8	Sonko Rd	0.69
9	Quarry Rd	0.69
10	Ambira Rd	0.64
11	Wangu Avenue	0.51
12	Uaso Rd	0.42
13	Heshima Avenue	0.37
14	Bondo St	0.30
15	Muinami St	0.28
16	Likoni Rd	0.24
17	Ahero St	0.21
18	DR Griffins	0.19
19	Rabai Rd	0.17
20	Ring Rd	0.15
21	Lamu Rd	0.14
22	Buruburu Rd	0.12
23	Park Road	0.09
24	Digo Rd	0.06
25	Meru Rd	0.06
26	New Rd California	0.05
27	Rabai Rd	0.05
28	Nile Rd	0.04
29	Lumbwa St	0.04
	<b>Total</b>	<b>18.03</b>

### **8.9.2 Acquisition for Developing Public Facilities**

The newly proposed public facilities that have been sited on land that is currently private include waste collection depot in Shauri Moyo estate (0.43 Ha) and sewer pretreatment facility in Blue Valley estate (0.37Ha). The total size of land the will need to be acquired in this respect is therefore 0.8 Ha.

### **8.9.3 Acquisition for Developing Public Houses**

An area of 0.04 Ha (covered by two plots) in Makadara/Hamza has been added to one of the current blocks of Makadara RH for the development of additional NCCG housing. This land will thus need to be acquired since it is currently sub-leased to private developers.

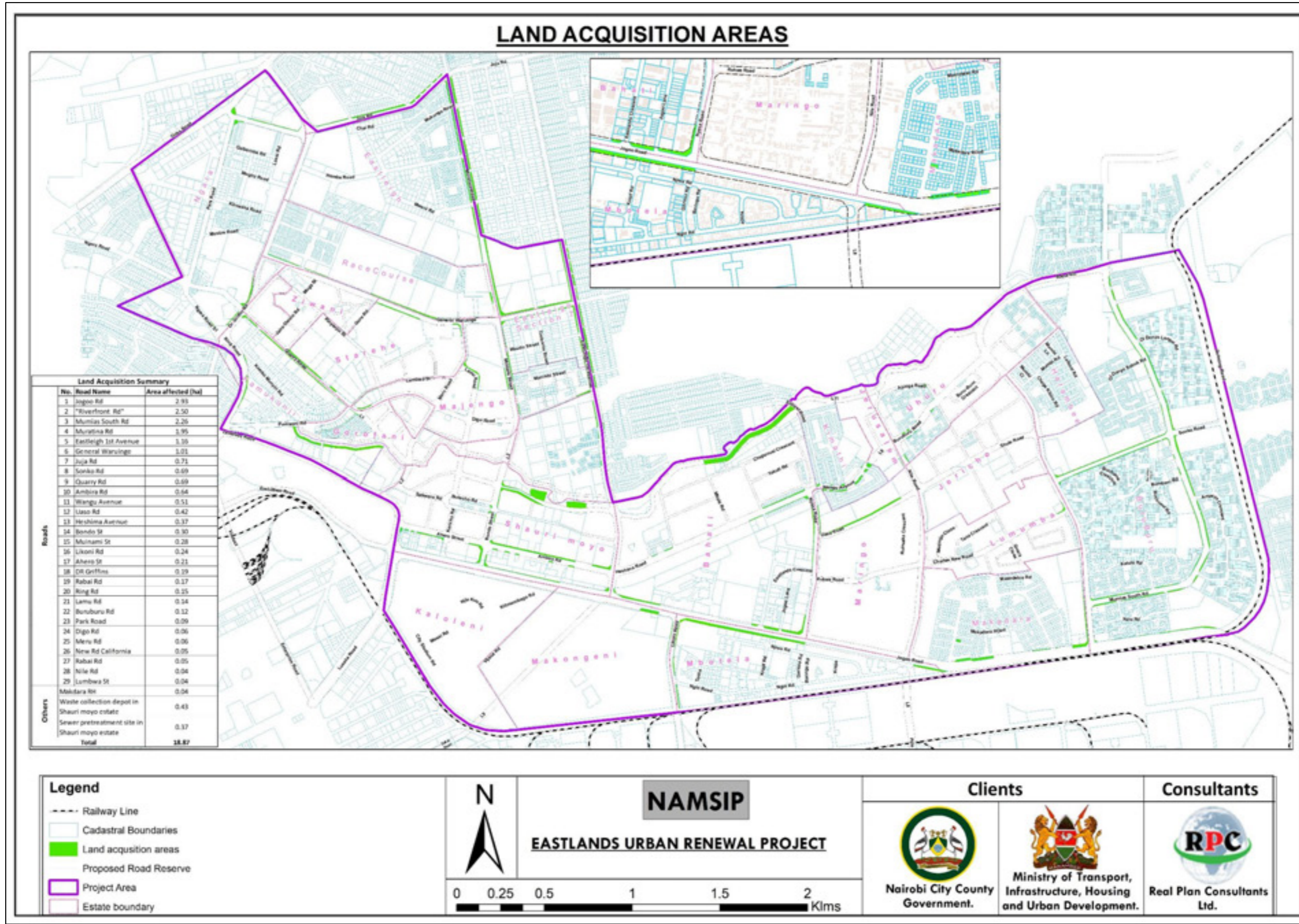


Figure 190: Areas for Land Acquisition

## 8.10 MONITORING AND EVALUATION STRATEGY

There is need to provide a means through which checks and balances can be undertaken in order to ensure that the projects are adequately implemented and the required outputs and outcomes realized. The monitoring and evaluation framework helps with this. It outlines the projects, expected outputs & outcomes, means of achieving them, institutions involved and indicators of success. This is shown the table below.

Table 123: Project Monitoring and Evaluation Framework

Sector	Nature of projects	No. of projects	Monitoring Institution(s)	Expected outcomes	Indicators of Success
Transportation	Road expansion projects	22	KURA MOTHUD NCCG NLC	<ul style="list-style-type: none"> <li>- Improved road transport system</li> <li>- Enhanced movement of people and goods</li> <li>- Improved traffic movement and road safety</li> <li>- Enhanced ease of movement of pedestrians and other NMT users</li> <li>- Improved rail transport services</li> <li>- Adequate terminal facilities</li> </ul>	<ul style="list-style-type: none"> <li>- Adequacy of road and railway network</li> <li>- Ease of traffic circulation</li> <li>- Level of road safety</li> <li>- Quality of transport services</li> </ul>
	Transit stations	3			
	BRT Corridors	10			
	Freight terminals	2			
Housing	Housing development (125,508 units)	1	KISIP/ County government	<ul style="list-style-type: none"> <li>- Increased housing stock in the planning area</li> <li>- Improved living environment of the concerned residents</li> </ul>	<ul style="list-style-type: none"> <li>- Sufficiency of housing</li> <li>- Quality of living environment</li> </ul>
Water and Sewerage	Rehabilitation of water piping network	1	Nairobi City Water and Sewerage Company  NCCG	<ul style="list-style-type: none"> <li>- Improved water supply</li> <li>- Better sanitation in the planning area</li> </ul>	<ul style="list-style-type: none"> <li>- Level of access to water and sewerage services</li> <li>- Level of sanitation</li> </ul>
	Elevated water storage tanks	10			
	Rehabilitation of sewer lines	1			
	Secondary sewer Pretreatment facilities	6			
Solid waste management	Solid waste collection 154 bins (each with a carrying capacity of 20 tons)	1	NCCG  NEMA	<ul style="list-style-type: none"> <li>- Improved solid waste management</li> </ul>	<ul style="list-style-type: none"> <li>- Quality of the living and working environment</li> </ul>
	Biogas processing	1			

	plant and slurry factory				
	Material Recovery Facility (Metal, glass and plastic waste)	1			
Storm water management	Storm water drainage network	1	Nairobi City County Government and KURA	<ul style="list-style-type: none"> <li>- Adequate storm water drainage infrastructure</li> <li>- Effective storm water drainage process</li> </ul>	<ul style="list-style-type: none"> <li>- The effectiveness of storm water drainage system</li> </ul>
	Storm water infiltration basins	4			
	Detention and retention basins	2			
	Storm water vegetative swales	1			
Energy	Expansion of electricity network	1	Ministry of Energy/ County Government	<ul style="list-style-type: none"> <li>- Improved access to electricity &amp; non-renewable energy</li> <li>- Reduced reliance on non-renewable sources of energy</li> </ul>	<ul style="list-style-type: none"> <li>- Extent of access to electricity and solar energy</li> </ul>
	48000 solar panels	1	Kenya Power		
	608 solar water heaters	1			
Education	Newly proposed education facilities	4	Ministry of Education, Science Technology	<ul style="list-style-type: none"> <li>- Efficient access to education</li> </ul>	<ul style="list-style-type: none"> <li>- Sufficiency of education facilities</li> <li>- Quality of education</li> </ul>
	Land acquisition for Expanded schools	3	County Gov't		
	Stream increment in 31 schools	1			
Health	Newly proposed	1	Ministry of Health/	<ul style="list-style-type: none"> <li>- Enhanced healthcare</li> </ul>	<ul style="list-style-type: none"> <li>- Sufficiency of health facilities</li> <li>- Quality of healthcare</li> </ul>
	Upgrade of existing facilities	5	County Government		
Community Facilities	New social hall	1	County Gov't	<ul style="list-style-type: none"> <li>- Improved access to social services</li> <li>- Increased of social integration in the community</li> <li>- Better skill development</li> </ul>	<ul style="list-style-type: none"> <li>- Sufficiency of community facilities</li> <li>- Quality of social services</li> <li>- Level of skill development</li> </ul>
	Upgrade of 11 social halls	1			
	Land acquisition for	1			

	expansion of 1 social hall			<ul style="list-style-type: none"> <li>- Reduced level of idling by the youth</li> <li>- Improved access to information</li> </ul>	<ul style="list-style-type: none"> <li>- Level of social cohesion</li> <li>- Innovation levels of individuals, businesses and institutions</li> </ul>
	Rehabilitation centers	4			
	Homes for the elderly	2			
	Upgrade of existing libraries	2			
	Equipping of 14 existing security facilities	1			
	New police stations	2			
	Expanded stadia	3			
	New fire station.	1			
	Fire hydrants and engines within sub-county offices in Bondeni and Maringo	1			
	Newly proposed recreational facilities	3			
	Upgrade of existing recreational facilities	10			
Environment	Nairobi River Revitalization	1	Ministry of Environment and Natural Resources/ County government  NEMA and WRA	<ul style="list-style-type: none"> <li>- Clean water in Nairobi river</li> <li>- A protected riparian land with high environmental quality</li> </ul>	<ul style="list-style-type: none"> <li>- Quality of Nairobi River waters and the riparian area</li> </ul>

Commerce and Industrialization	Market Redevelopment  (Gikomba, Kariokor, Uhuru, Burma, Jericho, Jua Kali Kamukunji, New Burma and proposed Kaloleni and furniture markets	1	Nairobi City County Government and UDD  Residents	<ul style="list-style-type: none"> <li>- Increased employment opportunities</li> <li>- Improved household income</li> <li>- Improved government revenue</li> </ul>	<ul style="list-style-type: none"> <li>- No of business and light industrial enterprises established</li> <li>- Production levels in the commercial and industrial sectors</li> <li>- Employment levels</li> <li>- Income levels of workers</li> <li>- Amount of business revenue accruing to government</li> </ul>
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## 8.11 RISKS AND UNCERTAINTIES

The following are risks that need to be mitigated against to enable the program achieve its objectives.

### 1. Outcome of Stakeholder Consultations

Most of the sitting tenants feel that since they have been living in the houses for many years, the houses should be transferred to them at no cost or at a minimal price. They also do not trust the exercise as because of fear of exclusion once the fats are completed. This fear has been squashed after explaining that there will be no relocation since the initial construction will start in open spaces. Worse still are tenants who have constructed extensions (Mihoroto) in their compounds. The extensions are in most cases income generating activities for the lessees of the main houses. These tenants are aware that they will lose incomes once they move to the new houses. They are therefore the main opposers of the renovation project.

### 2. Financial Risks

Macroeconomic instability has ambiguous effects on the economic and social development of a country. The financing of the construction component is what can be termed as a quick win. With inadequate funding, the implementation of the project will not be delayed thereby casting doubts on its future and its economic and financial viability. It is therefore necessary that a concerted effort is made to mobilize fund on time.

### 3. Macroeconomic Risks

Macroeconomic instability has ambiguous effects on the economic and social development of a country. Microeconomic stability is a necessary condition for the development of an economic policy based on macroeconomic balance. The factors that underlie economic stability include stabilization of prices, continued increase in production of goods and services, manageable budget deficits, stable currency exchange rates, interest rates that encourage investments and a manageable domestic and external debt that does not siphon funds from productive investment. Stable macroeconomic environment is crucial to this 20-year housing renewal project. Thus, proper management of the country's fiscal and monetary policies is key to avoiding macroeconomic risks. Changing international environment is also a risk to macroeconomic management of a country.

#### **4. Project Risks**

Project risks are uncertainties that can expose a project to potential failure. Poor leadership is usually a common problem which projects planners might not be aware of during project initiation. Too often project planners are often excited at the start but interest wanes as the complexity of the project emerges. Staff problems also emerge as the project team's turnover causes lack of continuity and loss of morale. There is also the risk of budget control issues such as cost overruns. Budget estimates are based on forward-looking estimates and typically involve some degree of uncertainty.

Identifying, evaluating and treating risks should therefore be an ongoing project management activity that seeks to improve project results by avoiding, reducing or transferring risks. Project risk management also provides stakeholders with visibility and clarifies accountability for accepted risks.

#### **5. Balance between Infrastructure Development, Institutional and Legal Issues**

This is an integrated project that requires coordination and integration of project activities together with budgeting. Disjointed planning and implementation will not produce the required results. Road construction and widening should be done where housing units are to be constructed. Annual Work Plans and Budgets of the implementing agencies should be properly coordinated and simultaneously funded. This will avoid delays due to unfunded sub components.

#### **6. Political Good Will and Governance**

Political good will from the national and county government is necessary if this project is to succeed. The chance of political events likely to disrupt the project should be avoided.

### **8.12 CONCLUSION**

The magnitude of this project is notably substantial. The financial costs are high and potential risks significant. The stakeholder interests are also as diverse as the expected institutional responsibilities. As such, proper inter-institutional coordination is inevitably necessary in the implementation process. The proposed implementation framework thus cuts across all the aspects that need be handled tactfully in order to achieve project success.

## **CHAPTER NINE**

### **SUMMARY AND CONCLUSION**

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This plan has addressed the various planning and developmental challenges experienced in the project area. The proposals are based on an urban renewal framework that emphasizes on the need to enhance access to affordable housing, revitalize the economy, improve connectivity, preserve the rich heritage of the area, conserve the environment, enhance public spaces and facilitate sustainable development in general. The framework also outlines the specific redevelopment approaches that are applicable in the different estates. They are mainly three, including renovation, selective and total redevelopment.

Special focus has been given to the various thematic areas including housing, economy, transport, water and sanitation, energy, education, health, recreation and environment among others. In terms of housing, the stock within the government estates has been increased to about 125,508 from the current 16,569, considering a mix of building heights of 5, 8, 12 and 16 levels. For the private estate development control guidelines have been provided to guide the property owners in redeveloping their land. Specific ground coverage and plot ratios have been recommended for each private estate and shopping centre.

In the economic sector, the additional work area provided is 8.7 ha, which translates to a total Gross Leasable Area of 353 Ha. The number of employment opportunities have also been increased from about 67692 to about 407,352. This is equivalent to 600% job increment. The Gross monthly incomes and annual government revenue are also expected to increase significantly. It is estimated that the former will increase from Ksh. 875 million to 5.3 billion while the latter will shoot to Ksh. 8.3 billion from the current Ksh. 4.4 million.

An elaborate infrastructure improvement strategy has also been developed. Proposals to improve transportation, water supply, sanitation, energy supply, storm water drainage and provision of various social facilities have also been made. The environmental strategy provides for revitalization of Nairobi River, disaster management and improvement of waste management system in Eastlands. The plan also provides estate specific action plans which respond to unique issues per estate.

A plan implementation strategy has been proposed. It outlines the specific implementable projects per sector, recommends the potential implementers and financiers and sets their roles and provides a PPP framework, a resettlement strategy and a Monitoring and Evaluation Strategy.

Finally, the plan has been prepared in due consideration of the views and aspirations of the stakeholders. The views were captured during the series of public participation forums organized at various stages of plan preparation.

Given the magnitude of the project area, it is recommended that the implementation of the urban renewal program must be phased. Initially, it should start with pilot projects before the roll out of the rest of the project. It is also recommended that the implementation of any housing project should be preceded by an enumeration and identification of beneficiaries from the sitting tenants. This will help enhance the success for the renewal project.

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