



**LOCAL PHYSICAL AND  
LAND USE DEVELOPMENT PLAN  
FOR  
NAIROBI RAILWAY CITY  
(2020-2035)**



**PLAN NO. UP/UPR&S/RC/ZONE1/180/19**

**Prepared by:**

**DOHWA**  
Engineering Co.,LTD.

**GIBB Africa**  
CONSULTING • DESIGN • MANAGEMENT

**September 2020**

---

### **Certification**

I certify that this plan has been prepared by the consultant following the guidelines in the Physical and Land Use Planning Act (2019), Urban Areas and Cities Act 2011 and County Governments Act (2012) of the laws of Kenya. The plan preparation has been guided by and conforms to various planning standards and best practices. The finalised plan is hereby submitted to the client for approval.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Lead Consulting Planner,  
Plan. Peter M. Kibinda, FKIP  
RPP 006**

---

## APPROVAL

---

### Certificate

This plan has been prepared and submitted for approval as per the requirements of the Physical and Land Use Planning Act, 2019.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Plan. Ann M. Mugo**  
**Project Supervisor**

---

### Recommended

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**County Executive Committee Member in Charge of Physical and Land Use Planning**

---

### Approval

Hansard No: \_\_\_\_\_

Date: \_\_\_\_\_

**County Assembly**

---

### Endorsed

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**H.E the Governor**



# FOREWORD

The Kenya Railways (KR) in cooperation with the Nairobi City County Government (NCCG) and the Ministry of Transport, Infrastructure, Housing, Urban Development & Public Works (MOTIHUD&PW) has prepared a plan for the Nairobi Central Railway Station and its surrounding areas into the Nairobi Railway City (hereinafter “Railway City”). Due its strategic location, the Nairobi station area will be developed into core for the Nairobi Multimodal Transport System with a modern central station incorporating mixed use commercial developments, housing and intermodal transport facilities. It will serve as a functional, urban centerpiece for Nairobi’s growing global reputation as a leading modern city.

DOHWA Engineering in joint venture with GIBB Africa were contracted to provide the Consulting Services for Preparation of Urban Plans, Urban Designs, Economic/Finance and Implementation Study, as one of Nairobi Metropolitan Services Improvement Project (NaMSIP) projects, funded by World Bank. The Consultant conducted various studies aiming at capturing the demand for preparing viable land development and urban planning for the future of Nairobi.

The project is one of the priority projects identified in the NIUPLAN as a strategy to expand Nairobi’s Central Business District (CBD) and forms part of core strategy for regeneration of Nairobi city and plugs into the Kenya Vision 2030 objectives.

The project culminates in the development of The Local Physical and Land Use Development Plan for Nairobi Railway City (2020-2035). The project area has its origin in the colonial era and the Nairobi central station has not fully optimized its location and historical advantages. The land is underutilized as it is occupied by the railway station, working yards, KR offices, public facilities, and industrial facilities without a proper plan to integrate these functions. The site has great potential of redevelopment as it is designated as an expanded CBD area in high-level plans such as the NIUPLAN.

Preparing a well-organized redevelopment plan based on the present condition analysis and integrating various opinions of stakeholder will revitalize the area and help it function as the expanded CBD area that will be planned and developed in ways that will improve the quality of the urban environment, create a 24-hour city with mixed used urban programs. In addition, the proposed new transportation networks will result in the creation of a multi-modal transport hub and connect the missing links relieving the traffic congestion. The Plan prioritizes Non-Motorized Transport (NMT), with a dominant NMT loop and pedestrian routes well integrated into the area’s plan. The redeveloped area is projected to attract local and global investments, accommodate new urban programs which will provide employment, and generate revenue.

The approach adopted during the preparation of the Plan was highly participatory, collaborative and consultative. The process brought on board participants from diverse backgrounds including National Government ministries, departments, agencies, Nairobi City County governments, professionals, the academia, civil society, non-state actors among others. This is not only in conformity with the Constitutional requirements on public participation in policy making but it is hoped that this will provide the requisite basis for the implementation of the Plan.

It is important that the implementation of this plan is prioritized so as to deal with some of the challenges experienced in the Nairobi Central Business District such as traffic due to the missing links and poor urban environment within the Plan area due to urban decay. The Plan also creates a model for future redevelopment plans on sustainability urban design principles such prioritizing NMT, provision of adequate public open spaces and integration of different transport modes. Let us all individually and collectively commit ourselves to the realization of the he Local Physical and Land Use Development Plan for Nairobi Railway City (2020-2035).

# PREFACE

The Local Physical and Land Use Development Plan for Nairobi Railway City (2020-2035) aim is to guide the redevelopment of the Nairobi Central Railway Station and its surrounding areas into an Iconic, Multi-Modal, Transit Oriented, and Urban Development. The Nairobi station area is strategically located and it will serve as a functional and cohesive nerve center for the Nairobi Multimodal Transport System with a modern central station incorporating mixed use commercial developments, housing and intermodal transport facilities.

The project is one of the priority projects identified in the NIUPLAN as a strategy to expand Nairobi's Central Business District (CBD) and forms part of core strategy for regeneration of Nairobi city. The project aims at accruing both economic and social benefits for the residents of Nairobi and it shall open the CBD for growth towards the southern area of city, integrating the northern and southern parts of the city across the existing rail track barriers.

The project main objectives were:

- To prepare a participatory, economically feasible, socially and environmentally sustainable urban plan, that complements the existing CBD which is currently at its optimal development capacity;
- To expand the Nairobi CBD by filling the missing gaps in development and integration of the existing spatial structure of the CBD; and
- To promote the global competitiveness of Kenya's capital city, Nairobi.

The National Spatial Plan 2019 advocates for the preparation of a land use plan at the national level and actualization of spatial frameworks for orderly management of human activities to ensure that such activities are carried out while considering aspects of economy, safety, aesthetics, harmony and environmental sustainability principles and the Plan is prepared in accordance to this principle.

The Plan covers a total area of 176ha (435acres) with the general boundary of the area defined by the following major roads: Haille Sellasie Avenue to the north, Ladhies Road to the east, Bunyala Road joining the intersection of Lusaka Road-Ladhies Road junction to the south and Uhuru Highway to the west. The site comprises; the Nairobi Railway Station, the Kenya Railways offices, Railway workshops and yards, Kenya Railways Museum, Technical University of Kenya, Markets (Wakulima and Muthurwa), Residential areas (Landie Mawe, Muthurwa), Barracks, Sports facilities, Police offices and quarters, Bus terminus and the Easy Coach yard.

The Plan aims at optimizing the area's potential while mitigating the challenges. The preparation of the Plan commenced with the development of a schematic layout by layering the Network and Program layers ensuring alignment with the TOD concept. The network layer included the requirements of connecting missing links and pedestrian walkways. The program layer is composed of the basic scheme urban functions that a TOD requires such as retail, office, and housing. Three options with a distinct urban form were developed and these options were presented to various stakeholders for discussion, inputs and validation.

Public participation was a key component of the planning exercise with a robust stakeholder strategy applied throughout the process. The stakeholders included the general public, the community within the Railway City precincts, neighboring community, Kenya Railways, government institutions, the media, civil society, business community, learning institutions, among others. Several stakeholder meetings were held with the different groups in various forms that included thematic workshops, high level meetings and public meetings among others. The discussion at the County Level Workshop gave the direction for the final option which can be summarized as adoption of 3 urban core concepts, integration of pedestrian

traffic with commercial activities with a dominant NMT loop and a landmark central station and square.

The Land use planning and implementation are based on the Physical and Land Use Planning Act, 2019. Other key documents that guided the land use planning include the Constitution of Kenya 2010, the Kenya Vision 2030 and the Big 4 Agenda, National Land Use Plan, Spatial Planning Concept for Nairobi Metropolitan Region, Nairobi Integrated Urban Development Master Plan, 2014 (NIUPLAN), Nairobi Metro 2030 Strategy, the National Urban Development Policy and the National Spatial Plan.

The phasing plan divides the project area into “the Development Area” and “the Planning Area”. The Development area will be developed and implemented as per the Plan, while the Planning Area will be developed in consultation with land owners based on development guidelines of the Project.

The establishment of The Railway City Development Authority to this body which shall oversee and facilitate the implementation is proposed. Overall the Plan will be socio-economic transformation catalyst for Nairobi and will contribute to the attainment of the Kenya Vision 2030 aspiration of making the county globally competitive.

# ACKNOWLEDGEMENT

James W. Macharia, EGH	Cabinet Secretary, Ministry of Transport, Infrastructure, Housing, Urban Development & Public Works
Charles Hinga, CBS	Principal Secretary, State Department for Housing and Urban Development
Eng. B. K. Njenga	Ag. Secretary, Urban and Metropolitan Development and NaMSIP Coordinator
Philip Mainga	Managing Director, Kenya Railways
Augustine Masinde, EBS	National Director of Physical Planning
Eng. John Maina	Former NaMSIP Coordinator

## The World Bank Team

Gyongshim An, TTL  
Sheila Kamunyori, Senior Urban Specialist  
Monica Karangi, Urban Specialist  
Lilian Kahindo, Safeguards Specialist  
Yondela Silimela, Senior Urban Specialist  
Andrea Rohde, Former TTL  
Pascaline Ndungu, Former Co-TTL  
Pedro Ortiz, Senior World Bank Urban Specialist  
Donna Rubinoff, Senior World Bank Urban Specialist

## UN Habitat

Klos Glas  
Marco Kamiya  
Dr Grace Lubaale  
Salvatore Fundaro

## The Project Team

### Department of Metropolitan Development

Plan. Ann M. Mugo (Project Supervisor & PIT Chair)  
Plan. Dan Kiara (Former Project Supervisor)  
Dr. Plan. Juliana Mutua (Former Project Supervisor)  
Plan. Mutua Mutisya  
Peter Bundi, Environmental Expert  
Peter Muriithi, GIS Expert  
Eng. Silas Gitau  
Alex Maroko  
Kevin Onjiko  
Kevin Gitau  
Michael Ibabu  
Barbara Bikala  
Mercy Kirema

## NCCG

Plan. Ruth Waruguru  
Eng. Kinyua Wamugunda  
Plan. Patrick Analo

Plan. Raphael Kazungu  
Eng. Sammy Muthama  
Plan. Martha Muthoni  
Nimrod Masaka  
Plan. Rose Muema

#### Kenya Railways

Dr. Eng. Mucemi Gakuru (PIT Co-Chair)  
Milly Omido  
Eng. Tobias Otieno  
Eng. James Maina  
Elijah Nyamu  
Thuranira Kinagwi

#### Kenya Airports Authority

Fred Odawo  
Rashid Abdullahi

Assistant NaMSIP Coordinator: Dr. Eng. Anthony Moire

Urban Planner Consultant for NaMSIP: Plan. Esther M. Githinji

#### Environmental and Social Experts Consultants for NaMSIP

Eng. Stephen Mwaura  
Dr. Edward Ontita

#### Communication Experts consultants for NaMSIP

Emily Mworira  
Jennifer Mbugua

#### The Consultant

##### Dohwa Engineering (South Korea)

Kim Hyongbok, Lim Dongwon, Park Nojun, Ko Hyeri, Kang Sunjun, Yim Minho, Yoo Changmin, Hong Chulkee, Moon Jaesuk, Cho Gyutae, Lim Gyoungmo, Ahn Hyerin, Kong Hyelim with Plan. Peter Kibinda (local planner)

##### GIBB Africa (Kenya)

Mark Gitahi, Silas Ngari, Benedict Mbindah, Thomas Ndeda, Charles Kanjama, Wambui Gachago, Edgar Kamara, Njeru Benson, Tom Omenda, Anastacia Ngatti, Grace Munjuri, George Wandera, Aggrey Kwadha, Morris Omolo, Terry Odula

# EXECUTIVE SUMMARY

## Introduction

The Ministry of Transport and Infrastructure, Housing and Urban Development and Public Works, in collaboration with Kenya Railways and the Nairobi City County Government, intends to redevelop the Nairobi Central Railway Station and its surrounding areas into an Iconic, Multi-Modal, Transit Oriented, Urban Development dubbed "The Nairobi Railway City". Owing to its strategic location, the Nairobi station area will be developed into an iconic nerve center for the Nairobi Multimodal Transport System with a world class new central station incorporating mixed use commercial developments, housing and intermodal transport facilities. It will serve as a functional, urban centerpiece for Nairobi's growing global reputation as a leading modern city.

The Project is significant nationally as it forms part of core strategy for regeneration of Nairobi City. It is one of the priority projects identified in the NIUPLAN as a strategy to expand Nairobi's Central Business District (CBD). The redevelopment will create equilibrium between social benefits and economic returns. It will also reduce pressure on the CBD growth by opening up the large area to the south and integrating the northern and southern parts of the city across the existing rail track barriers.

The project main objectives are:

- To prepare a participatory, economically feasible, socially and environmentally sustainable urban plan, that complements the existing CBD which is currently at its optimal development capacity;
- To expand the Nairobi CBD by filling the missing gaps in development and integration of the existing spatial structure of the CBD; and
- To promote the global competitiveness of Kenya's capital city, Nairobi.

## Planning Context

**Location of the planning area-** The project site is located at the center of Nairobi City and is surrounded by the industrial area to the south, the CBD area to the north and decrepit residential houses on the eastern side. The total area is 176ha (435acres). The site is composed of; the Nairobi Railway Station, Kenya Railways offices, Railway workshops and yards, Kenya Railways Museum, Technical University of Kenya, Markets (Wakulima and Muthurwa), Residential areas (Landie Mawe, Muthurwa), Barracks, Sports facilities, Police offices and quarters, Bus terminus and the Easy Coach yard. The general boundary of the area can be defined by the following major roads: Haille Sellasie Avenue to the north, Ladhies Road to the east, Bunyala Road joining the intersection of Lusaka Road-Ladhies Road junction to the south and Uhuru Highway to the west.

**Historic perspective of planning area-** The project area has historical significance as it was the genesis of urban development in Nairobi. From the first plan of Nairobi City in 1898 by a British railway engineer, the Nairobi Station was the same location as it is today. When the railway tracks were started to be laid, the history of Nairobi starts as a transportation center, which later becomes a greater city of Nairobi as global gate way city of Eastern Africa. In an effort to preserve history, some of the existing buildings will be rehabilitated for reuse or relocated to another part of the project site.

**Relevant Studies and Projects** - There are a number of projects/studies (ongoing and complete), targeting the project area and the larger Nairobi region. The previous studies such as NIUPLAN act as base for the proposed project. Main relevant projects are on the followings

- Nairobi Urban Transport Study, 2006, (NUTRANS)
- Kenya Railways Master Plan, 2009
- Mass Rapid Transit System Study, 2011 (MRTS)
- Spatial Planning Concept for Nairobi Metropolitan Region, 2013
- Nairobi Integrated Urban Plan, 2014 (NIUPLAN)
- MRTS Harmonisation Study, 2014
- A Green Mall street bus station in Nairobi railway station and its surrounding, 2016
- Interdisciplinary Land-use and Transport Metropolitan Analysis within Nairobi Metropolitan Region (ILUT), 2018

**Planning approaches and principles** – The Plan paid special attention to the issues of integrated multi-modal transportation, sustainability of economic, social and environmental aspects, which make the project to be a world class TOD development.

### **Legal and Institutional Framework**

The legal and policy framework outlines the various statutes, regulations and policies which are relevant to the actualization of various elements of the Plan. Land use planning and implementation options are some of the key considerations, based on the Physical and Land Use Planning Act (2019). In addition, other relevant policies as regards the political, economic, social, and other aspects that influence the development of the Plan are analyzed. Key policy documents analyzed include, the Constitution of Kenya 2010, the Kenya Vision 2030 and the Big 4 Agenda, National Land Use Plan, Spatial Planning Concept for Nairobi Metropolitan Region, Nairobi Integrated Urban Development Master Plan, 2014 (NIUPLAN), Nairobi Metro 2030 Strategy and the National Urban Development Policy.

This section also covers the project governance and institutional framework models that may be adopted by the Project, but also considering the fact that there is already gazetted a Development Authority (Railway City Development Authority) which shall be the implementing authority for the Project.

### **Situation Analysis**

**Physical characteristics-** The planning area is located in a flatty terrain with gentle slope southwards about 5% on average altitude at 1,660m. An unnamed tributary of the Ngong River enters the planning area and exits the site through Bunyala Road.

**Topography and physical Features** - The project area is generally flat with a gentle southwards slope with an average gradient of 5% making the area suitable for development. The aquatic ecology analysis shows that an unnamed tributary of the Ngong River flows through Uhuru Park into the Railway Golf Club before it flows into the planning site exiting the site on the Bunyala Road side. The tributary shall be conserved and the area used as a passive recreation area.

**Land use pattern of surrounding areas** - The northern part of the planning area is the CBD, composed of government agencies, banks and businesses. The western area named as Upper hill are connected to the planning area by green space including Kenya Railway Golf Course as an important asset for the MICE industry. Eastern area confronts the Eastlands as one of main residential area in Nairobi. Southern area is mainly occupied by industrial plot which continues a workshop area from the railway station. The Plan seeks to link those heterogeneous urban landscapes in terms of economic, social and urban landscape.

**Public Utilities-** The existing drainage structures need to be improved to rectify inadequacy, siltation, and blockage. Water supply, wastewater treatment and power supply analysis show that these are adequate for the proposed development.

**Transportation and road network-** In the planning area, 3 missing links (Enterprise Road, Workshop Road, and Commercial Road) are the main cause of the traffic congestion of the Nairobi CBD. Railway tracks in the project area create a barrier effect between the CBD and other parts of Nairobi. Commuter rail services and non-motorised transport modes are of low quality and are inadequate. The plan therefore aims at creating a Transit Oriented Development (TOD) that improves the transport system and the existing urban environment.

**Real estate analysis** – it aims at informing the design and implementation team on the current market conditions with a view of determining the most optimal mix for the proposed project. The analysis is also to be used as inputs for the various financial models so as to determine and maximize returns. This section also analyses demand and supply for the different types of developments i.e. Residential, Retail, Office, MICE, etc. The proposed Railway City is part of the greater proposed Urban Renewal projects in the Nairobi metropolitan region. The vision for the development should be to transform the Nairobi CBD area into an ultra-modern urban center with facilities competing with more developed cities of the World. The development should be viewed as complementing sited recent redevelopments with a possibility of eventually leading to Nairobi CBD revitalization as a working, recreational, investment, and living destination. In contrast to buyers in elsewhere in Nairobi, buyers of the project site will have relatively easy access to other areas in Nairobi since they will be at the heart of the railway central station.

## **Land Use Plan**

The Plan addresses the strategic positioning of Nairobi city. The Plan envisions the Greater CBD concept which is in line with the concept outlined in the NIUPLAN. East African Gateway, and Central station as an Inland Global Gateway. Multiple plenary and group discussions such as Visioning workshops were held in an effort to develop the vision for the Plan. Four Pillars – Economy, Transport, Urban space and Sociality- were selected as the core items in line with the NIUPLAN. The selected vision was “Nairobi Railway City as a Sustainable (economic), Integrated (transport), Iconic (urban space) City for all (sociality).”

The schematic layout was developed by layering the Network and Program layers to ensure alignment with the TOD concept. The Network layer comprised the requirements of connecting missing links and pedestrian walkways. The Program layer included the basic scheme of allocation of multiple urban functions that a TOD requires such as retail, office, and housing. Overlaying the two layers was the starting point of the layout plan used for optional studies.

Three options have been outlined with a different urban form respectively. Option A focuses on the grid form with a center core concept with two housing blocks in the east and west areas. Option B has a circular shape with a fan shaped square creating a strong symbolic spatial image. Option C emphasizes the linkage between east and west by a grand green axis, linking the Upper hill area to the Eastlands area. The discussion at the County Level Workshop gave the direction for the final option as follows:

- Adoption of the 3 urban cores concept (MICE Core - West, Center and East Core);
- Integration of pedestrian walkways with commercial activities;
- Have a symbolic central station and square;
- Have linkage between all directions via an NMT loop.

**Spatial Framework** - While developing the layout plan, the three urban cores were treated as magnets in their respective areas, acting as development catalysts. Between the core areas, diverse urban programs are interwoven with an NMT way, providing easy access to each urban plot. This NMT way expands the existing pedestrian network creating a walkable CBD, resulting in decrease in the vehicular traffic volumes. The symbolic central station and a fan-

shaped square will be the final linchpin structure of the future of Nairobi CBD. The new station will be accessed through public walkways providing a physical link from the existing CBD to the south and from east to west. These physical linkages will promote economic, social and environmental transactions of each area.

### **Strategic Sectoral Plans**

The transportation plan promotes the idea of a multi-modal hub at the new central station. The Plan suggests the design of the railway station to be a smooth and efficient transit center referred to as the Kiss and Ride concept. The BRT system, airport transfers and public service vehicles should be integrated with this transit center.

The infrastructure plan focuses on making an efficient water supply, sewage and power network. For storm water management, the two rivers will be the main discharging points, i.e. Ngong River for the west and Nairobi River for the east. A common duct for utilities and waste water recycling systems are also proposed.

The strategic environment and social management plan is prepared to show how specific concerns and mitigation measures can be addressed through the implementation of the Plan.

### **Urban Design: Development Guideline**

The Plan has 11 precincts (zones). Each precinct has a specific location character, different neighbors, specific urban function and typology creating a unique place identity.

The 11 precincts (zones) are:

- MICE Core;
- Center Core;
- East Core;
- Government Office;
- Kenya Railways;
- New Central Station;
- Railway Front Commercial;
- Street Commercial;
- International Office;
- Housing; and
- High-tech Industry,

A Mixed-use approach is one of the key guiding principles of the Plan. Most of the precincts have both commercial and housing programs, aiming at 24-hour urban system, with majority of commercial activities taking place during day time and the housing element acting as a night time keeper.

Preserving and strengthening the historical heritage is another key consideration. The Street Commercial precinct has similar urban fabric with that of the existing CBD to ensure a continuous spatial perception. Some of the historical buildings include the Easy Coach building, the Station building, the Kenya Railway headquarters and the Wakulima Market structures. Some of these buildings shall be preserved, relocated near the original site, or rehabilitated for new functions. These historic buildings are the key elements that will preserve the original Nairobi in the new city.

Development guidelines shall be provided for both the private and public developments to ensure uniformity of proposed land uses as shown in the spatial scheme and detailed land use

plan. However, these guidelines shall allow room for individual developers to create unique buildings.

## **Implementation Framework**

**Total cost** - The total cost of the project is estimated to be Khs 60,599,098,000, inclusive of tax. The major cost is railway infrastructure, i.e. laying the new track, superstructure (61.5%), followed by Water supply (9.9%), Roads and Pavement (5.1%), and Earthwork (4.4%), etc.

**Phasing plan** - The phasing plan divides the project area into “the Development Area” and “the Planning Area” determined by the land ownership status with the former owned by KR whereas the latter is non-KR land. The Development area will be developed and implemented as per the Plan, while the Planning Area will be developed in consultation with owners based on development guidelines of the Project. The Development Area will be developed in two phases to be completed in 5 years. The duration for the first phase is based on timeline required for development of the railway infrastructure including a new station building which is estimated to require a 3-year development period. In addition to the railway infrastructure, the first phase will include implementation of arterial roads such as the Workshop Road and the Government office. These public investments can be funded by the government. In the second phase, the remaining railway infrastructure is to be realized. The KR zone and Station front commercial precinct also are planned to be completed in this phase. Land will be sold to private investors in the three cores namely, Street Commercial, and International Offices and the Housing precinct.

**Business plan** - The successful implementation of the Plan will fully rely on funds set aside by the national government through the national treasury. The project is termed as one of national importance and therefore can be fully funded by the government under the oversight of a development authority. Income for running the day-to-day operations as well as the overall profitability of the established development authority, upon completion, will be sourced from proceeds of the sale and/or lease of designated serviced plots to make it an almost self-sustainable project. Therefore, the sales and/or leasing revenues will be targeted towards at least breaking even with the implementation costs throughout the 2No. phases of the project.

**Financial and economic analysis** - A cost benefit analysis has been undertaken as part of the economic appraisal of the project under the financial modelling for the proposed project. The measures of project worth used are the Economic Internal Rate of Return (EIRR) and Net Present Value (NPV) at a discount rate of 12%. The costs considered are construction costs, statutory fees, professional fees, and the cost of compensation related to acquisition of parcels of land privately owned. For the operating phase, the costs incorporated are sales expenses and legal fees. The economic investment cost under the base case scenario is estimated at Kes 89.4 billion and would be disbursed over five years from 2020 to 2025. Residual value at the end of forecast period has been incorporated so as not to underestimate the benefits of the project given that the design life of the project assets is longer than the model’s forecast period.

**Communication strategies and activities** – In order to make a successful project, it is important to communicate effectively with the different audiences and stakeholders. In the Plan, it is suggested that principles for the communication, diverse communication channels and tactics including web base media and Public Launch.

## **Stakeholder engagement**

The stakeholder consultations and civic engagement process to help develop an inclusive plan commenced on 07 July 2017. Among numerous activities, main events were held including Visioning workshop, two Thematic group workshops, two major County level workshops, Muthurwa Barraza, and MCA workshop. Those events and consultations triggered public awakening about the project and resulted in useful feedback for refinement of the Plan.

# TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>vi</b>
<b>TABLE OF CONTENTS .....</b>	<b>xi</b>
<b>LIST OF FIGURES .....</b>	<b>xvi</b>
<b>LIST OF TABLES .....</b>	<b>xxi</b>
<b>ABBREVIATIONS AND ACRONYMS .....</b>	<b>xxiv</b>
<b>Chapter 1. INTRODUCTION.....</b>	<b>1</b>
1.1 Background .....	1
1.2 Justification for the Plan .....	1
1.3 Vision and Objectives .....	2
1.4 Scope <sup>2</sup>	
1.4.1 Project Location .....	2
1.4.2 Project Area .....	2
1.4.3 Plan Expectations .....	3
1.5 Expected Outputs .....	3
1.5.1 Urban Environment.....	3
1.5.2 Transportation.....	3
1.5.3 Economy.....	4
1.6 Methodology .....	4
1.7 Arrangement of the Report.....	5
<b>Chapter 2. PLANNING CONTEXT .....</b>	<b>7</b>
2.1 Location of the Planning Area .....	7
2.2 Historical Perspective of Planning of Nairobi and the Planning Area .....	9
2.2.1 First Plan of Nairobi City in 1898 .....	9
2.2.2 Plan for a Settler Capital in 1927 .....	9
2.2.3 Master Plan for a Colonial Capital in 1948 .....	10
2.2.4 Nairobi Metropolitan Growth Strategy 1973 .....	11
2.3 Previous Planning Interventions, Studies, and Projects.....	12
2.3.1 NUTRANS for Nairobi City Council .....	12
2.3.2 KR Master Plan.....	13
2.3.3 MRTS Study .....	14
2.3.4 NIUPLAN .....	14
2.3.5 MRTS Harmonization Study .....	16
2.3.6 Standard Gauge Railway.....	17
2.3.7 Green Mall Project.....	17
2.3.8 Nairobi Viaduct and Road Construction Project .....	19
2.3.9 Detailed Planning of Integrated Transport System and Loop Line Project .....	19
2.3.10 Capacity Enhancement of A104 Road .....	20
2.3.11 NaMSIP Proposals .....	21
2.3.12 Interdisciplinary Land-use and Transport Metropolitan Analysis within Nairobi Metropolitan Region (ILUT) .....	22
2.3.13 Urban Renewal Plan.....	23
2.3.14 TUK Master Plan .....	23
2.3.15 Commuter Rail Masterplan.....	24
2.3.16 Urban Renewal Study for Eastlands.....	25
2.3.17 SGR Embakasi Railway Station Area Development .....	26

2.3.18	Implications for the Next Step.....	27
2.4	Planning Approaches and Principles.....	28
2.4.1	Sustainable Integrated Multi-modal Transportation.....	28
2.4.2	Economic Sustainability.....	29
2.4.3	Social Sustainability and Accountability .....	29
2.4.4	Sustainable Urbanism and security .....	29
2.4.5	Environmental Sustainability .....	30
2.4.6	Urban Design and Sustainability .....	30
<b>Chapter 3.</b>	<b>LEGAL AND INSTITUTIONAL FRAMEWORK .....</b>	<b>33</b>
3.1	Policy Framework.....	33
3.1.1	The Kenya Vision 2030 .....	33
3.1.2	The Big 4 Agenda .....	33
3.1.3	National Land Use Policy (NLUP), 2017 .....	34
3.1.4	Spatial Planning Concept for Nairobi Metropolitan Region .....	34
3.1.5	Nairobi Integrated Urban Development Master Plan, 2014 (NIUPLAN) .....	34
3.1.6	National Urban Development Policy,2016 (NUDP) .....	35
3.1.7	Nairobi Metro 2030 Strategy (NM2030) .....	35
3.2	Legal Framework.....	36
3.2.1	The Constitution of Kenya 2010 .....	36
3.2.2	The Physical and Land Use Planning Act, 2019 .....	36
3.2.3	The Urban Areas and Cities Act, Act No. 13 of 2011 .....	37
3.2.4	The County Government Act, Act No. 7 of 2012 .....	38
3.2.5	A Guide of Nairobi City Development Ordinances And Zones.....	38
3.2.6	Planning and Building regulation in Kenya (2009) .....	38
<b>Chapter 4.</b>	<b>SITUATIONAL ANALYSIS.....</b>	<b>39</b>
4.1	Physical Characteristics .....	40
4.1.1	Topography.....	41
4.1.2	Geology and Soils.....	41
4.1.3	Biological Environment .....	42
4.1.4	Climate.....	44
4.2	Population and Demographic Characteristics .....	46
4.2.1	Population.....	46
4.2.2	Livelihoods and Economic Activities.....	48
4.2.3	Settlement Character.....	49
4.3	Land Use Analysis.....	49
4.3.1	Land Tenure .....	49
4.3.2	Landuse Pattern .....	50
4.3.3	Built Environment.....	55
4.3.4	Urban Green and Recreational Space .....	60
4.4	Technical Analysis of Railway Structure .....	63
4.4.1	Direction.....	63
4.4.2	Railway Current Status and Site Survey .....	64
4.4.3	Related Projects Analysis .....	66
4.4.4	Preliminary Railway Operation Scheme .....	68
4.4.5	Initial Layout.....	70
4.4.6	Horizontal Alignment Review.....	72
4.4.7	Vertical Alignment Review .....	73
4.5	Transportation Analysis .....	74
4.5.1	Roads .....	75
4.5.2	Public Transport.....	76
4.5.3	Non-Motorised Transport.....	79
4.5.4	Personal Vehicles and Motorcycles.....	80
4.5.5	Parking.....	80

4.6	Physical Infrastructure .....	80
4.6.1	Storm Water and Drainage Facilities .....	80
4.6.2	Water Supply .....	85
4.6.3	Power Supply and Telecommunication .....	87
4.6.4	Energy .....	88
4.7	Social Infrastructure.....	88
4.7.1	Education Facilities.....	88
4.7.2	Health Facilities .....	89
4.7.3	Markets .....	90
4.7.4	Sports Stadia .....	91
4.7.5	Administrative Facilities .....	91
4.7.6	Cultural Heritage Sites.....	92
4.8	Real Estate Analysis.....	94
4.8.1	Introduction .....	94
4.8.2	Office Sector .....	96
4.8.3	Commercial/Retail Sector .....	108
4.8.4	MICE Sector .....	115
4.8.5	Housing Sector .....	128
4.8.6	Alignment of Real Estate Volume with Planning Volume .....	140
4.9	SWOT Analysis .....	141
<b>Chapter 5. THE LAND USE PLAN .....</b>		<b>145</b>
5.1	Competitive Alignment: Strategic Positioning .....	146
5.1.1	Nairobi as East African Gateway .....	146
5.1.2	Nairobi in World Cities .....	146
5.1.3	Central Station as an “Inland Global Gateway” .....	147
5.1.4	Central Station as an Origin of Nairobi .....	149
5.1.5	Making CBD Stronger Through Linkage .....	149
5.2	Competitive Strategy .....	150
5.2.1	Nairobi Railway City as a “Linkage City” .....	150
5.2.2	Value positioning and programs .....	151
5.2.3	Program Division .....	155
5.3	Vision 156	
5.3.1	Capturing Expectations .....	156
5.3.2	Value Promoting .....	157
5.3.3	Proposed Vision Statement .....	158
5.3.4	Value Merge .....	158
5.3.5	Final Statement Setting .....	158
5.4	Concepts for the Greater CBD .....	159
5.4.1	Linkage of Green .....	159
5.4.2	Linkage of Urban Function .....	160
5.4.3	Linkage of Missing Connection: Road Network.....	160
5.5	Planning Scenarios.....	161
5.5.1	Planning Indicator .....	161
5.5.2	Schematic Layout as Layering Approach .....	163
5.5.3	Plan Options/ Alternatives .....	174
5.5.4	Final Design Directions.....	180
5.6	Spatial Framework.....	181
5.6.1	Economic Layer: Private Sector .....	182
5.6.2	Social and Urban Space Layer-Public Sector .....	184
5.6.3	Network Layer.....	185
5.7	Land Use Plan .....	186
5.7.1	Road Layout .....	187
5.7.2	Open Space Plan.....	188
5.7.3	Population and Housing Plan .....	189

5.7.4	Commercial Area Plan.....	190
5.7.5	Office Area Plan.....	191
5.7.6	Public Facility Plan.....	192
5.7.7	Building Height Plan .....	193
<b>Chapter 6. STRATEGIC SECTORAL PLANS .....</b>		<b>195</b>
6.1	Transportation Plan .....	195
6.1.1	Road Network.....	195
6.1.2	Public Transport.....	200
6.1.3	Non-Motorised Transport Network .....	202
6.1.4	Transport Analysis .....	203
6.2	Infrastructure Plan .....	215
6.2.1	Storm Water and Drainage Facilities.....	215
6.2.2	Water supply.....	215
6.2.3	Wastewater collection and Disposal plan .....	218
6.2.4	Water Recycling.....	219
6.2.5	Power supply .....	220
6.2.6	Telecommunication and CCTV.....	221
6.2.7	State of Art infrastructure – Smart designs .....	222
6.3	Strategic Environmental and Social Management Plan .....	223
6.3.1	Purpose and objectives of SESMP.....	223
6.3.2	Responsibilities of the SESMP .....	223
<b>Chapter 7. URBAN DESIGN: DEVELOPMENT GUIDELINE .....</b>		<b>232</b>
7.1	Definition of Terms .....	232
7.2	Goal and Ranges of The Railway City Development Guideline.....	233
7.2.1	Goals and Objectives .....	233
7.2.2	Direction: Transit Oriented Development .....	234
7.3	Eleven (11) Precincts in The Plan .....	237
7.3.1	MICE Core.....	238
7.3.2	Center Core .....	241
7.3.3	East Core.....	243
7.3.4	Government Office Precinct .....	246
7.3.5	Kenya Railways .....	248
7.3.6	New Central Station Precinct.....	251
7.3.7	Station Front Commercial.....	255
7.3.8	Street Commercial.....	257
7.3.9	International Office zone.....	260
7.3.10	Housing.....	262
7.3.11	Hi-Tech Industry Precinct .....	264
7.4	Recreational facilities.....	266
7.4.1	Central Square and Park .....	267
7.4.2	Ngong River Basin.....	270
7.4.3	East Community Park.....	272
7.4.4	Wakulima Park.....	272
7.4.5	Park linkage to surroundings .....	273
7.4.6	Railway buffer green.....	274
7.5	Historic Buildings, Structures and Areas .....	274
7.6	Vehicle Movement, NMT Network.....	275
7.6.1	Vehicle Movement Network.....	275
7.6.2	NMT Network.....	276
7.7	Guide for the Private Realm .....	277
7.7.1	Common Aspect of Private Realm .....	277

<b>Chapter 8. IMPLEMENTATION FRAMEWORK.....</b>	<b>282</b>
8.1 Cost of Infrastructure .....	282
8.2 Phasing Plan .....	283
8.2.1 Cost Breakdown by Phasing .....	284
8.2.2 Master Schedule and Annual Cost Breakdown .....	287
8.3 Proposed Governance and Institutional Framework .....	291
8.3.1 Structuring Financing.....	291
8.3.2 Project Governance structure.....	296
8.3.3 Project Governance Co-Ordination Model .....	298
8.3.4 Project Governance Implementation plan .....	299
8.4 BUSINESS PLAN .....	301
8.4.1 Preamble .....	301
8.4.2 External Factors Consideration .....	301
8.4.3 Business strategy .....	302
8.4.4 Outright Sales/Long-Term Leases.....	304
8.4.5 Incentives to Investors / Unique Selling Points .....	305
8.4.6 Products Pricing Model.....	306
8.4.7 Land Disposal Plan.....	316
8.4.8 Planning Area B (Land for Compulsory Acquisition) .....	316
8.4.9 Investor Conference plan .....	317
8.4.10 Investor Outreach plan .....	320
8.5 Financial and Economic Analysis .....	321
8.5.1 Financial Model Overview .....	321
8.5.2 Model Results .....	323
8.5.3 Cost-Benefit Analysis .....	323
8.6 Communication Strategy and Activities.....	324
8.6.1 Communication Stakeholder Analysis .....	324
8.6.2 Brand Development.....	337
8.6.3 Project Communication .....	339
8.6.4 Monitoring and Evaluation .....	356
<b>Chapter 9. STAKEHOLDER ENGAGEMENT .....</b>	<b>360</b>
9.1 Stakeholder Consultation .....	360
9.1.1 Main Public Workshop.....	360
9.1.2 Meetings with Stakeholders and Businesses within the Planning Area .....	364
9.1.3 Disclosure of the Plan.....	364
9.2 Key messages of the Stakeholder Engagement Process .....	365
9.3 Issues Arising from Consultations and Their Integration into the Plan .....	366
<b>APPENDIX .....</b>	<b>372</b>
APPENDIX 1. Comparison of Lowering and At-grade the Railway .....	372
APPENDIX 2. Index of Statutes.....	382
APPENDIX 3. KCAA Letter about Building Height Plan .....	383
APPENDIX 4. Brochure of The Railway City .....	385
APPENDIX 5. Maps of the Plan .....	387
APPENDIX 6. Bird's-eye view.....	393
<b>References. ....</b>	<b>398</b>

# LIST OF FIGURES

Figure 1-1 Project Area .....	2
Figure 1-2 Plan Objectives .....	3
Figure 2-1 Location Map of the Planning Area .....	8
Figure 2-2 First Plan of Nairobi City (1898) and the Planning Area .....	9
Figure 2-3 Plan for Settler Capital (1927) and the Planning Area .....	10
Figure 2-4 Masterplan for Colonial Capital (1948) and the Planning Area .....	10
Figure 2-5 Nairobi Metropolitan Growth Strategy (1973) and the Planning Area .....	11
Figure 2-6 NUTRANS and the Planning Area.....	12
Figure 2-7 Master Layout Plan for Nairobi Railway Station .....	13
Figure 2-8 Masterplan of MRTS Corridors.....	14
Figure 2-9 Nairobi Railway Station Area in NIUPLAN .....	15
Figure 2-10 Greater CBD Concept in NIUPLAN .....	16
Figure 2-11 MRTS Harmonization Study (2014) and the Planning Area.....	17
Figure 2-12 Green Mall Project Scheme and the Planning Area.....	18
Figure 2-13 Loop Line Project and the Planning Area.....	20
Figure 2-14 NaMSIP Road Proposals and the Planning Area.....	21
Figure 2-15 NaMSIP Central Station Proposals .....	22
Figure 2-16 ILUT Exemplary Drawing –Kikuyu Station .....	23
Figure 2-17 Technical University of Kenya Campus Masterplan.....	24
Figure 2-18 Commuter Rail Project Masterplan.....	25
Figure 2-19 Urban Renewal Study for Eastlands and the Planning Area.....	26
Figure 2-20 SGR Embakasi Project and the Planning Area .....	27
Figure 4-1 Current Situation Map.....	40
Figure 4-2 Altitude and Slope Analysis of the Planning Area .....	41
Figure 4-3 Vegetation Composition within the Planning Area .....	43
Figure 4-4 Ngong River Tributary Passing Through the Planning Area .....	44
Figure 4-5 Average Rainfall and Temperature in Nairobi .....	45
Figure 4-6 Population Pyramid of Nairobi.....	46
Figure 4-7 Population Distribution by Age in Muthurwa Estate .....	47
Figure 4-8 Livelihoods of Residents in Muthurwa Estate.....	48
Figure 4-9 Land Ownership in the Planning Area.....	50
Figure 4-10 2km Radius Land Use Map .....	51
Figure 4-11 2km Radius Current Land Use .....	52
Figure 4-12 2km Radius Land Use Map - Residential Use.....	52
Figure 4-13 2km Radius Land Use Map - Commercial Use .....	53
Figure 4-14 2km Radius Land Use Map - Institutional Use .....	53
Figure 4-15 2km Radius Land Use Map - Industrial Use.....	54
Figure 4-16 2km Radius Land Use Map - Green Space Use .....	54
Figure 4-17 Inventory of Structures / Facilities in the Planning Area.....	55
Figure 4-18 Typical Houses in Landi Mawe and Muthurwa estates .....	56
Figure 4-19 Pedestrian Bridges Crossing Railway at the Planning Area .....	56
Figure 4-20 State of Drainage in the Planning Area .....	57
Figure 4-21 Encroachment of informal business in the Planning Area.....	58
Figure 4-22 Spatial Image of Nairobi CBD Area.....	58
Figure 4-23 Spatial Image of Eastern Boundary Area .....	59
Figure 4-24 Spatial Image of Southern Boundary Area.....	59

Figure 4-25 Illustrative Figure of Flight Safety Zone from Moi Airbase .....	60
Figure 4-26 Ecological Environment in Nairobi City .....	61
Figure 4-27 Nairobi City Stadium .....	62
Figure 4-28 Urban Fabric of Existing CBD- Aga Khan Walk .....	63
Figure 4-29 Kenya-Uganda Railway Route .....	64
Figure 4-30 Current figure of Current Nairobi Central Station .....	65
Figure 4-31 SGR Route and Mombasa New Station .....	66
Figure 4-32 Core Scenario Lines of Commuter Rail Network.....	67
Figure 4-33 Status of Current Railway Tracks in Operations at NCS.....	71
Figure 4-34 Proposals Initial Track Layout in NCS area.....	72
Figure 4-35 Section Proposal of Initial Track Layout - Lowering Case.....	73
Figure 4-36 Section Proposal of Initial Track Layout – At-grade Case.....	73
Figure 4-37 Existing Road Network around the Planning Area .....	75
Figure 4-38 Traffic Outlets in the Immediate Surroundings of the Planning Area .....	76
Figure 4-39 PSV Traffic on the Congested Haile Selassie Avenue.....	77
Figure 4-40 Commuter Rail Routes Around NCS .....	79
Figure 4-41 NMT and MT Conflicts Around the Planning Area .....	79
Figure 4-42 Parking Within 2km of the Planning Area .....	80
Figure 4-43 Site Drainage Map Around the Planning area .....	81
Figure 4-44 Existing Drainage Facilities Around the Planning Area .....	82
Figure 4-45 Water Harvesting Exemplary Figure.....	82
Figure 4-46 Proposed Drainage Measures .....	83
Figure 4-47 Waste Water Collection System Around the Planning Area .....	84
Figure 4-48 Waste Water Disposal Route in Zone 7 .....	84
Figure 4-49 Waste Water Disposal Scheme.....	84
Figure 4-50 Dandora Sewerage Treatment Plant and Dandora Trunk Sewer .....	85
Figure 4-51 Sewer Layout from Parliament Road to Racecourse Road .....	85
Figure 4-52 Kabete WTP/ Reservoir Map.....	86
Figure 4-53 Kabete WTP/ Reservoir Flow Chart .....	86
Figure 4-54 Existing Water Supply System Around the Planning Area .....	87
Figure 4-55 Education Facilities Within 2km Radius .....	89
Figure 4-56 Health Facilities Within 2km Radius .....	90
Figure 4-57 Sikh Temple (Siri Gurdwara Ramgharia) in Landi Mawe .....	93
Figure 4-58 The Nairobi Railway Museum.....	94
Figure 4-59 Quarterly GDP Growth Rate from 2012 to 2017 .....	95
Figure 4-60 Office Demand in Nairobi .....	97
Figure 4-61 Office Supply in Nairobi .....	98
Figure 4-62 Nairobi Office Supply.....	98
Figure 4-63 Performance of Grade-A Offices .....	100
Figure 4-64 Percentage Stake of the Major Players.....	102
Figure 4-65 Demand and Projection for Different Office Type in 20 years .....	105
Figure 4-66 Grade-A Office Demand over 20 Years .....	106
Figure 4-67 The Project Uptake in Nairobi Demand (Grade-A Office) .....	106
Figure 4-68 Grade-B Office Demand over 20 Years .....	107
Figure 4-69 The Project Uptake in Nairobi Demand (Grade-B office) .....	107
Figure 4-70 2016 vs 2017 Rental and Occupancy Status .....	110
Figure 4-71 Nairobi Mall Space Supply Growth 2010-2020 .....	113
Figure 4-72 Year Retail Demand Projection .....	114
Figure 4-73 The Project Uptake in Nairobi Demand (commercial).....	114
Figure 4-74 Segmentation of Retail Use in the Project.....	115

Figure 4-75 Percentage Distribution of MICE .....	118
Figure 4-76 MICE Demand Rates (2014-2017) .....	119
Figure 4-77 International Arrivals in 2017 .....	123
Figure 4-78 Nairobi Uptake of Kenya Guest .....	123
Figure 4-79 Current Number of Hotel Rooms in Nairobi .....	124
Figure 4-80 Hotel Accommodation Demand Over 20-years .....	124
Figure 4-81 The Project Uptake in Nairobi Demand (Hotel) .....	125
Figure 4-82 Hotel/ MICE Allocation in the Project .....	125
Figure 4-83 MICE Demand Projection in 20 years .....	127
Figure 4-84 The Project Uptake in Nairobi Demand (MICE) .....	127
Figure 4-85 Projected Housing Needs 2016-2028 Nairobi .....	129
Figure 4-86 High-End Housing Example .....	132
Figure 4-87: Affordable Housing Examples .....	135
Figure 4-88 Proposed Segmentation of the Housing Units .....	138
Figure 4-89 SWOT Analysis of the Project .....	143
Figure 5-1 Progress Towards the Final Plan .....	145
Figure 5-2 Nairobi as Eastern African Gateway .....	146
Figure 5-3 Nairobi in World Cities .....	147
Figure 5-4 Central Station as Global Gateway .....	148
Figure 5-5 Central Station as Inner-City Gateway .....	148
Figure 5-6 Making CBD Stronger by Linkage .....	149
Figure 5-7 Example of Amsterdam Zuidas, Netherlands .....	150
Figure 5-8 Railway City as “Linkage City” .....	151
Figure 5-9 Value Positioning and Programs .....	151
Figure 5-10 Example: Amsterdam Zuidas .....	152
Figure 5-11 Example: Den Haag Central Station .....	153
Figure 5-12 Example: Yongsan Station, Seoul .....	154
Figure 5-13 Example: Seoul Station .....	155
Figure 5-14 Program Division in the Plan .....	156
Figure 5-15 Railway City in the Greater CBD .....	159
Figure 5-16 Linkage of Green in the Greater CBD .....	159
Figure 5-17 Linkage of Urban Function in the Greater CBD .....	160
Figure 5-18 Linkage of Missing Connection in the Greater CBD .....	161
Figure 5-19 Segmentation of the Various programs in the Plan .....	162
Figure 5-20 Base Map for the Schematic Layout .....	163
Figure 5-21 Commercial Program in the Schematic Layout .....	164
Figure 5-22 Office Program in the Schematic Layout .....	165
Figure 5-23 MICE Program in the Schematic Layout .....	165
Figure 5-24 Housing Program in the Schematic Layout .....	166
Figure 5-25 Health Care Program in the Schematic Layout .....	167
Figure 5-26 Education Program in the Schematic Layout .....	167
Figure 5-27 Sports Program in the Schematic Layout .....	168
Figure 5-28 Cultural Program in the Schematic Layout .....	169
Figure 5-29 Monuments Program in the Schematic Layout .....	169
Figure 5-30 Green Space Program in the Schematic Layout .....	170
Figure 5-31 Schematic Road Network .....	171
Figure 5-32 Schematic Pedestrian Network .....	172
Figure 5-33 Schematic Layout of Network .....	172
Figure 5-34 Schematic Layout of Program .....	173
Figure 5-35 Schematic Layout of Network and Program .....	173

Figure 5-36 Option A Schematic Layout .....	175
Figure 5-37 Option B Schematic Layout .....	176
Figure 5-38 Option C Schematic Layout .....	177
Figure 5-39 Comparison of the Urban Form of 3 Options .....	178
Figure 5-40 Land Use Plans and the Model Comparison of 3 options .....	180
Figure 5-41 Spatial Framework of the Plan .....	182
Figure 5-42 Economy Layer of the Plan .....	183
Figure 5-43 Social and Urban Space Layer of the Plan .....	184
Figure 5-44 Network Layer of the Plan .....	185
Figure 5-45 Land Use Plan .....	186
Figure 5-46 Proposed Road Hierarchy in the Plan .....	188
Figure 5-47 Open Space Network in the Plan .....	188
Figure 5-48 Population and Housing Plan .....	189
Figure 5-49 Commercial Area Distribution Plan.....	190
Figure 5-50 Office Area Distribution Plan .....	191
Figure 5-51 Public Facilities Distribution Plan.....	193
Figure 5-52 Building Height Plan and Skyline.....	193
Figure 6-1 Proposed Road Network and Hierarch in the Plan.....	196
Figure 6-2 Proposed Road Cross Section .....	197
Figure 6-3 Suggestion for Enhancing Network with Surrounded Area .....	198
Figure 6-4 Idea Sketches for Linkage between Existing CBD and the Planning Area .....	199
Figure 6-5 Proposed BRT Spur Lines .....	200
Figure 6-6 Proposed BRT Trunk and Feeder System with BRT Exclusive Zone .....	202
Figure 6-7 Exclusive NMT Corridor in the Planning area .....	203
Figure 6-8 Railway City and Surrounding Transport Network .....	203
Figure 6-9 Four Step Modelling Process .....	204
Figure 6-10 Modal Share of the Plan .....	205
Figure 6-11 Consolidated OD Zones .....	207
Figure 6-12 Schematic Layout of In and Out Generated AADT in 2030 .....	210
Figure 6-13 Schematic Layout of Adjusted Green Mall Traffic + Generated AADT in 2030 .....	212
Figure 6-14 Proposed Drainage Scheme of the Plan .....	215
Figure 6-15 Water Supply Plan .....	218
Figure 6-16 Wastewater Collection and Disposal Plan.....	219
Figure 6-17 Existing GIS 2x200MVA Substation .....	220
Figure 6-18 Transformer .....	221
Figure 6-19 CCTV example .....	221
Figure 6-20 Power and Communication Network Plan .....	222
Figure 6-21 Utility Tunnels example drawing of the Plan .....	223
Figure 7-1 Building Line Illustration for Development Guideline .....	233
Figure 7-2 Urban Design Guideline (whole).....	235
Figure 7-3 Precinct Map in the Railway City .....	237
Figure 7-4 Avic Center Development (Nairobi) .....	239
Figure 7-5 Example of MICE Core Image ( <i>D-CUBE city</i> , South Korea).....	239
Figure 7-6 MICE Core Design Guideline .....	240
Figure 7-7 Image of Rotterdam Lijnbaan .....	242
Figure 7-8 Center Core Design Guideline.....	242
Figure 7-9 Images of Covent Garden (London) .....	244
Figure 7-10 East Core Location Map .....	244
Figure 7-11 Multi-Use Public Service Center Example (South Korea) .....	245
Figure 7-12 East Core Design Guideline .....	245

Figure 7-13 Example Image of the Government Office Precinct .....	247
Figure 7-14 Government Office Precinct Design Guideline .....	247
Figure 7-15 Example Image of Kenya Railway Cultural Center .....	249
Figure 7-16 Kenya Railways Precinct Exemplary Image .....	250
Figure 7-17 Kenya Railway Precinct Guideline.....	250
Figure 7-18 Network Diagram of the NCS Precinct .....	252
Figure 7-19 Architecture Drawing of New Central Station (Plan) .....	253
Figure 7-20 Architecture Drawing of New Central Station (Section-1) .....	253
Figure 7-21 Architecture Drawing of New Central station (Section-2).....	254
Figure 7-22 Station Front Commercial Precinct Location .....	255
Figure 7-23 Station Front Commercial Precinct Design Guideline .....	256
Figure 7-24 Image of Existing CBD Street (left), Plot Sampling (right).....	258
Figure 7-25 Location Diagram of Street Commercial, Green Pocket .....	258
Figure 7-26 Street Commercial Area Exemplary Section .....	258
Figure 7-27 Street Commercial Precinct Design Guideline .....	259
Figure 7-28 Image of Business District (South Korea) .....	261
Figure 7-29 International Office Precinct Design Guideline.....	261
Figure 7-30 Housing Precinct Design Guideline .....	263
Figure 7-31 Image of Industrial Area Transition (South Korea).....	265
Figure 7-32 High Tech Industry Precinct Design Guideline .....	265
Figure 7-33 Location of Open Space in the Plan .....	266
Figure 7-34 Image of Cologne Hauptbahnhof, Germany.....	267
Figure 7-35 Drawing of Central Square and Parks.....	268
Figure 7-36 Image of Clock Tower, Outdoor Tourist Information Center (South Korea) .....	268
Figure 7-37 Image of the Dome Square (South Korea).....	269
Figure 7-38 Outdoor Theater Image (South Korea).....	269
Figure 7-39 Image of Urban Events.....	270
Figure 7-40 Image of MICE Event .....	271
Figure 7-41 Wakulima Park.....	273
Figure 7-42 Images of Wakulima Park.....	273
Figure 7-43 Historical Buildings and Structures in the Planning Area .....	274
Figure 7-44 Examples of Parking Lot with Mixed Use Program (South Korea).....	275
Figure 7-45 NMT Loop Typical Form .....	276
Figure 7-46 Image of Indoor Bicycle Park.....	277
Figure 7-47 Between-Plot Pedestrian Links, Example Image (South Korea).....	278
Figure 7-48 Examples of See-Through Fence with Plantation (South Korea).....	279
Figure 8-1 Cost of Infrastructure Ratio.....	283
Figure 8-2 Phasing Plan.....	283
Figure 8-3 Cost Ratio by Phasing .....	287
Figure 8-4 Proposed Coordination Structure .....	298
Figure 9-1 Photos of Disclosure of the Plan .....	364
Figure 9-2: Photos of Kenyan Gazette.....	365
Figure A-1 Exemplary drawing of Railway At-grade and lowering in Green Mall Projec.....	372
Figure A-2 Exemplary Figure of Viaduct across The Railway City .....	372
Figure A-3 Lowering Railway Structure .....	373
Figure A-4 At-Grade Case Structure.....	374
Figure A-5 Image of Transition of Chunggye River .....	377
Figure A-6 Image of Transition of Rive Gauche.....	378
Figure A-7 Model Study of Lowering and At-grade Scenario .....	379

# LIST OF TABLES

Table 2-1 Project Administrative and Electoral Boundaries.....	7
Table 2-2 Summary of Related Projects & Studies .....	27
Table 4-1 Tree Species in the Planning Area .....	42
Table 4-2 Major Roosting and Nesting Sites for Birds in Nairobi and its Neighborhood .....	43
Table 4-3 Population Growth Trend in Nairobi.....	46
Table 4-4 Population Growth in Starehe Sub-County from 1989 to 2019 .....	47
Table 4-5 Detail of Livelihood Activities in Muthurwa Estate .....	48
Table 4-6 Current Commuter Line Operation Status .....	65
Table 4-7 General SGR Information .....	66
Table 4-8 Current Operating Status of NCS .....	68
Table 4-9 Current Operating Frequency and Passenger Demand of NCS .....	68
Table 4-10 Rolling Stock of NCS (Suggestion).....	69
Table 4-11 Number of Daily Operation of NCS Communter Rail (Suggestion).....	69
Table 4-12 Operation Headway (Suggestion).....	70
Table 4-13 Train Formation (Suggestion).....	70
Table 4-14 Railway Track in NCS (Suggestion) .....	70
Table 4-15 Track Design Standard Proposal.....	71
Table 4-16 Advantage of Each Alternative .....	74
Table 4-17 Short Distance PSV Routes at Kenyatta Railway Matatu Stage .....	77
Table 4-18 Long Distances Routes at KRSRBS Car Park Stage .....	78
Table 4-19 Current Commuter Rail Routes Terminating at NCS.....	78
Table 4-20 Delineated Drainage Catchment Analysis .....	83
Table 4-21 Existing Substations in and Around the Planning Area .....	87
Table 4-22 Various Types of Energy Sources Used in Nairobi County .....	88
Table 4-23 Education Facilities in Starehe Sub-County .....	88
Table 4-24 Institutions Facilities Around the Planning Area .....	91
Table 4-25 Cultural / Historical Buildings Around the Planning Area.....	92
Table 4-26 Analysis of Commercial Offices in Nairobi.....	97
Table 4-27 Sample Occupancy Versus Occupancy Rates.....	99
Table 4-28 Offices' Grading Criteria.....	100
Table 4-29 Proposed/ Upcoming/ Recently Completed Competitive Office Buildings .....	101
Table 4-30 SWOT Analysis for Office Real Estate .....	103
Table 4-31 Nairobi Commercial Office Demand and Supply Trends.....	105
Table 4-32 Average and Highest Shopping Mall Rental Rates in Nairobi CBD .....	110
Table 4-33 Current Commercial/ Retail Mega Projects in Kenya .....	111
Table 4-34 MICE Industry outlook in 2016.....	117
Table 4-35 MICE Main Players .....	120
Table 4-36 MICE SWOT Analysis.....	122
Table 4-37 Main Convention Facility Outlook in Nairobi.....	125
Table 4-38 Housing Demand and Supply in Nairobi (by Type) .....	130
Table 4-39 Income Levels by Category .....	130
Table 4-40 Average Sizes and Prices of Apartment in Westlands .....	131
Table 4-41 Current Standard Apartment Outlook .....	132
Table 4-42 Serviced and Furnished Apartments in Westlands.....	133
Table 4-43 Vertical Mixed-Use Development in Nairobi .....	134
Table 4-44 Categories of Affordable Housing.....	135

Table 4-45 Approved Prices by the Cabinet for Kibera Redevelopment Houses .....	135
Table 4-46 Social Housing Supply for Kibera .....	135
Table 4-47 NCCG Urban Renewal Projects .....	136
Table 4-48 MoTIH&UD Urban Renewal Projects.....	136
Table 4-49 Estimation of Housing Demand in Nairobi and the Project Housing Supply .....	137
Table 4-50 Proposed Segmentation of Housing in the Project.....	138
Table 4-51 Segmented Commercial, Office and MICE Location in the Planning Area .....	140
Table 4-52 Segmented Housing and Location in the Planning Area .....	141
Table 5-1 Brief Zone Division in the Schematic Layout .....	163
Table 5-2 Final Option Directions .....	181
Table 5-3 Land Use Plan Table .....	187
Table 5-4 Open Space Category .....	189
Table 5-5 Population and Housing Type.....	190
Table 5-6 Commercial Area Category .....	191
Table 5-7 Office Area Type in the Plan.....	191
Table 5-8 Essential Social Facility List in the Plan .....	192
Table 5-9 Desirable Social Facility List in the Plan.....	192
Table 6-1 Provision of Traffic Facilities in the Plan.....	202
Table 6-2 Summary of AM and PM Person Trips .....	204
Table 6-3 Summary of PM Person Trips.....	205
Table 6-4 Summary Trips per Travel Mode in the PM Peak.....	206
Table 6-5 Vehicle Trips per Precinct/ Zone in the PM Peak .....	206
Table 6-6 OD Matrix of the Plan .....	207
Table 6-7 Trip Proportions per Entry/Exit Point .....	208
Table 6-8 Trip Distribution Summary .....	208
Table 6-9 Trips per Precinct in the Plan.....	208
Table 6-10 Peak Hour and AADT Volumes .....	209
Table 6-11 Public Transport Coverage in the Road .....	211
Table 6-12 Practical Capacities of Two-way Urban Roads .....	213
Table 6-13 Road Capacity Requirements within and around the Planning Area .....	214
Table 6-14 Calculated Water Demand.....	216
Table 6-15 Future Water Supply Systems.....	217
Table 6-16 Existing Substations around the Planning Area .....	220
Table 6-17 Power Demand Estimation of the Plan.....	220
Table 6-18 Strategic Environmental and Social Management Plan .....	225
Table 7-1 Urban Design Guideline (Table Form).....	236
Table 7-2 High-rise Buildings in Nairobi (over 75m) .....	238
Table 7-3 MICE Core Program/ Population .....	240
Table 7-4 MICE Core Land Use and Population.....	241
Table 7-5 Center Core Program/ Population .....	243
Table 7-6 Center Core Land Use/ Population.....	243
Table 7-7 East Core Program/ Population .....	246
Table 7-8 East Core Land Use/ Population .....	246
Table 7-9 Government Office Program/ Population.....	248
Table 7-10 Government Office Land Use/Population .....	248
Table 7-11 Kenya Railway Precinct Program/ Population .....	251
Table 7-12 Kenya Railway Precinct Land Use/ Population .....	251
Table 7-13 New Central Station Program/ Population .....	254
Table 7-14 New Central Railway Station Land Use/ Population.....	254
Table 7-15 Station Front Commercial Precinct Program/ Population.....	256

Table 7-16 Station Front Commercial Precinct Land Use/ Population .....	257
Table 7-17 Street Commercial Precinct Program/Population .....	259
Table 7-18 Street Commercial Precinct Land Use / Population .....	260
Table 7-19 International Office Precinct Program/ Population.....	261
Table 7-20 International Office Precinct Land Use/ Population .....	262
Table 7-21 Housing Precinct Program/ Population.....	263
Table 7-22 Housing Precinct Land Use/ Population .....	264
Table 7-23 High-Tech Industry Precinct Program/ Population .....	265
Table 7-24 High Tech Industry Precinct Land Use/Population .....	265
Table 7-25 Park Linkage to the Surroundings (Proposal).....	273
Table 7-26 Historical Buildings Current and Future Use .....	275
Table 8-1 Cost of Infrastructure Volume .....	282
Table 8-2 Cost Breakdown by Phasing Plan .....	285
Table 8-3 Master Schedule .....	289
Table 8-4 Annual Cost Breakdown .....	290
Table 8-5 Adopting LVC scheme in the Plan .....	294
Table 8-6 The Risk and Reward Assessment for Financing Options .....	296
Table 8-7 Comparison of the Development Authority SPV and the Master Development Company SPV.....	297
Table 8-8 Competitive Projects of the Railway City in Local and Regional Scale .....	302
Table 8-9 Precincts as Development Compositions .....	303
Table 8-10 Outright Sale Area in the Project .....	303
Table 8-11 Plot Price of the Railway City.....	308
Table 8-12 Land Size of the Planning Area B.....	316
Table 8-13 Estimated Cost of the Land Acquisition in the Planning Area B.....	316
Table 8-14 Invitees List.....	317
Table 8-15 Investor Outreach Schedule .....	320
Table 8-16 Construction Cost of the Railway City .....	322
Table 8-17 Model Scenario .....	323
Table 8-18 Framework for Stakeholder Analysis .....	324
Table 8-19 Preliminary Stakeholder Analysis Findings .....	324
Table 8-20 Focus for Engagement of the Stakeholder Groups .....	332
Table 8-21 Communication Matrix for the Project .....	346
Table 8-22 Communication Plan.....	348
Table 8-23 Communication Budget .....	351
Table 8-24 Monitoring and Evaluation Matrix for the Communication Strategy .....	357
Table 9-1 Issues and Incorporated into the Plan .....	366
Table A-1 Superstructure Table of Lowering/ At-grade Track .....	374
Table A-2 Construction Cost of Lowering / At-grade Track .....	374
Table A-3 Land Value Comparison of Lowering / At-grade Track .....	375
Table A-4 Structure Cost-Land Value Comparison .....	375
Table A-5 Comparison Table of Lowering and At-grade Scenario .....	376
Table A-6 Cost Breakdown of Lowering/ At-grade Scenario .....	379

# ABBREVIATIONS AND ACRONYMS

BRT	Bus Rapid Transport / Bus Rapid Transit
CBD	Central Business District
Ea.	Each
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESIA	Environmental and Social Impact Assessment
EU	European Union
FS	Feasibility Study
GoK	Government of Kenya
ILUT	Interdisciplinary Land use and Transport Metropolitan Analysis within Nairobi Metropolitan Region
IRR	Internal Rate of Return
JICA	Japanese International Co-operation Agency
JKIA	Jomo Kenyatta International Airport
KAA	Kenya Airports Authority
KCAA	Kenya Civil Aviation Authority
KeNHA	Kenyan National Highways Authority
KP	Kenya Powers
KR	Kenya Railways
KURA	Kenya Urban Roads Authority
LRT	Light Rail Transport
LPLUDP	Local Physical and Land Use Development Plan
MGR	Meter Gauge Rail
MoTIHUD&PW	Ministry of Transport, Infrastructure, Housing, Urban Development & Public Works
MoE	Ministry of Energy
MRT	Mass Rapid Transit
NAMETA	Nairobi Metropolitan Area Transport Agency
NCCG	Nairobi City County Government
NCS	Nairobi Central Station
NEMA	National Environment Management Authority
NIUPLAN	Nairobi Integrated Urban Development Masterplan
NIUTRIP	Nairobi Urban Transport Improvement Project
NMR	Nairobi Metropolitan Region
NMK	National Museum of Kenya
NMS	Nairobi Metropolitan Services
NSS	Nairobi South Station
NUTRANS	Nairobi Urban Transport Study
PIT	Project Implementation Team
PAP	Project Affected Persons
PPP	Public Private Partnership
RAP	Resettlement Action Plan
R&R	Roles and Responsibility
SEA	Strategic Environmental Assessment
SESMP	Strategic Environmental and Social Management and Monitoring Plan
SGR	Standard Gauge Rail
TOD	Transit Oriented Development
ToR	Terms of Reference



# Chapter 1. INTRODUCTION

This chapter provides the project's overview and highlights the following key areas:

- Background;
- Justification of the Plan;
- Vision and objectives;
- Scope;
- Expected outputs;
- Methodology; and
- Arrangement of the report.

## 1.1 Background

The Kenya Railways (KR) in cooperation with the Nairobi City County Government (NCCG) and the Ministry of Transport, Infrastructure, Housing, Urban Development & Public Works (MOTIH&PW) intends to develop a plan for the Nairobi Central Railway Station and its surrounding areas into the Nairobi Railway City (hereinafter "Railway City").

Dohwa Engineering in joint venture with GIBB Africa (hereinafter "the Consultant") has been contracted to provide the Consulting Services for Preparation of Urban Plans, Urban Designs, Economic/Finance and Implementation Study, as one of Nairobi Metropolitan Services Improvement Project (NaMSIP) projects, funded by World Bank.

The Consultant has conducted various studies aiming at capturing the demand for preparing viable land development and urban planning for the future of Nairobi. Therefore, this report will incorporate all core outputs of the previous report and the business, financial and institutional implementation plans.

## 1.2 Justification for the Plan

The Plan aims to redevelop the Railway City to a new iconic place with multimodal transportation in the expanded CBD area.

Kenya Railways owns most of project land and has prepared several plans<sup>1</sup> to regenerate and redevelop areas next to its railway stations in Nairobi, Mombasa and Kisumu. However, these plans do not fully address the vision of The Railway City.

The Directorate of Urban and Metropolitan Development under MoTIH&UD has the mandate to formulate and administer policy in respect to the Nairobi Metropolitan Region to provide world-class services for the residents of the region.

The NCCG has prepared the Nairobi Integrated Urban Development Masterplan (NIUPLAN) which will guide the development of the site and will be the approving organization of the final plan for the Project.

---

<sup>1</sup> 2012 Railway city Masterplan by Kenya Railways

The development of the Railway City will showcase of Nairobi’s growing global reputation as a leading modern city on the world stage, generate social benefit housing such as public and community facilities and provide economic returns.

### 1.3 Vision and Objectives

The Project aims to achieve the following objectives;

- To prepare a participatory, economically feasible and socially/environmentally sustainable urban plan and design concept to guide the Railway City transit hub/TOD and mixed-use development
- To complete and expand the Nairobi CBD by filling in the missing gaps in development and integrating seamlessly with the current CBD spatial structure
- To promote the global competitiveness of Nairobi, by focusing on economic feasibility and competitiveness at a global level, and by positioning Nairobi appropriately relative to the global network of sustainable cities.

### 1.4 Scope

#### 1.4.1 Project Location

The Project site is located at the center of Nairobi City and is bordered by the industrial area to the south and the CBD area to the north. Initially, the boundary given for the Railway City consisted of the main roads running around the CBD area, i.e. Uhuru Highway, Bunyala Road, Ladhies Street and Haille Selassie Avenue.

#### 1.4.2 Project Area

The actual size of the land for the project surveyed through the GIS mapping is 176ha (435acre). This area comprises;

- KR land: 118ha (292 acres)
- Non-KR land: 58ha (143 acres)

The Nairobi Railway Station, the Kenya Railways offices, Railway workshops and yards, Kenya Railways Museum, Technical University of Kenya, Market (Wakulima and Muthurwa), Residential (Landie Mawe and Muthurwa), Barracks, Sports facilities, Police offices, quarters, railway bus terminus and Easy Coach yard are all within the project site.

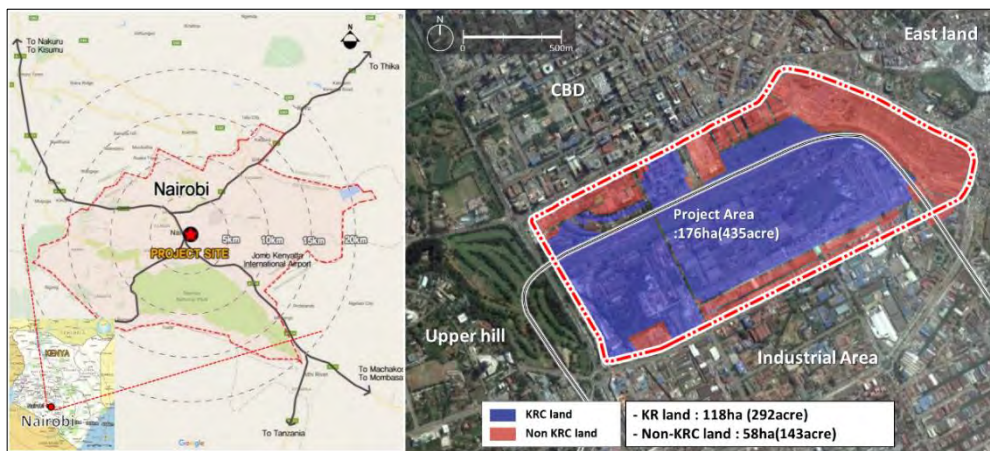


Figure 1-1 Project Area

### 1.4.3 Plan Expectations

The Project aims to achieve the following expectations;

- To prepare a participatory, economically feasible and socially/environmentally sustainable urban plan and design concept to guide the Railway City transit hub/TOD and mixed-use development
- To complete and expand the Nairobi CBD by filling in the missing gaps in development integrating seamlessly with the current CBD spatial structure
- To promote the global competitiveness of Nairobi, by focusing on economic feasibility and competitiveness at a global level, and by positioning Nairobi appropriately relative to the global network of sustainable cities.

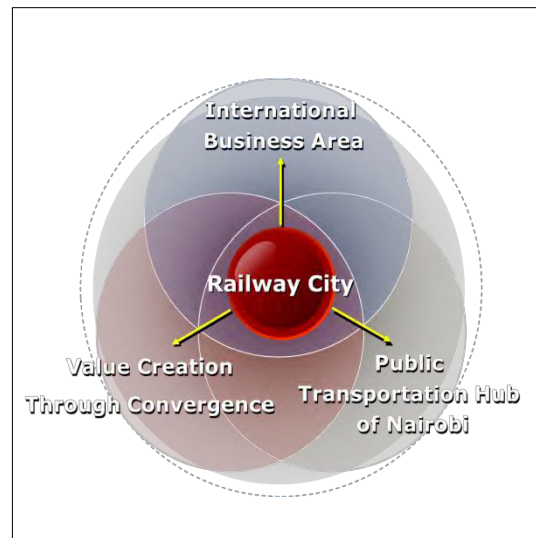


Figure 1-2 Plan Objectives

## 1.5 Expected Outputs

The following outputs in each sector could be achieved once the project is implemented.

### 1.5.1 Urban Environment

Currently, the project site has failed to take advantage of its locational and historic benefits. The land is underutilized as it is occupied by the Railway Station and working yards, offices and various buildings, public facilities, and industrial facilities without a proper plan to integrate these functions. The site has great potential of redevelopment as it is designated as an expanded CBD area in high-level plans such as the NIUPLAN.

Preparing a well-organized redevelopment plan based on the present condition analysis and integrating various opinions of stakeholder will revitalize the area and help it function as the expanded CBD area that will be planned and developed in ways that will;

- Improve the urban environment quality in the Nairobi CBD;
- Make a vibrant 24-hour city with mixed used urban programs; and
- Enlarge the CBD to promote the spatial restructuring of Nairobi.

### 1.5.2 Transportation

The railway has been an important means of transport for more than 100 years. The station area as is, occupies an expansive area between the CBD and industrial areas and it has been an obstacle for road connection which is one of the reasons for traffic congestion in the CBD area. Hence, redeveloping the station area with new transportation networks will result in the following;

- Development of the Central station as multi-modal transport hub;
- Connect the missing links relieve the traffic congestion; and

- Adopt TOD (Transit Oriented Development) concept for citizen-friendly urban mobility development.

### 1.5.3 Economy

As stated above, the project site will be redeveloped as a Railway City which will be an iconic place with multimodal transportation and multi-functions. With the improved transportation network and well-planned infrastructure, the Railway City will

- Draw local and global attractions and investments,
- Accommodate new urban programs which will provide employment, and Generate development benefit returns and taxes.

## 1.6 Methodology

Preparation of plan was started on 28th March 2017 as commencement date. Situation analysis, locational characteristic and significance were elaborated in terms of planning perspectives, environment, social and transportation aspect. Diverse kinds of GIS mapping were also elaborated by the support of KR, NCCG and World Bank.

During the planning process, direction of “sustainable urban Transit Oriented Development” is clearly set up by numerous discussions. The Plan pays particular attention to the integrated multi-modal transportation. The Plan provides a blueprint for scaling up the commuter rail and other public transport services like BRT, public buses, taxi and NMT as well.

Building a nationally and internationally competitive economy for Nairobi is one of the key objectives of the development. Nairobi will benefit from harnessing of the Railway City development to provide for the much-needed CBD growth while achieving much wider social, environmental and cultural objectives. The development will reduce pressure on saturated areas as well as reduce prices in property and rental markets while creating an investment opportunity.

Nairobi is set to benefit socially from the provision of housing, education, health and other social services that are to be integrated in the Railway City. Creation of progressive and adequate housing, well serviced with water, sanitation, circulation, waste management, recreation and green facilities, health and social facilities. The Plan consider to satisfy some of the housing demand, but to demonstrate viable typologies of mixed-use high-density urban development.

Based on the situation analysis, development land use with options and civic engagement process were also conducted. For efficient decision making, some of visual materials like posters, PPTs, popups, massing and physical models will be chosen to express the concepts of development.

Once final option was set up, the following process was entailed to develop; 1) program development strategy, 2) land use, zoning plan, 3) infrastructure plan, 4) environmental management plan, 5) urban design guidelines, and implementation plan.

Multiple stakeholder engagement has been carried out throughout the entire planning process, which started on 28th March 2017 as follows:

- Visioning workshop, on 20th Feb, 2018;
- High level round table in UN-Habitat on 21th Feb, 2018;
- 1<sup>st</sup> Thematic group workshop, on 9<sup>th</sup> Mar, 2018;
- 1<sup>st</sup> County level workshop, on 23<sup>rd</sup> Mar, 2018;

- Major workshop for final option disclosure, on 8<sup>th</sup> Jun 2018;
- 2<sup>nd</sup> Thematic group workshop, on 3<sup>rd</sup> Oct 2018;
- High level workshop in UN-Habitat, on 23<sup>rd</sup> Oct 2018;
- 2<sup>nd</sup> County level workshop, on 24<sup>th</sup> Oct 2018;
- Muthurwa public meeting, on 9<sup>th</sup> Oct 2019; and
- MCA workshop, on 11<sup>st</sup> Oct 2019.

In addition, the Plan was presented at a number of consultations and strategic meeting with leaders of neighborhood associations in the area.

## **1.7 Arrangement of the Report**

The main structure of this report is as follows:

- Introduction;
- Planning context;
- Legal and institutional framework;
- Situation analysis;
- Land use plan;
- Strategic sectoral plan;
- Urban design: development guideline;
- Implementation framework;
- Stakeholder engagement;
- Appendices.



# Chapter 2. PLANNING CONTEXT

This chapter entails the analysis of the planning context. The following aspects are covered in chapter;

- Location of the plan area – National, Regional/Metropolitan, County and local context
- Historical development Nairobi and the planning area
- Previous planning interventions, studies and projects
- Planning approaches and principles

## 2.1 Location of the Planning Area

The project site is located within the CBD of Nairobi City, the main geographical and economical hub of Kenya. The Nairobi Central Station, which is included in the project area, was genesis of Nairobi, as a stopover between the port of Mombasa and Kampala Uganda. Nairobi City is seen as a monocentric city with a centralized urban structure as all city functions are concentrated around the CBD. As a key part of the CBD, the site has significant locational characteristics and is included in the first part of the Nairobi CBD expansion. Challenges such as traffic congestion, environmental degradation and the hollowing of the city center hinder the growth of the monocentric city. The current state of traffic decreases productivity, gradually leading to the decline of Nairobi’s position on the global competitiveness scale.

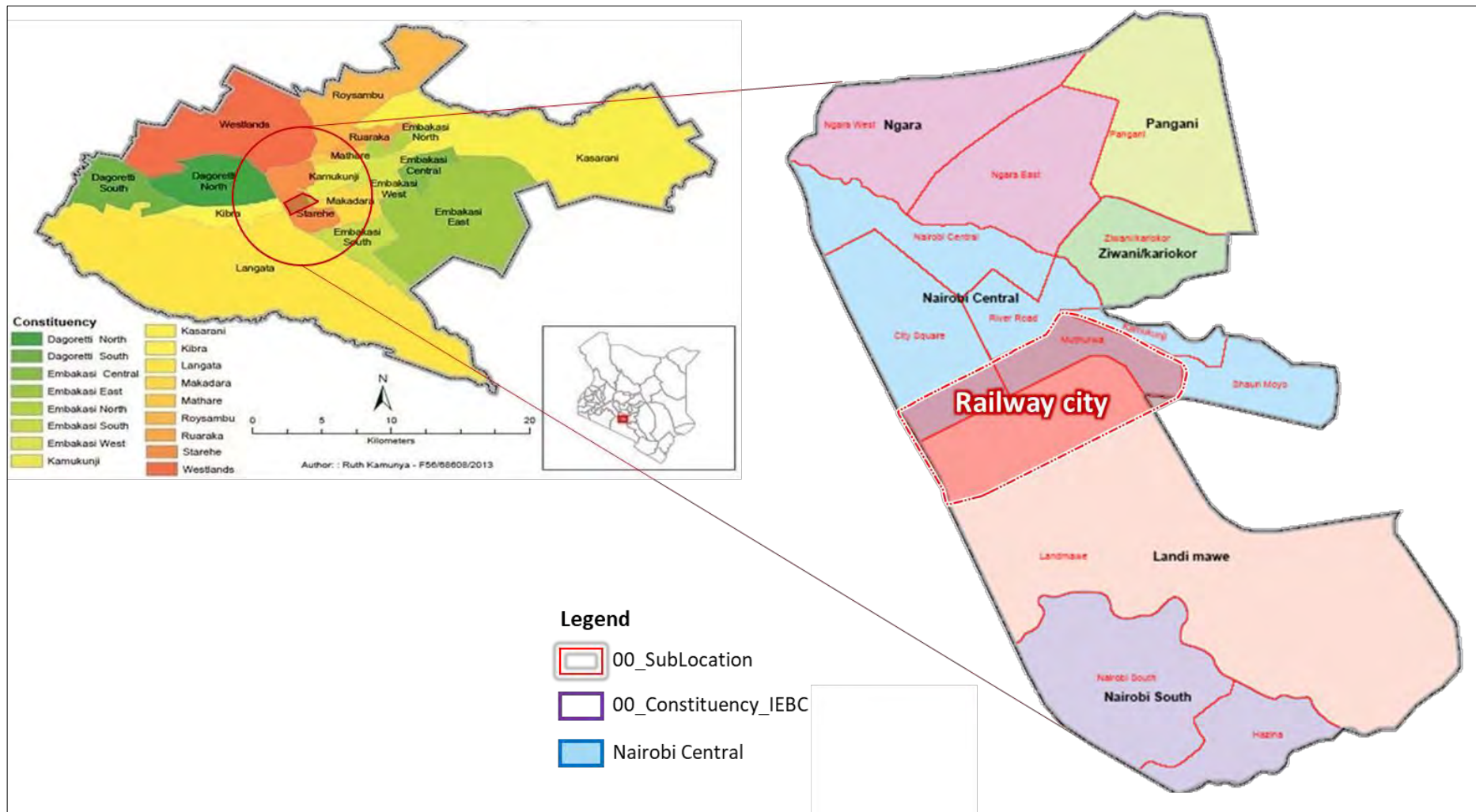
The planning area is located primarily on 176ha (435 acres) of land within and around the KR headquarters in Nairobi, located between Uhuru Highway, Bunyala Road, Ladhies Road and Haile Selassie Avenue. Most of the land is occupied by the current Nairobi Central Railway station, yards, workshops and includes neighboring lands belonging to KR. Below figure shows location map of the planning area.

Administratively, majority of the project area is located in Starehe Sub-County with a small section in Makadara Sub-County of Nairobi City County. As regards electoral boundaries, the majority of the planning area is located in Landi Mawe Ward of Starehe Constituency as outlined below:

**Table 2-1 Project Administrative and Electoral Boundaries**

County	Sub-county	Ward	Sub-location	Area coverage	Population
Nairobi	Starehe	Nairobi Central	City Square	2.6km <sup>2</sup>	25,354
			River Road		
			Muthurwa		
		Landi Mawe	Landi Mawe	7.3km <sup>2</sup>	26,509

Source: Developed from <https://softkenya.com/kenya> and <http://www.nairobi.go.ke/home/subcounty-administration/> retrieved on 11 April 2018



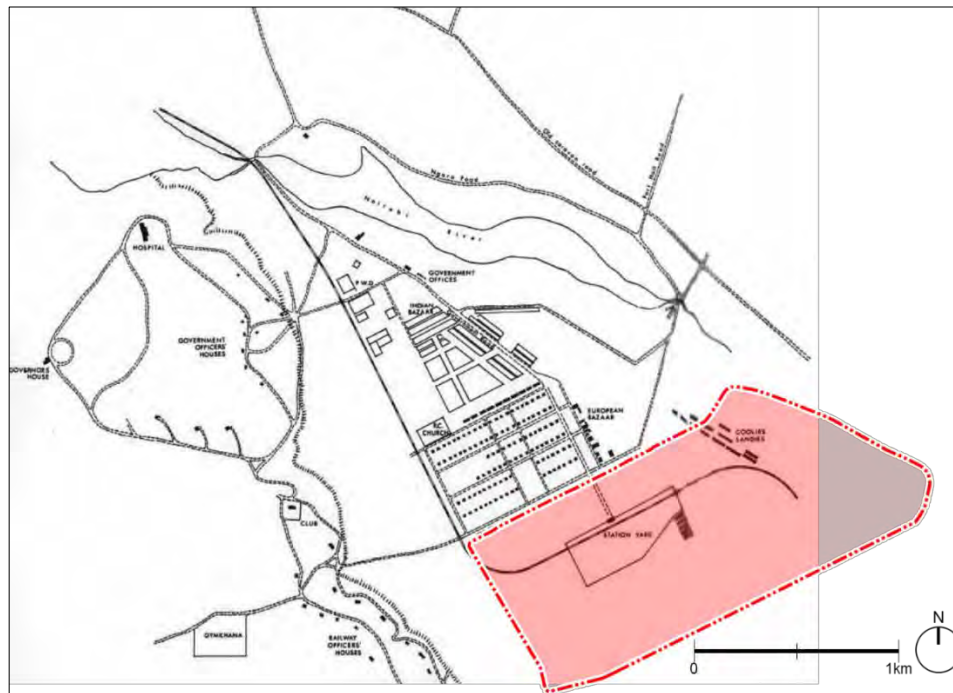
**Figure 2-1 Location Map of the Planning Area**

Source: Developed from <https://softkenya.com/kenya/starehe-constituency/> retrieved on 11 April 2018

## 2.2 Historical Perspective of Planning of Nairobi and the Planning Area

### 2.2.1 First Plan of Nairobi City in 1898

The first plan for Nairobi City was drawn in 1898 by a British railway engineer as part of preparing a layout plan for a railway supply depot in Nairobi for the Mombasa-Uganda railway line construction project. The plan was approved on 30 November 1898 and dispatched to London for approval (NIUPLAN, 2014). The first urban settlement that occurred in Nairobi is within the planning area, hence the planning area can be deemed as the genesis of Nairobi. The Planning area is outlined in red in the figure below.



**Figure 2-2 First Plan of Nairobi City (1898) and the Planning Area**

Source: NIUPLAN and Planning area superimposed

### 2.2.2 Plan for a Settler Capital in 1927

In the early years, the growth of Nairobi was mainly influenced by economic forces with no coordination of development. In an attempt to order the situation, a town planning Consultant was appointed in 1926 (NCCG). In 1927, the Plan for a Settler Capital was developed under the British East African rule. The city area was expanded to 77 sq. km to accommodate the growing population from its previous boundary defined by Article 45 of the East Africa Order-in-Council as “the area comprised within a radius of one-mile-and-a-half from the present office of H.M. Sub-Commissioner in Ukamba” (NCCG). The plan aimed at the improvement of drainage and clearing of swamps and regulating building and density. The plan also put in place traffic regulations and designated residential land area, which was generally segregated by racial groups (NIUPLAN, 2014).

The planning area was designated as a station and workshop area. To the south, railway quarters and relative light industry were located. Other land uses evolved and developed around the planning area with the Upper hill area occupied by government offices and the Eastleigh area developing as a residential area.

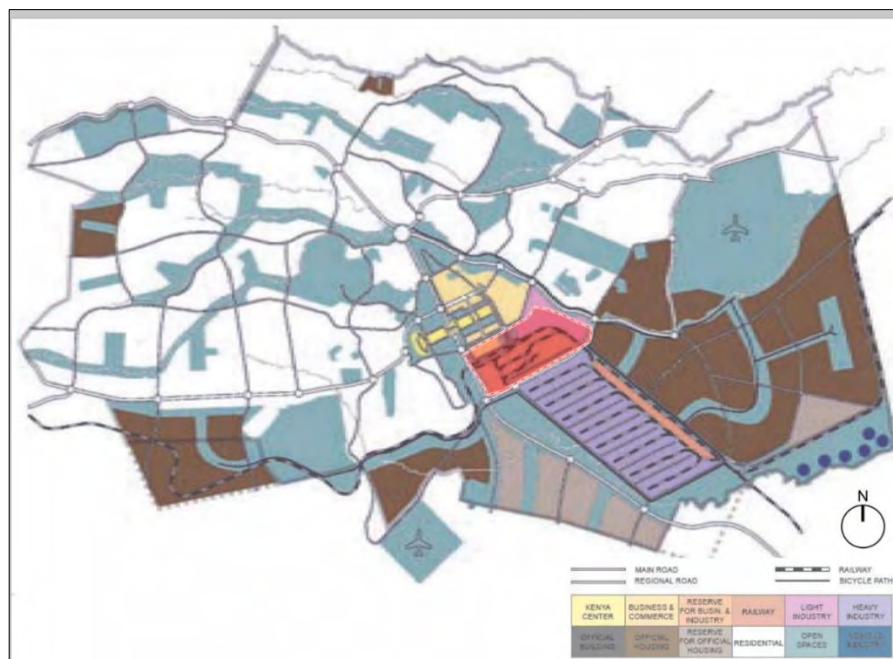


**Figure 2-3 Plan for Settler Capital (1927) and the Planning Area**

Source: NIUPLAN and planning area layer superimposed

### 2.2.3 Master Plan for a Colonial Capital in 1948

The plan was funded by the Municipal Council of Nairobi and the Railway Authorities. The plan introduced a zoning scheme for official buildings, business and commercial, industry, railway, residential, official housing, open space, forest reserve, and parks. The plan also used the garden city concept to divide residential areas into neighborhood units. However, the plan created racial segregation character of different Nairobi locations still depicted today. Europeans resided to the north and west of the railway (Owuor and Mbatia, 2008). The plan was expected to make Nairobi more attractive for industrial investments. The alignment of the railway line was changed to the current situation along the western part of the town, which gave way for the expansion of the Uhuru Highway; and the area to the south of the railway station was converted to an extensive industrial zone (NIUPLAN, 2014).



**Figure 2-4 Masterplan for Colonial Capital (1948) and the Planning Area**

Source: NIUPLAN and planning area overlapped

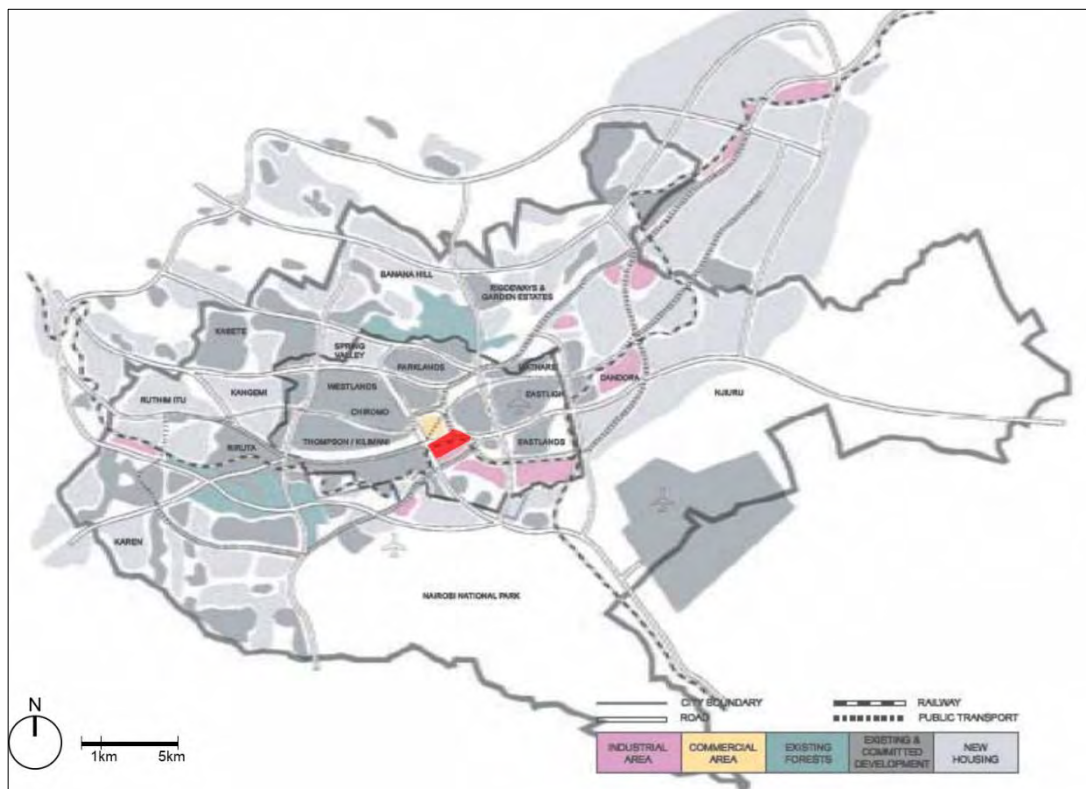
### 2.2.4 Nairobi Metropolitan Growth Strategy 1973

After Kenya's independence in 1963, special ad hoc groups were created to deal with specific aspects of the growth of Nairobi. And in 1973, the Nairobi Urban Study Group was created, and through support from the United Nations prepared the Nairobi Metropolitan Growth Strategy which was published in 1973.

The 1973 plan was essentially a long-term structure planning policy, recommendation of broad long-term policy directions, strategies, possibilities, and guidelines for the development of Nairobi City (NIUPLAN, 2014). The strategy recommended, among others, decentralization and development of alternative service centers; modifying, upgrading and extension of the road network; formulation of realistic housing programs; and extension of the city boundary to the west and northeast as and when required, as well as encouraging the growth of satellite towns surrounding the city, i.e. Thika, Athi River and Machakos (Owuor and Mbatia, 2008).<sup>2</sup>

As much as the plan was a tool for managing the growing city, the interests of the urban majority seem to have been neglected as segregation was enhanced based on economic and class lines. In the process, the urban majority were marginalized further and informal settlements and businesses thrived from the late 1970s to date (Owuor and Mbatia, 2008).

The planning area is located in the middle of diverse urban landscape. The railway station and railway track are a physical barrier between the CBD and the industrial area.



**Figure 2-5 Nairobi Metropolitan Growth Strategy (1973) and the Planning Area**

Source: NIUPLAN and planning area overlapped

<sup>2</sup> Owuor S.O & Mbatia T. (2008). *Post-Independence Development of Nairobi City, Kenya*. Paper presented at Workshop on African Capital Cities Dakar.

Other relevant studies and plans including NIUPLAN have been reviewed in the next.

## 2.3 Previous Planning Interventions, Studies, and Projects

### 2.3.1 NUTRANS for Nairobi City Council

NUTRANS (Nairobi Urban Transport Study, 2006) is a master plan that was done by JICA for the NCC for the Nairobi metropolitan area from 2004 to 2006. The GoK recognizes the importance of transport sector in facilitating the rapid economic growth and reconstruction, poverty eradication and wealth creation for the country. The study aimed at addressing transport challenges in the Nairobi metropolitan area and to finding solutions to the increasing traffic demand.

In order to solve the transport problems, a comprehensive master plan was formed to deal with the area requiring road network improvement, public transport and traffic management under the NUTRANS document. One of the strategies that NUTRANS focuses on is the rebirth of Nairobi as the Hub for Road Transport in the East African Region, which involves improving Uhuru Highway, Mombasa Road (A104) and Thika Road (A2). In addition, in order to disperse the traffic volume in the central area, the construction of Eastern, Northern and Southern bypass and Western Ring Road is recommended.

Many of these transport/road projects have already been implemented. Meanwhile, the Nairobi Integrated Urban Plan (NIUPLAN) of 2014 built on the recommendations made in NUTRANS.

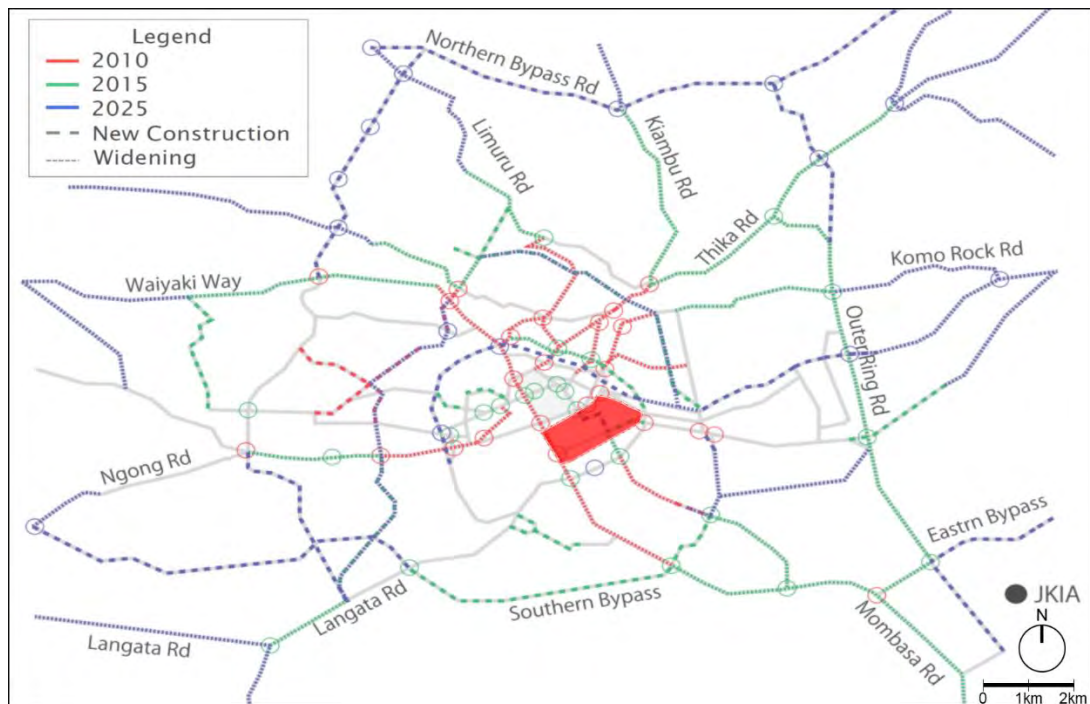


Figure 2-6 NUTRANS and the Planning Area

Source: NUTRANS for Nairobi City Council

### 2.3.2 KR Master Plan

KR prepared the master plan (2009) on the basis of Pre-FS for the proposed state of the art terminal at Nairobi and Mombasa in 2009. The following issues on urban planning and transportation have been noted;

#### Urban Planning

- Confining the development to only KR land (Appox.200acre) would be ideal in order to avoid constraints of adjacent land owners.
- If the Marshalling yard area remains as status quo, it could bring some shortage of saleable development land.
- Neighboring land uses could be a source of program development conflict especially on eastern side of the site e.g. Wakulima Market.
- Enterprise road and workshop road intend to link the northern CBD and Southern industrial area, but spatial linkage scheme is weakly addressed.
- Dispersed program allocation e.g. commercial and office space could alleviate agglomeration effect of relevant programs.

#### Transportation

- North-South linkage is proposed by Workshop and Enterprise Road to meet Halle Selassie Avenue. Many road connections with Halle Selassie Avenue would bring about congestion.
- Consideration of MRT connection or multi modal platform is insufficiently addressed.

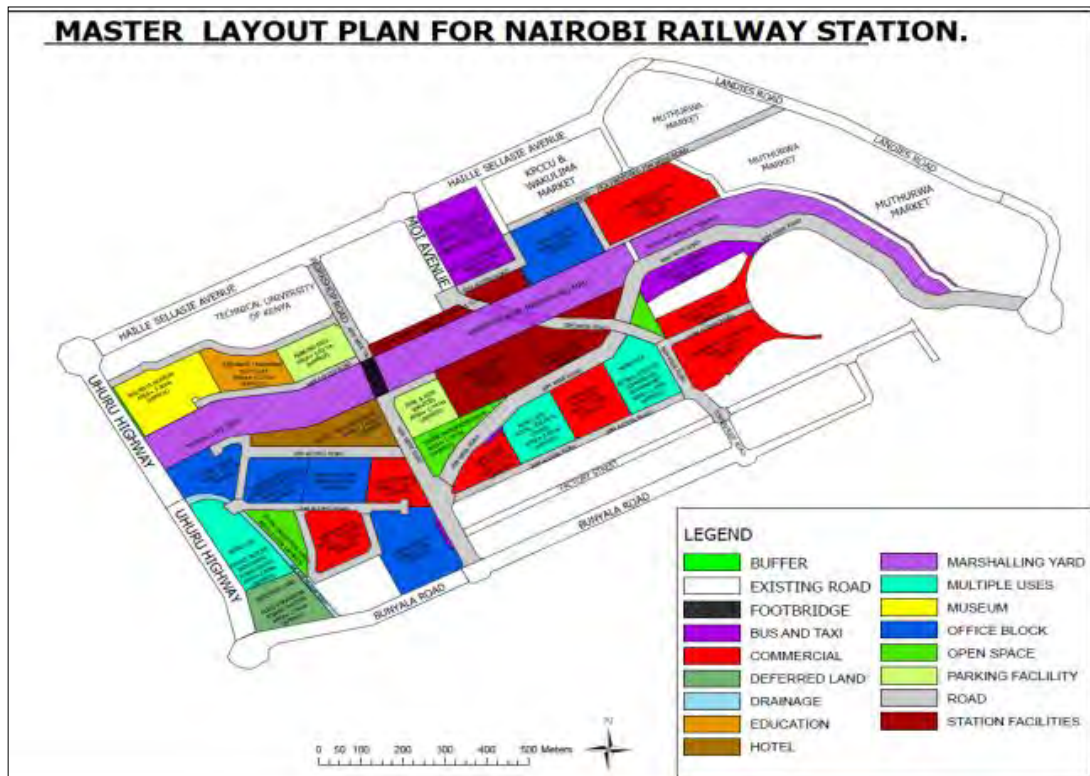


Figure 2-7 Master Layout Plan for Nairobi Railway Station

Source: Terms of Reference

KR master plan is the first trial for preparing a land use plan for the planning area. It informed the plan in regards to the site boundary and initial vision of development. However, the KR

master plan has shortcomings in integration of urban design and transportation planning, as well as in embracing the mixed land use principles.

### 2.3.3 MRTS Study

MRTS Study (Mass Rapid Transit System Study, 2011) was carried out on behalf of the GoK as a feasibility study for MRTS for the 32,000km<sup>2</sup> of Nairobi Metropolitan Region (NMR), covering the counties of Nairobi, Kiambu, Machakos and Kajiado.

The main objectives were to assist the GoK in preparing a coherent public transport policy framework and make recommendations for the legal, regulatory and institutional framework for operationalizing the policy. In addition, a pre-investment study on various modes of mass transit systems such as Heavy Rail Transit, Light Rail Transit and Bus Rapid Transit was carried out.

The study recommended the planning of MRTS network to be aligned along 9 MRTS corridors for the development of Metro Rail and Light Rail Transit Systems, with some having an extension of BRTS. All but one of the corridors (Outer ring road) were proposed to terminate at Nairobi Railway Station. This would enable easy transfer amongst the lines, facilitating the long trips from one region to another; however, this could also create bottlenecks and delays associated with the central hubs. In addition, twelve transit centers were recommended along the MRTS corridors. The subsequent MRTS harmonization study sought to resolve issue not tackled in the MRTS .

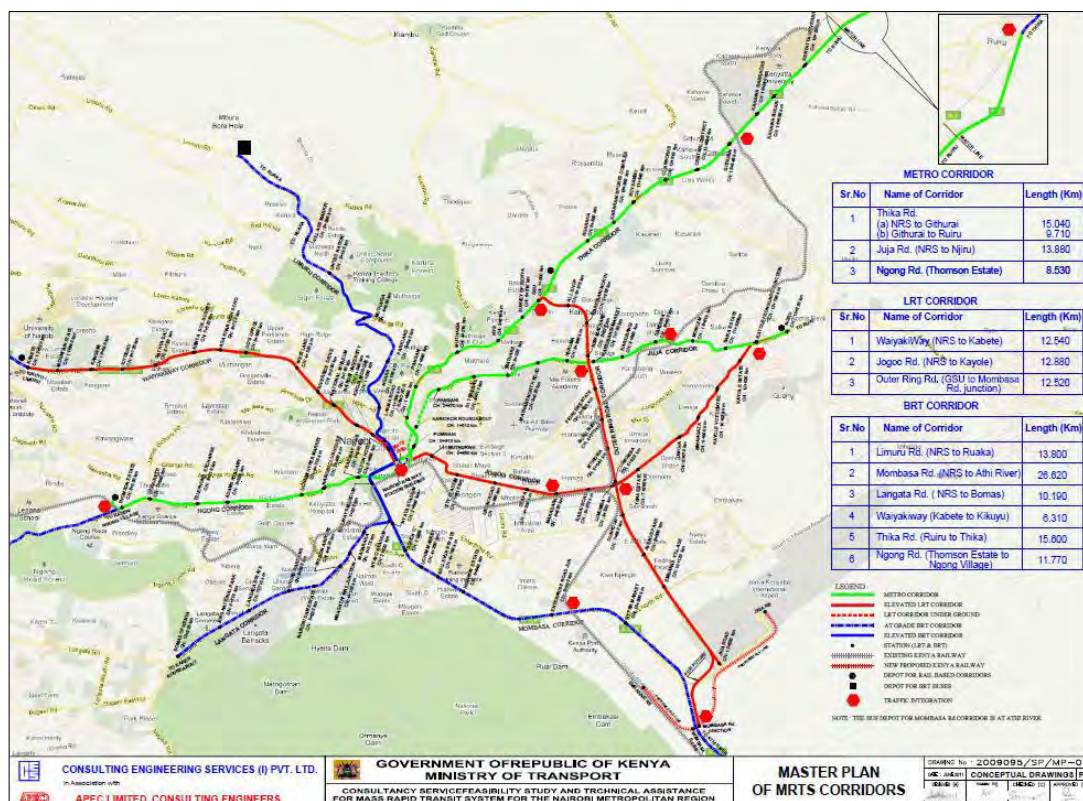


Figure 2-8 Masterplan of MRTS Corridors

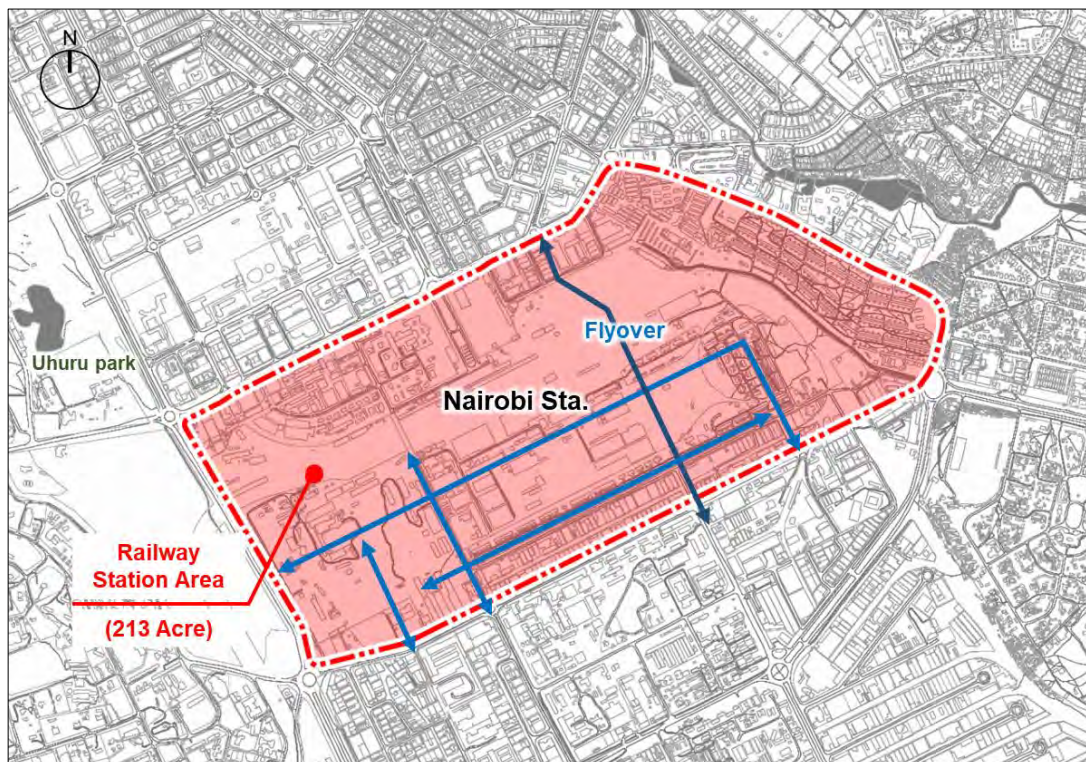
Source: MRTS study (2011)

### 2.3.4 NIUPLAN

Nairobi Integrated Urban Plan (“NIUPLAN”, 2014) seeks to integrate the existing master plans on various infrastructures within and surrounding area of Nairobi Metropolitan Area, especially

the NUTRANS and MRTS Study, in order to derive a guiding integrated framework that manages all the urban development from 2014 to 2030. The NIUPLAN envisages a compact city with multiple core centers and a revitalized CBD in accordance with the NIUPLAN vision, creating an inclusive city that ensures social equity and environmental sustainability.

Transportation and land use sector built on NUTRANS 2006 study defines the new spatial structure and land-uses, compliant with the 2030 vision, including 16 sub-centers located at interchanges between the road network and railway corridors. NIUPLAN identifies the Railway City as a priority project in land use planning, railway and urban transport sector expansion as well as CBD expansion towards the south. As a plan that aims to address the traffic congestion issues, NIUPLAN recommends a revision of plans, including the Kenya Railways Master Plan, to strengthen traffic and pedestrian network and optimize the development potential of the area.



**Figure 2-9 Nairobi Railway Station Area in NIUPLAN**

Source: NIUPLAN (2014)

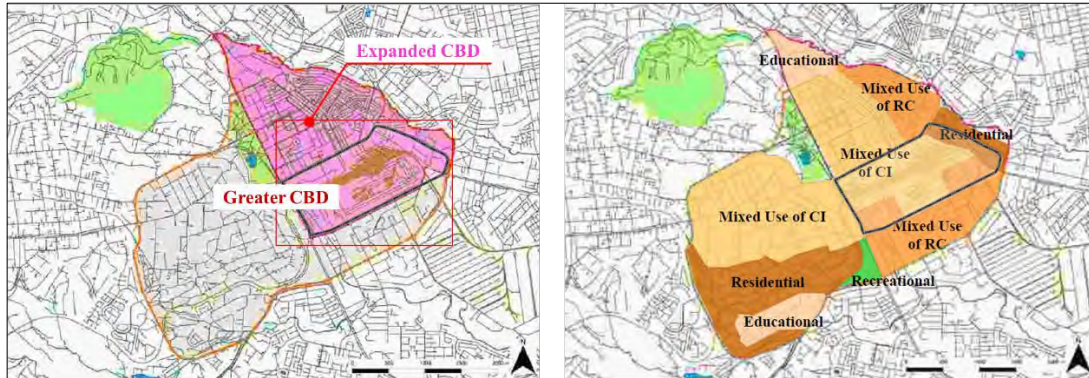
In tandem with the urban redevelopment of the Nairobi Railway station area, NIUPLAN also recommends certain road and public transport development programs including flyover (viaduct) concept.

From a planning perspective, NIUPLAN provides a basic framework for the planning of Nairobi and adopts the concept of decentralizing urban activities and settlements from CBD. A sub center system with bi-polar corridor development is noted as 1 urban core with 8 junction sub centers and 7 stations sub center. The CBD as 1 urban core is envisioned to reinforce its symbolic status as the center of Kenya, and as the gateway to East Africa region through strengthening the function of the CBD of Nairobi. The main concepts of the CBD area development are classified under 4 pillars as outlined below,

- Economy: Promote an inclusive urban economy
- Transport: Efficient, effective, and inclusive transport system
- Environment: A healthy, green, thriving, and secure Nairobi city

- Urban space: Pedestrian –friendly urban space

With an aim of reinforcing the CBD function, NIUPLAN suggests a greater CBD concept. Compared to the spatial planning concept for NMR (2012), the Upper hill area is included as part of the CBD. In addition, NIUPLAN introduces the brief land use layout which suggests the idea of railway city as a mixed-use area with both residential and commercial uses.



**Figure 2-10 Greater CBD Concept in NIUPLAN**

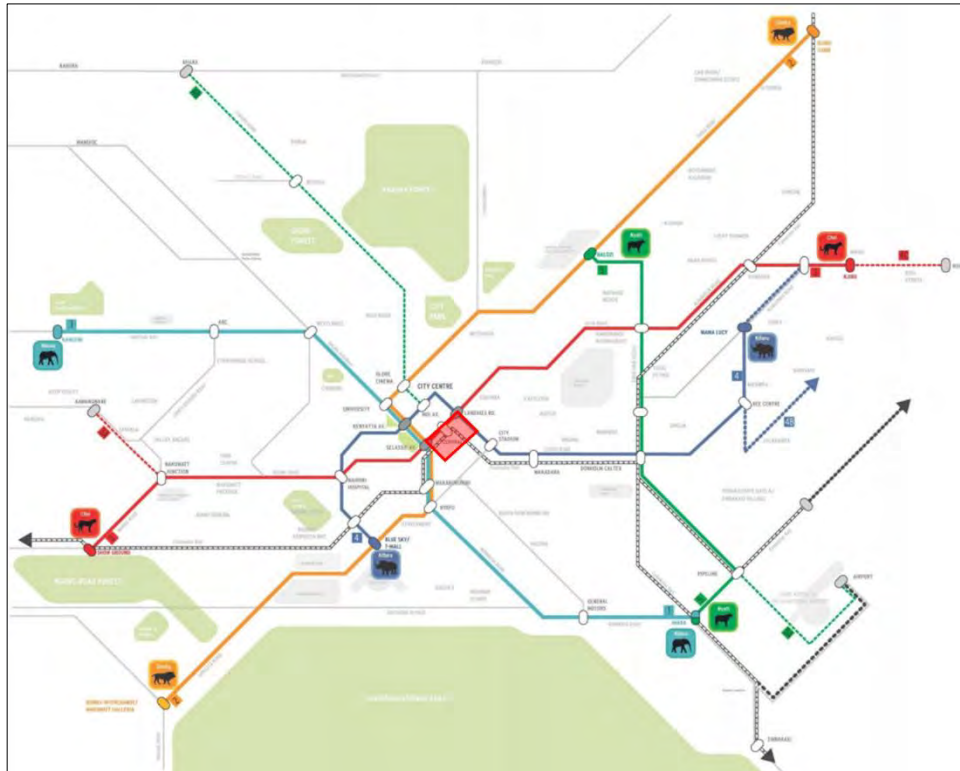
Source: NIUPLAN (2014)

NIUPLAN indicates the Railway City project should be treated as priority project amongst others. The CBD four pillar concepts could be directly reflected in urban character of the Railway City. Adapting to the Greater CBD concept, the Railway City development could integrate the old CBD structure with the linkage to the surrounding area. The Viaduct proposal in NIUPLAN was considered and lowering the railway was the better alternatives outlined in Appendix 1. Comparison of lowering and At-grade the railway.

### 2.3.5 MRTS Harmonization Study

The aim of the Harmonization Study (2014) was to develop an integrated public transportation network for Nairobi and the Nairobi Metropolitan Region and develop a consistent network of all MRTS corridors that is realistic and provides feasible solutions for all key corridors in the future. Through this study, a coherent MRTS network will be developed, which is considered as the optimum solution that meets the needs of the public transportation of the Nairobi Metropolitan Area for the current and the 2030-time horizon.

The MRTS Harmonization Study recommended 5 MRTS lines, instead of the 9 recommended in the MRTS Study (2011), with a focus on BRT. In the previous MRTS Study, these MRTS corridors were proposed to converge and terminate at the same location, the Nairobi Railway Station. However, this concept was deemed not feasible as it would lead to more congestion in the CBD. Furthermore, this system also showed that it would be extremely vulnerable to disruption from any unexpected accidents or unscheduled maintenance requirements. Therefore, while there are four radial lines crossing the City Center, one orbital line circles around the Outer Ring Road and according to the traffic demand of the suburban areas, either one mode of transport or the complementary MRTS and Commuter Rail will be provided. The proposed BRT line integration in the Plan is based on this study.



**Figure 2-11 MRTS Harmonization Study (2014) and the Planning Area**

Source: MRTS harmonization study and planning area layers superimposed

### 2.3.6 Standard Gauge Railway

The Standard Gauge Railway is an important link for intercity train transport from Mombasa to Kisumu via Nairobi. The SGR passenger station that is located at Embakasi Station (Nairobi South Station) is linked to the Nairobi Central Station by commuter rail by meter gauge rail from the Syokimau Station. Commuter Rail master plan elaborated further the way of linkage of NMS and NCS.

### 2.3.7 Green Mall Project

The Green mall project (2016) was jointly sponsored by the Kenya Railways Corporation, the County of Nairobi and the Directorate of Urban Development to assess the feasibility and provide detailed designs for the selected road corridors and a Green-Mall bus station boulevard in the Nairobi central station. The proposed road corridors and bus station were developed as part of wider plans by the sponsors and relevant stakeholders and built on the following plans,

- NIUPLAN (Nairobi Integrated Urban Development Master Plan) which proposed the development of two viaducts and a new bus & matatu terminus within the Nairobi Railway Station area,
- NUTRANS.

The above plans are described in detail in other parts of this report. However, it is important to note that the plans above did not include traffic analysis for the Project area. The Green Mall project narrowed this gap and a detailed traffic study and analysis were carried out. In addition, the Green Mall project was ultimately to become a part of the Nairobi Railway City project. The results obtained from the study was fully considered in the development of the Nairobi Railway City project.

The Green Mall project included a proposal of lowering the railway lines in the Nairobi Central Station Area. The proposal was in line with the trends observed in many cities worldwide, especially those with high populations and many traversing railway and road routes. In many cities, when railway lines were first constructed, stations and workshop facilities were erected at the fringes of built up areas and were surrounded by undeveloped open spaces. However, as population increased and the urban areas were developed, the railway structures happened to be in the middle of the built-up areas, which hindered further extension of the station area.

In case of Nairobi, the grounds and yards around the Nairobi Railway station now functions as a barrier against the expansion of the Central Business District (CBD), and is not only an obstacle of urban growth and development also of traffic flow. Development of this area would allow for expansion and continuity of the CBD towards the Industrial Area. Proposals for creation of North-South traffic links between the CBD and the Industrial Area led to the discussion to lower the railway line.

An open cut was considered to be the best option as it reduces the visual barrier effect caused by many railways as any bridges would be constructed at the ground level and not create a difference in level. The proposal included lowering the railway infrastructure from the west of Uhuru Highway to the overpass of the Lusaka Road in the East, extending over a length of 2.6km plus the ramps at both ends. The proposal suggested the rail to be lowered to a depth that allows it to be crossed via bridge at the ground level. Relocation of other infrastructure was also recommended from the area to free prime property for urban development.

The Green Mall project suggested the urban and traffic concept including the position of the railway line as in the figure below. The option of lowering the railway is discussed further in Appendix 1 with an analysis of costs for the proposal including the social economic costs and benefits.



**Figure 2-12 Green Mall Project Scheme and the Planning Area**

Source: Green Mall Project (2016)

### 2.3.8 Nairobi Viaduct and Road Construction Project

This Nairobi viaduct and road construction project (ongoing) was funded by JICA under the objective of conducting a preparatory survey for the construction of viaducts over the railway yard and expansion of Enterprise Road. These were identified as priority projects in the NIUPLAN that would address traffic congestion in the CBD.

The proposals from the viaduct project were reviewed in detail with respect to their compatibility with the plan. The review focused on the effect of the barrier effect created by the viaduct and other environmental issues. The Plan recommends lowering the railway track as the optimum option. This is described in Appendix 1.

### 2.3.9 Detailed Planning of Integrated Transport System and Loop Line Project

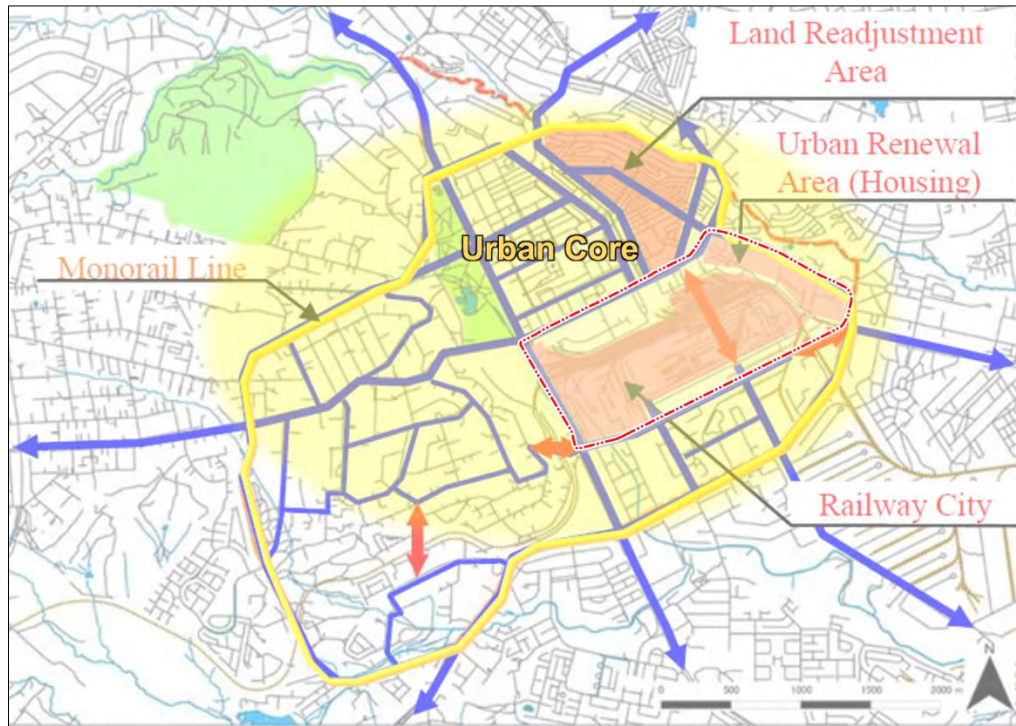
The detailed planning of Integrated Transport System and Loop Line Project (2016) was undertaken by JICA for the Nairobi City County Governments with the objective of formulating an integrated transport system and loop line that will provide seamless connections with other modes in the Central Business District as envisaged in the NIUPLAN. The project covers the Nairobi Urban Core as shown in the below figure.

The two main components of the project were:

- **Component 1:** Develop a detailed plan of the Integrated Transport System in the Nairobi Urban Core
- **Component 2:** Develop a framework for the Loop Line Project

This was mainly developed by:

- Reviewing and analysing the current situation of transport and urban development in Nairobi and its Urban Core;
- Developing the integrated transport system in the Nairobi Urban Core in line with NIUPLAN while coordinating with on-going and planned transport and urban development projects in the Urban Core;
- Formulating a detailed plan of integrated transport system in the Nairobi Urban Core including public transport system connectivity; and
- Designing the loop line project framework including preliminary design and alignment of routes for the transport system and an implementation structure, legal framework and financial scheme of the project.



**Figure 2-13 Loop Line Project and the Planning Area**

Source: NCCG (2016)

### 2.3.10 Capacity Enhancement of A104 Road

The A104 road is the main route from the Mombasa port in the south-east region of Kenya, through Nairobi to Malaba on the Kenya/ Uganda border. GoK intends to improve the section of the A104 Highway from Jomo Kenyatta International Airport (JKIA) to Rironi. The project is divided into three lots as follows:

- Lot1: JKIA to Likoni Road
- Lot 2: Likoni Road to James Gichuru Road (12 km)
- Lot 3: James Gichuru Road to Rironi (25 km)

These roads have very high traffic volumes and long travel times due to heavy traffic in the Nairobi CBD section. The traffic flow is interrupted by a number of at-grade intersections with very low capacity especially at the signalized roundabouts.

The scope included:

- Capacity Enhancement of A104 from JKIA Turnoff to Rironi
- Design BRT roadway infrastructure

The project proposes the introduction of grade separated intersections at various major intersections to reduce traffic conflicts and improve through movement. The design of the road includes provisions for a segregated BRT line in the road median which will run parallel to the road alignment as BRT line 1. This is inclusive of modern BRT stations at specific locations and as determined by a study undertaken by the Institute of Transport Development Policy (ITDP). Any relevant changes to the design of A104 will be incorporated in the detailed design.

### 2.3.11 NaMSIP Proposals

NaMSIP proposed the improvement of public transport through better modal integration and land use coordination. This includes provision of the necessary infrastructure and promotion of residential and business growth in the vicinity of the project.

The proposals consist of five new crossings linking the exiting CBD in the North and the new envisioned CBD in the South as follows:

- Road 1: Haile Selassie to Mombasa Road near Capital Center along the alignment of Workshop, Dunga and Mukenia Roads. As the Road shall act as an alternative to Uhuru Highway, it is proposed that the capacity be maintained at a similar level
- Road 2 and 3: Two link roads allowing continuous movement between Commercial Street /Bunyala Road to Moi Avenue and Tom Mboya Street respectively.
- Road 4: Extension of Enterprise Road to Haile Selassie Avenue at Wakulima Market
- Road 5: Link road running from Haile Selassie Avenue Near Ladhies Road Roundabout along Factory Street after which it follows the railway alignment until it terminates at Bamburi Road in Industrial Area.

In this case, unlike the Nairobi Viaduct proposal, the proposals highlighted that the crossing of Roads 1 and 4 through the railway yards should be a 'street', not a wall, to provide continuation of the city fabric to the south. The Figure below shows the layout of these roads.

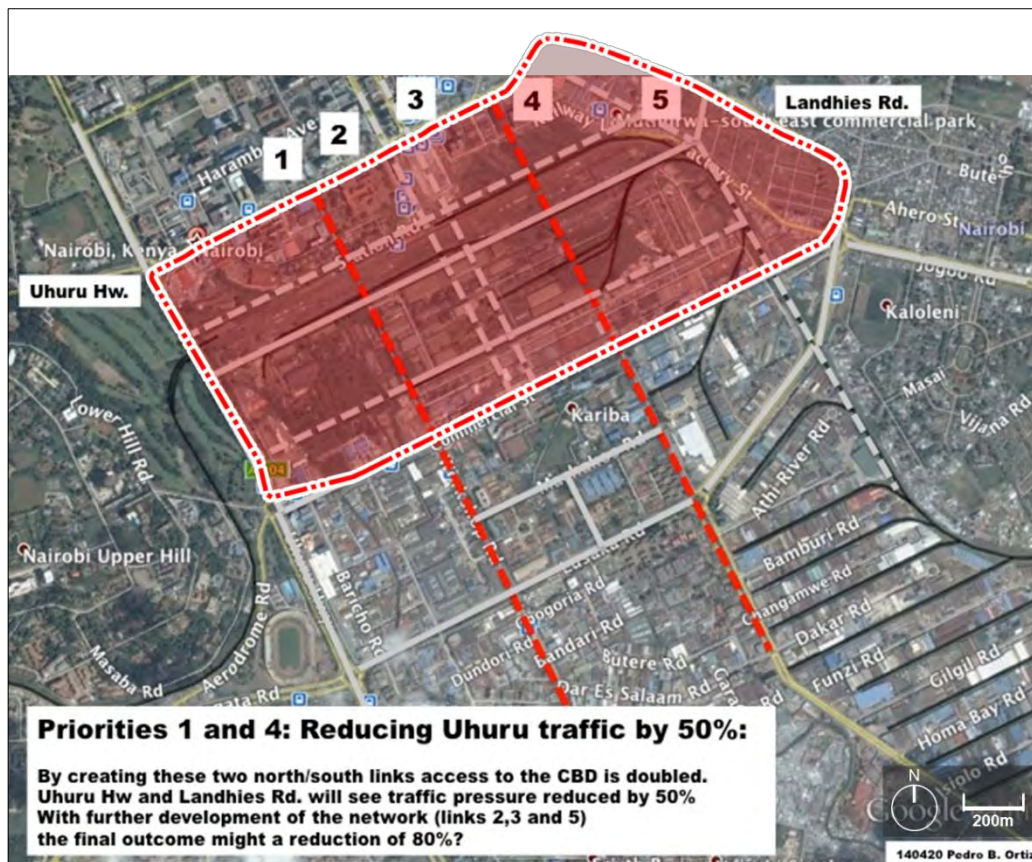
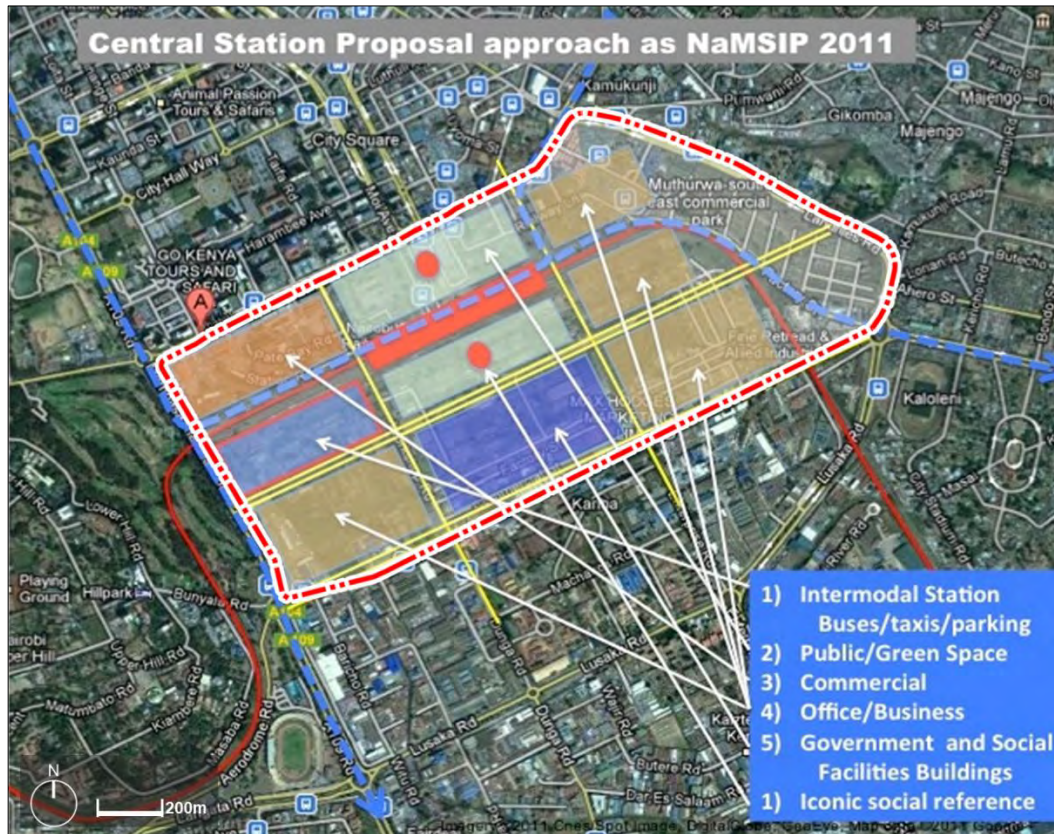


Figure 2-14 NaMSIP Road Proposals and the Planning Area

Source: NaMSIP



**Figure 2-15 NaMSIP Central Station Proposals**

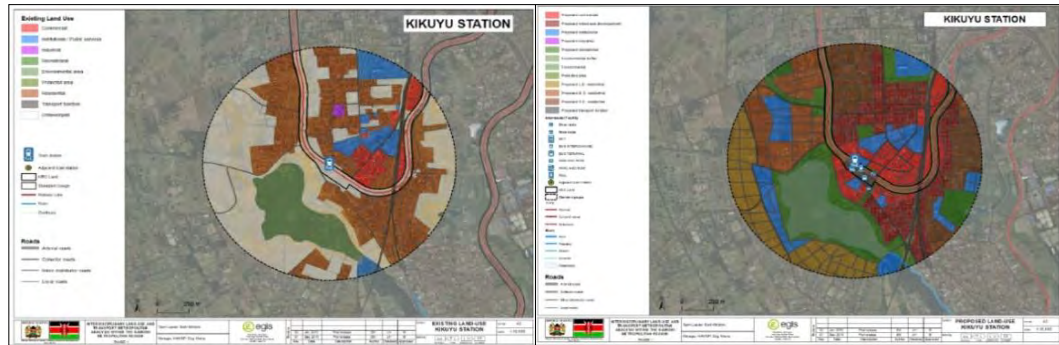
Source: NAMSIP

Proposals were also made on the improvement of the Central Railway Station area to provide for various facilities including an intermodal station as shown in the Figure above.

### 2.3.12 Interdisciplinary Land-use and Transport Metropolitan Analysis within Nairobi Metropolitan Region (ILUT)

ILUT (2017) analysis focuses on 34 commuter rail stations studied in terms of potential for development. The NMR spatial plan prepared a regional development concept for Nairobi. It allocates future development and activities in broad areas of the metropolitan region. According to the NMR spatial plan, multi criteria were used for prioritizing the stations' list. Majority of the stations outside of Nairobi are proposed for massive densification and urbanization next to the railway station, to initiate the basis of TOD that supports most of the growth of NMR.

This project took an analysis of surrounding areas of existing or future commuter rail stations within 1km radius from station. The picture below illustrates existing land use map and future plan of TOD base land use map.



**Figure 2-16 ILUT Exemplary Drawing –Kikuyu Station**

Source: KR

The Nairobi central station is not considered in this project but this project ensured the trends of transit and sustainable oriented developments, those were fully reflected in the plan.

### 2.3.13 Urban Renewal Plan

The recent increase in population growth and urbanization has left the Kenyan housing sector unable to provide sufficient and affordable housing to its residents. Those most affected by the lack of housing are primarily from lower income groups. In the urban areas, 84% of Kenyans rent houses while only 16% own their own homes. Households spend more than 30% of their incomes on rental accommodation. A lack of access to affordable financing exacerbates their difficulties in escaping the cycle of poverty.

The proposed Nairobi Housing Urban Renewal is the Nairobi City County's initiative under the leadership of the Nairobi governor to refurbish the old buildings in Nairobi into modern and affordable houses for Nairobi residents to rent or buy. The estates to be refurbished include Bachelors/Jevanjee estate, Ngong road estate, Old Ngara estate, Pangani estate, Uhuru estate, Ngong road estate and New Ngara. Most of these estates were erected a long time ago and are therefore dilapidated. In addition, most of them are low-rise occupying extensive lands which can be optimized by erecting middle to high rise apartments in line with city planning regulations.

The NCCG's challenge of providing decent and affordable housing for Kenyan citizens has been lack of sufficient funds to implement such a capital-intensive program. It is for this reason, that a Joint Venture (JV) solution has been developed. Under the joint venture (JV) business agreement, the NCCG and Private Investors will agree to develop for a finite time, the proposed houses by contributing equity. They will jointly exercise control over the development and consequently share revenues, expenses and assets.

To implement such a large-scale project, it is essential that the design solution is standardized to achieve economies of scale and speed in implementation. The proposed design of the housing units has therefore been standardized and modularized.

As a relevant scheme, "Affordable housing" initiative was influenced by GoK policy on affordable housing. In the Plan, especially within the Muthurwa area, the affordable housing scheme is proposed. Refer to Chapter 7. Urban design: development guideline)

### 2.3.14 TUK Master Plan

The TUK (2017) currently has three faculties: Engineering Sciences and Technology, Social Sciences and Technology and Applied Science and Technology. The university currently has 9,000 government-sponsored full-time day students and 5,000 part-time (night) private students. It is projected that following expansion of the faculties and facilities at the university the student population will grow to approximately 20,000 by year 2020.

TUK is in the process of developing their own master plan-TUK master plan- to provide facilities to cater for this growth. The acquisition of this additional land will require negotiation with the development authority of Railway city.

TUK and the project will benefit reciprocally. Business and urban activities will be driven by student activities providing diverse urban activities.

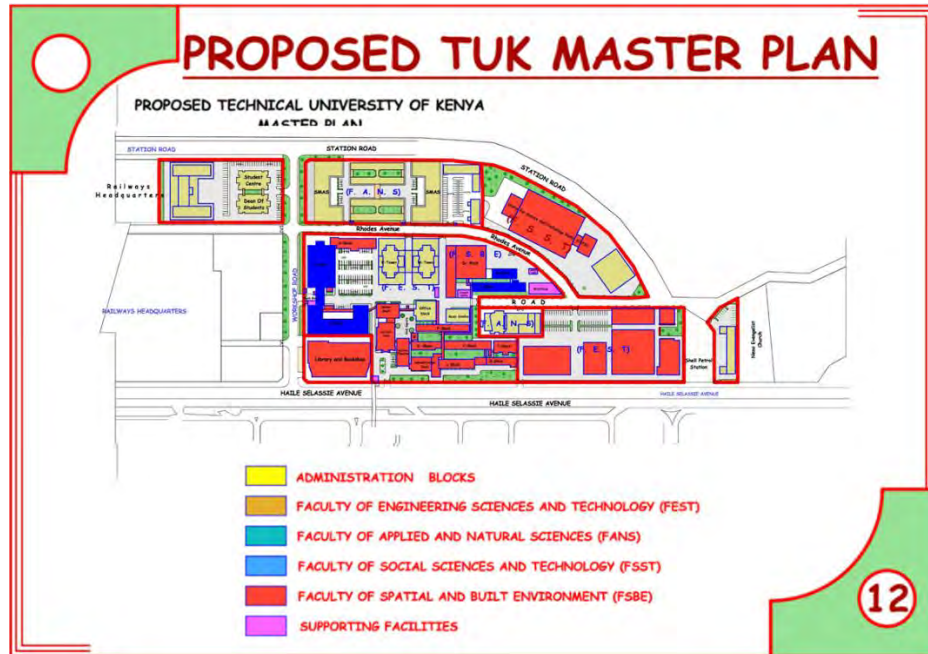


Figure 2-17 Technical University of Kenya Campus Masterplan

Source: TUK (2017)

### 2.3.15 Commuter Rail Masterplan

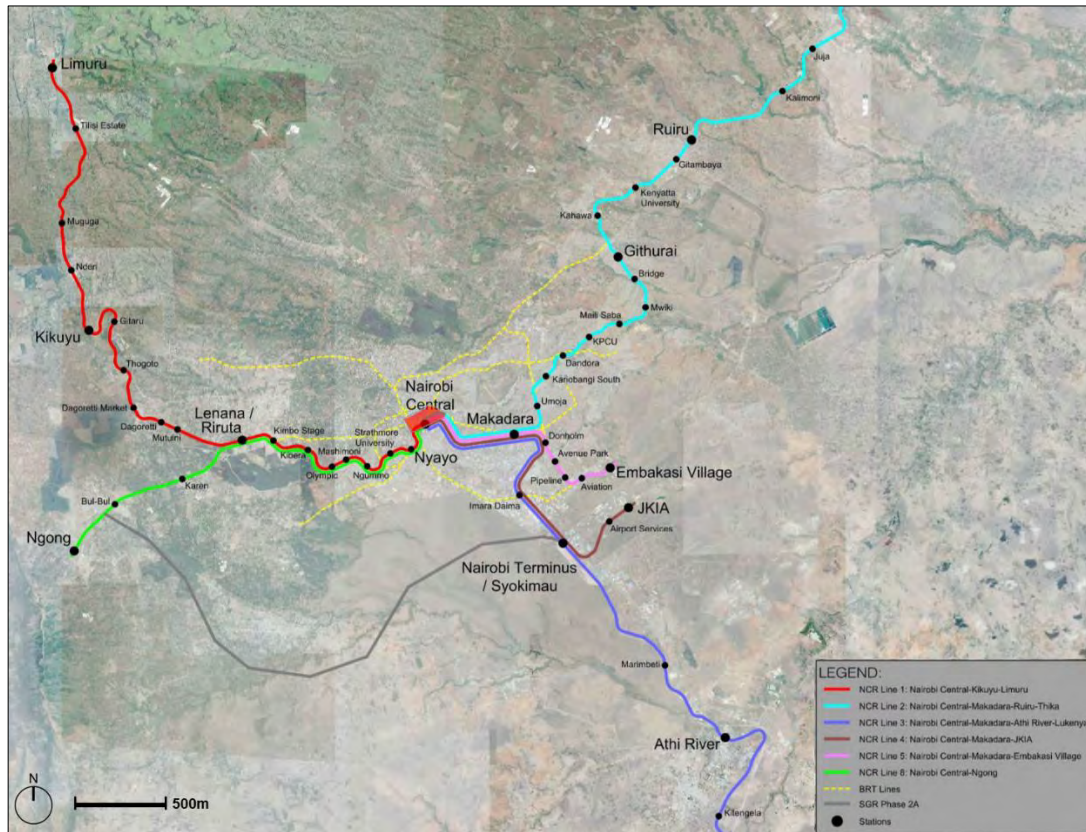
Kenya Railways conducted a study to develop a master plan for commuter rail within Nairobi Metropolitan Region (NMR). Commuter rail is envisioned to be a backbone of mass public transport in NMR. As one of the components of NUTRIP.

Rail passenger demand forecasts were developed for year 2030, in line with land use development scenarios produced for the NIUPLAN and Spatial Concept studies. Thereafter, another demand forecast was projected for the year of 2045.

Based on future demand scenarios, the "2030 Core Scenario" shows that 6 lines of commuter rail network are proposed (line 1,2,3,4,5 and 8 refer to below figure). It is noted that commuter rail is forecasted to carry 17% of all public transport trips in the NRM and Thika-Nairobi central line accounted for 46% of the total demand<sup>3</sup>. As per the Nairobi central station, this study projects the NCS station will be a strong focus of demand with 30,000 people in AM pick hour. This number is outstanding figure in comparison with the other major stations like Makadara and Githurai Station.

This study witnesses that the Nairobi Central Station will be a strongest inland hub for NMR region, thus Nairobi Railway City shall provide effective multi-modal transit facility including BRTs with strong connection of commuter rail services.

<sup>3</sup> The number is remarkably bigger than that of NIUPLAN suggestion of railway modal share as 1.9% in 2030 Alternative 3 scenario. NIUPLAN part II, pp7-44



**Figure 2-18 Commuter Rail Project Masterplan**

Source: KR (2018)

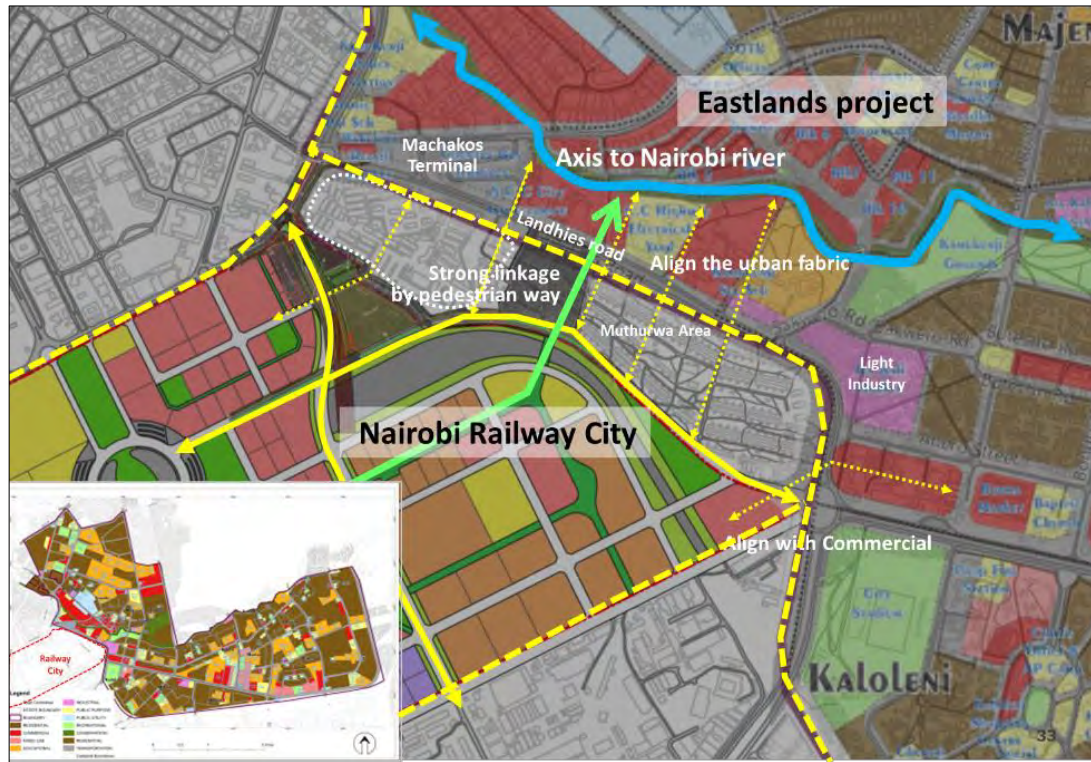
### 2.3.16 Urban Renewal Study for Eastlands

A conventional sense is that Nairobi East is under-developed than the Nairobi West. However, historically the area provides solid residential space for the middle- and low-income people in Nairobi. Physical boundary of this project borders on The Railway City boundary by Ladhies Road.

This project was undertaken by GoK, focusing on the old public housing estates and adjacent areas in Eastland. The area has been experienced a number of development challenges, some of which include dilapidated housing, environmental degradation, urban poverty, old infrastructure and services, inadequate public transport, overcrowding congestion etc.

The project covers 1,264ha. It provides frameworks for the transformation of Eastlands through provision of decent housing and sound infrastructure in terms of utility, transportation and social facilities. The renewal strategy emphasizes on densification of use of land through high-rise developments, expansion of trunk infrastructure and social services.

Both Railway City and Eastlands are neighboring projects to be complemented each other by taking advantages of respective benefits of each area. The Railway City shall be connected physically to the Eastlands by pedestrian way. Further, aligning the urban fabric also shall be considered for harmonized and linked urban development of each area.



**Figure 2-19 Urban Renewal Study for Eastlands and the Planning Area**

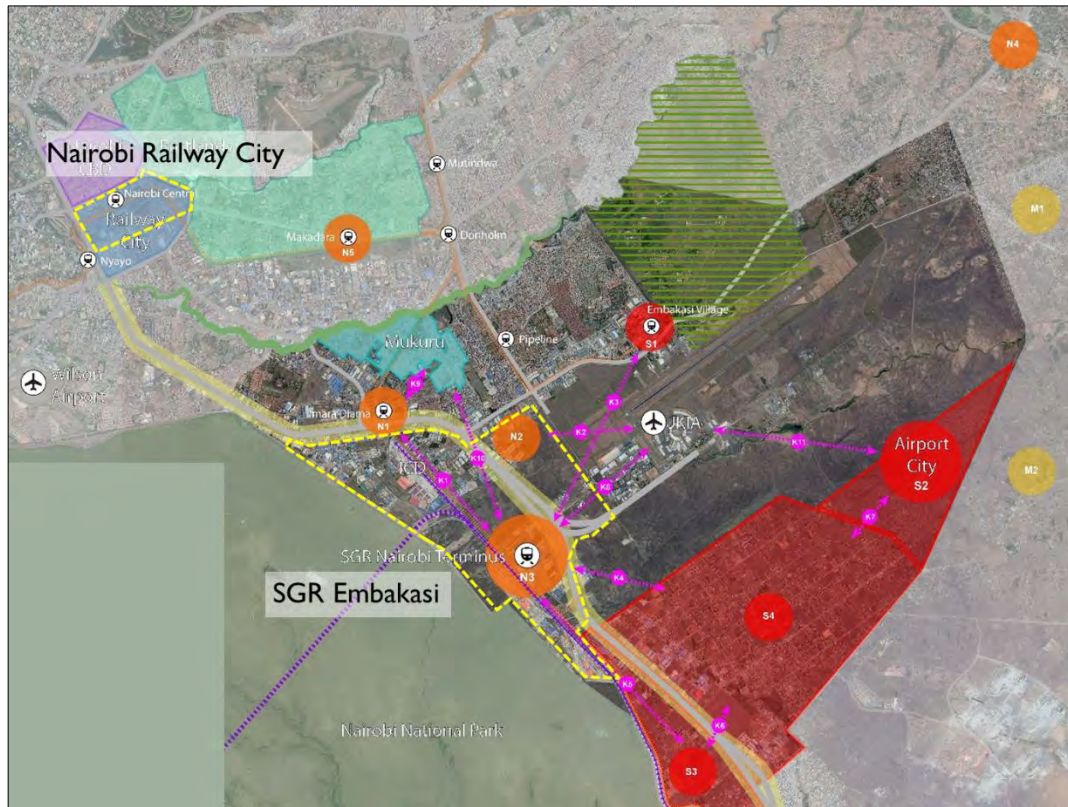
Source: NCCG (2019)

### 2.3.17 SGR Embakasi Railway Station Area Development

Project area is situated within the Embakasi East and South of Nairobi County and Mavoko Constituency in Machakos County. SGR phase 1 was completed in May 2017 (Mombasa to Nairobi) and phase 2A is under construction (Nairobi to Naivasha). Commuter rail network also interface within the area and proximity of JKIA provide another potentiality for Multi modal oriented development. Around the JKIA, the “Broader area” is 10,500ha and the front area of Nairobi South station as “Core area” is 1,500ha.

Physically the distance of SGR Embakasi and Nairobi central station are around 10km. However, both projects are linked by strong mobility means like A104 road and MGR commuter rail. Broadly, both projects need to be differently positioned in terms of urban functionality, city character in line with mobility characteristics.

SGR Embakasi includes the SGR and JKIA, so “global gateway character”, but Nairobi Railway city can be focused on the “inland global gateway” with extended CBD position. Both projects will fuel the ambitious transition of current Nairobi to the first double strong TOD urban center.



**Figure 2-20 SGR Embakasi Project and the Planning Area**

Source: NaMSIP (2019)

### 2.3.18 Implications for the Next Step

The existing projects around the planning area have been categorized as either transport or urban planning point of view. Transportation viewpoints emphasize the centrality of urban core and multimodal hub as NCS. Close contact with JKIA by rail or MRT is highly recommended. Urban planning point of view regards the planning area as a prime land of Nairobi in terms of market value and future greater CBD of Nairobi.

**Table 2-2 Summary of Related Projects & Studies**

Projects	Year/Clients	Main Issues
NUTRANS	2006, NCC	Spreading out the central traffic volume, Eastern, Northern, Southern bypass and Thika Road expansion and western ring suggested.
MRTS Study	2011, MOT	Develop Nairobi as a public transport-oriented city with metropolitan perspective. 9 MRT corridors with 12 transit centers are suggested. MRT composed of BRT, LRT and Metro.
NIUPLAN	2014, NCC	Based on NUTRANS and MRTS study, 4 BRT corridors, 3 intercity terminals, and 1 circular LRT route are suggested. In line with “Nairobi 2030: An Iconic and globally attractive city” comprehensive city with Railway City act as a CBD strengthening strategy.
Harmonization Study	2014, MOT	Based on MRTS study and NIUPLAN, partly different transportation plans to harmonize the two. 5 BRT corridors with commuter rail network are suggested.
Standard Gauge Railway	-	NSS (Nairobi South Station) as intercity SGR lines with commuter linkage of NCS (Nairobi Central station)

Green Mall Project	Ongoing, MoTIH&UD	Within NCS area, actual link between North CBD and South industrial area by 3 roads corridor and green mall concept are suggested.
Viaduct and Road Construction Project	Ongoing, KURA+JICA	To improve accessibility to the CBD and surrounding areas and reduce traffic congestion. In the plan, lowering option was taken instead of viaduct scheme for the future benefit of the Nairobi.
Loop Line in Nairobi Urban Core	Ongoing, JICA	Integrated transport system with loop line, confirmation of traffic mode suggestion
KR Master plan	2013, KR	Conceptual plan of NCS development as a state of the art termini, but this plan is updated by the project
ILUT (Interdisciplinary Land-use and Transport) analysis	2016, MoTIH&UD	Adopting the NMR Plan (2012) and others, 23 stations area development planning with TOD concept for densifying the NMR systematically.
TUK Master Plan	2017, TUK	TUK intends to expand the campus by acquiring adjacent lands including KR, post office and government printers. Land negotiation and compensation between the development authority and TUK is anticipated but the two projects are mutually beneficial.
Commuter Rail Master plan	2018, KR	KR anticipates the future commuter rail network in line with the NUTRIP, NIUPLAN and Spatial Concept for NMR studies. It shows that Nairobi Central station will be strongest inland commuter rail hub in 2030 scenario.
Eastlands urban renewal	2019, NCCG	Eastlands project adjoins with the Railway City by Ladhies Road. Strong physical linkage is recommended by pedestrian way.
SGR Embakasi Project	2020, NaMSIP	It holds two major mobility hubs with JKIA and SGR station. Railway City and Embakasi are linked by A104 and commuter rail network. Both projects share a grand "Gateway city" character with the Embakasi as global gateway and Railway city for inland gateway with the Greater CBD.



## 2.4 Planning Approaches and Principles

### 2.4.1 Sustainable Integrated Multi-modal Transportation

The Plan paid particular attention to the critical issue of integrated multi-modal transportation. Optimizing mobility and inclusive accessibility through effective transportation planning is a key component of the development. Traffic congestion in Nairobi is at an aggravated level and is only set to get worse.

The future of the metropolis has to be based on an alternative system of transport to the current massive use of the private car and small buses. Mass transit in developed metropolitan structures is based on heavy rail. The development of a world class Nairobi multi-modal central station would significantly scale up the commuter rail and other public transport services and the system itself would have substantial benefits in terms of enhancing accessibility, reducing congestion, improving air quality and quality of life in general.

A multimodal Nairobi central station is planned to be incorporated and be fully integrated with current and proposed city, national and regional transport systems and land use. The provision

of multiple links across the existing railway tracks linkages, integrated with the street web of the existing CBD, linking the north and south areas of the stations, is planned to enhance mobility and provide flexibility and freedom of access to the CBD. The Plan will have the ripple effect of reducing congestion along highways such as Uhuru highway by providing alternatives. This leads to create a competitive business environment as well as means through which various social and environmental objectives can be achieved.

One option to improve environmental impacts is the entrenchment of actual rail tracks to subgrade level, which results in reducing impact of actual rail activity and promoting open communication and continuity of the urban fabric between north and south areas of the station. This will reduce congestion effects on actual CBD and reduce environmental pressure on Upper hill area by providing alternative CBD expansion area.

#### **2.4.2 Economic Sustainability**

Building a nationally and internationally competitive economy for Nairobi is one of the key objectives of the development. Nairobi will benefit from harnessing of the 176ha (435acres) of under developed land to provide for the much-needed CBD growth while achieving much wider social, environmental and cultural objectives. The development will reduce pressure on saturated areas as well as reduce prices in property and rental markets while creating an investment opportunity.

The project will anchor a metropolitan public transport network that will promote substantial metropolitan growth by providing effective linkages between households, work locations, production centers and opportunities to create and develop businesses. This will ensure that Nairobi City County retains its predominance as the center and driver of the metropolitan region. To achieve this will entail building a supportive environment for creating and maintaining quality employment, spurring a vibrant and dynamic economy benefiting all persons and seeking the availability of skilled and affordable personnel equipped with competitively priced working spaces. The multiplier effect of this will be felt in diverse sectors of Nairobi's economy such as construction, provision services and taxes, and will retain and foster Nairobi's leadership role in East and Central Africa.

#### **2.4.3 Social Sustainability and Accountability**

The Plan seeks to provide a world class living environment aimed at the creation of better places to live, work and visit to attract a diverse range of people and together form healthy, vibrant, coherent and safe communities. Providing a quality living environment for all will include ideas for housing, social facilities, adequate services – water and sanitation, open public spaces and recreation facilities, energy efficient and environmentally sustainable amenities in the region.

Nairobi is set to benefit socially from the provision of housing, education, health and other social services that are to be integrated in the project. Housing the population in the transformed region will require innovation in design of the interventions, elimination of the current housing deficiencies and creation of progressive and adequate housing, well serviced with water, sanitation, circulation, waste management, recreation and green facilities, health and social facilities. The Plan does not only satisfy some of the housing demand, but it can demonstrate viable typologies of mixed-use high-density urban development.

#### **2.4.4 Sustainable Urbanism and security**

Public administrations will also benefit from direct returns from the development value catchment and future taxes, which can be used for social reinvestment. Maximum economic value of land will be targeted through establishment of an integrated hierarchy of land uses to enhance value of land. Special attention should be devoted towards allocation of value capture to both infrastructure and targeted high need social programs. Through designated proportional profit captures diverted towards affordable housing or other civic needs, the project can truly respond to all citizens, not just the elite city dwellers.

### 2.4.5 Environmental Sustainability

The Plan endeavors to provide a world class living environment aimed at the creation of better places to live, work and visit to attract a diverse range of people and together form healthy, vibrant, coherent and safe communities. Providing a quality living environment for all includes options for housing, social facilities, adequate services – water and sanitation, open public spaces and recreation facilities, energy efficient and environmentally sustainable amenities in the region.

### 2.4.6 Urban Design and Sustainability

#### Local Character and Identity

This is the distinctive identity of the area that shall result from the interaction of many factors, including built form, people, activity and history. The Plan sought to support local character in the Urban design in order to:

- attract highly skilled workers and high-tech businesses
- help in the promotion and branding of the city and regions
- potentially add a premium to the value of properties
- reinforce a sense of identity among residents, and encourage them to help actively manage their surroundings
- offer people meaningful choices between very distinctive places, whose differences they value
- encourage the conservation and responsible use of non-renewable resources.

#### Connectivity

This shall entail the physical conditions facilitating access within a region, city, town or neighborhood. The Plan sought to provide for well-connected cities and towns in order to:

- enhance land values
- make local shops and facilities more viable
- enhance people's safety and security by encouraging surveillance
- encourage more walking and cycling, leading to health benefits
- reduce vehicle emissions through fewer cars being used

#### Density

The urban design endeavors to promote a higher density of buildings and public spaces (in conjunction with other conditions, such as mixed use, good building design and adequate open space) in order to:

- deliver savings on land, infrastructure and energy
- reduce the economic costs associated with time spent travelling
- promote social connectedness and vitality
- help encourage greater physical activity, with consequent health benefits
- help conserve green spaces, in conjunction with certain kinds of urban development
- reduce run-off from vehicles to water, and overall emissions to air/atmosphere (although air emissions may be more locally concentrated).

#### Mixed Use

The Plan made efforts to suggest an urban design where a variety of different living and working activities are in close proximity within a neighborhood in order to:

- offer people convenience, choices and opportunities, which lead to a sense of personal wellbeing
- allow parking and transport infrastructure to be used more efficiently
- lower household spending on transport
- increase the viability of local shops and facilities
- encourage walking and cycling - bringing health benefits, reducing the need to own a car and thus reducing emissions
- increase personal safety
- enhance social equity

### **Adaptability**

The Plan seeks to design urban buildings, neighborhoods and spaces that are adaptable to changing needs in order to:

- extend the useful economic life of buildings and public spaces
- increase the diversity of uses and users in the public area, and the length of time it is used for
- encourage the conservation of non-renewable resources
- contribute to economic success over time.

### **High Quality Public Realm**

The Plan is not simply about transport or real estate development plan. An important objective is to demonstrate how the public realm can create urban vitality and excitement that will encourage people to be proud of Nairobi and animate the city. Public plazas and public space policies aim at designing along with recommendations for required policy change (for elements such as outdoor cafes, community markets, kiosks, musical/performance, daytime/night-time activities, etc.). The goal is to ensure attention to elements that will produce a vibrant and secure street life; and to ensure that policies and regulations will support this goal.

The public realm will comprise all parts of the physical environment of the planning area that the public has access to, and that form the setting for community and public life. The urban design approach was emphasized a quality in the public realm in order to:

- lead to enhanced urban economic performance by attracting more people and activities
- encourage greater participation in community and cultural activities, and enhance civic pride and commitment to the community
- increase the use of public space and support associated business
- enhance personal safety

### **Governance**

Effective governance systems are key consideration in the realization of the project. Two governance systems are important: governance/management of this project and long-term governance of project development after the project is completed. These governance systems aim at creating efficient and effective application of available resources to achieve desired results in a transparent and equitable manner. The development requires complex mechanisms of management and planning. An agile management structure shall be prepared that ensures economic maximization while still addressing public interest objectives.

Above planning approaches were the key consideration during the planning process.



# Chapter 3. LEGAL AND INSTITUTIONAL FRAMEWORK

## 3.1 Policy Framework

The Plan (The Nairobi Railway City Local Physical and Land Use Development Plan) has been prepared in accordance to the following main policies; Kenya Vision 2030, Big 4 Agenda, National Land Use Policy (NLUP), 2017, Nairobi Integrated Urban Development Master Plan, 2014 (NIUPLAN).

### 3.1.1 The Kenya Vision 2030

The Kenya Vision 2030 is the long-term development blueprint for the Country. It's vision is to create a globally competitive and prosperous nation with a high quality of life by 2030, so that aims to transform Kenya into a newly industrializing, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. Vision 2030 seeks to transform the country economically, socially and politically. In a similar manner, the project seeks to sustainable, integrated, iconic city by implementing key aspects of vision 2030.

The project contains various components that are envisioned by Vision 2030 such as a potential hi-tech Industrial Park, railway lines, road networks to address missing links, non-motorized transport facilities and housing. Many of these features are identified as key goals by the Vision 2030 Medium Term Plans.

### 3.1.2 The Big 4 Agenda

The Big 4 Agenda is a 5-year development plan by the GoK with four (4) key pillars being manufacturing; Affordable housing; Universal Health Coverage and Food Security. With respect to Affordable Housing, the Big 4 Agenda aims to deliver 500,000 affordable homes across the country's 47 counties and to reduce the cost of construction and ownership by 30% and 50% respectively. The overarching goal is to reduce the low-income housing gap by 60%. With respect to Manufacturing, the Big 4 Agenda aims to raise the manufacturing sector's contribution to the national GDP from 8.5% to 15%. The primary target sectors are the Agro-processing industry; the Textile, Apparels and Leather industry; Heavy industries (Oil & Gas, Mining, Iron & Steel); and ICT and Services industries.

With respect to Universal Health Coverage, the Big 4 Agenda aims to actualize 100% cost subsidy on essential health services and to reduce medical out-of-pocket expenses by 54% as a percentage of household expenditure. Accordingly, the Agenda focuses on investment in low-cost health insurance products especially targeting the low-income segment of the population. With respect to Food Security, the Big 4 Agenda aims to increase the average daily income of farmers by 34% and to create 1000 agro-processing SMEs and 600,000 new jobs. Further, the Agenda aims to increase the agriculture sector's contribution to national GDP by 48% and to reduce the number of food insecure Kenyans by 50%.

These are the main components of the Big 4 Agenda.

### **Affordable Housing**

The project provides for affordable housing within the project area. This will assist the Government reach its goal of provision of affordable housing both under the Big 4 Agenda and under Vision 2030.

### **Hi-Tech Industrial Area**

The project has a portion of tech industrial area, which is one of the components of the Big 4 agenda. The area will improve the high-tech manufacturing sector of the economy as well as provide employment to a number of young Kenyans currently struggling to find jobs and make ends meet.

### **Health Facility**

The project also planned the construction of a county hospital. Currently, there is no reliable public hospital facility within the Project area or in the immediate vicinity of the Nairobi CBD. The hospital can increase the capacity of the City to meet the health needs of inhabitants of Nairobi Metropolitan Region.

#### **3.1.3 National Land Use Policy (NLUP), 2017**

The principal objective of NLUP is to provide legal, administrative, institutional and technological framework for optimal utilization and productivity of land. The NLUP notes that land use in Kenya especially in urban areas is hardly in conformity with the existing zoning subdivision and building Regulations. This has led to uncontrolled urban development among other factors. The NLUP lays great emphasis on land use planning especially in urban areas such as the project site. The location of the Plan involves redeveloping a prime section of Nairobi CBD to promote better utilization of land on the planning area for the benefit of the entire city.

#### **3.1.4 Spatial Planning Concept for Nairobi Metropolitan Region**

This planning concept is the framework that gave rise to the NIUPLAN. It sought to collect data and study the various factors influencing of the structure of the Nairobi Metropolitan Region (NMR). These factors include strategic location, land tenure structure, settlement structure, transport structure and settlement structure among others. The study of these factors involved stakeholder engagement after which the stakeholders recommended that the spatial plan to be developed should incorporate the direct development of the NMR in a way that facilitates economic planning, incorporates affordable housing and provides effective governance and security.

The Planning Concept provides detailed recommendations on planning issues with respect to housing, land use management, transport and infrastructure. It is notable that all of these aspects form part of the Railway City Plan, as the Railway City is intended to among other things, transform Nairobi City into a 24-hour economy of a world class nature.

#### **3.1.5 Nairobi Integrated Urban Development Master Plan, 2014 (NIUPLAN)**

NIUPLAN is a policy document adopted for the purpose of guiding a transition towards a planned and orderly urban environment in the capital city of Nairobi. The plan addresses planning issues affecting the city including poor housing, water inadequacy, unemployment, disorganized urban growth and health sector challenges and provides recommendations on how the issues can be solved.

NIUPLAN provides basic framework of the planning of Nairobi and adopts the concept of decentralizing activity and settlements from CBD. A Sub center system with bi-polar corridor development is noted as 1 urban core with 8 junction sub centers and 7 stations sub center. The CBD as 1 urban core is envisioned to reinforce its symbolic status as the center of Kenya,

and as “Gateway to East Africa Region through strengthening the function of Nairobi City’s CBD”. Main concepts of CBD area development are classified under 4 pillars as outlined below,

- Economy: Promote an inclusive urban economy
- Transport: Efficient, effective, and inclusive transport system
- Environment: Healthy, green, thriving, and secure Nairobi city
- Urban space: Pedestrian –friendly urban space

With an aim for the reinforcing the CBD function, NIUPLAN suggests a greater CBD concept. Compared to the Spatial planning concept for NMR (2012) with the Upper hill area is included as part of the CBD. In addition, NIUPLAN introduces the brief land use layout of which expresses the idea of the Railway City as mixed-use area with both residential and commercial uses. NIUPLAN indicates the project of the plan should be treated as priority project amongst others. The CBD four pillar concepts could be directly reflected in the Plan.

### 3.1.6 National Urban Development Policy,2016 (NUDP)

The mission of NUDP is therefore to promote effective governance and management of urban areas through constitutional policy and legislative framework. NUDP recommends that there be civic education to citizens to appreciate the need to elect leaders committed to local issues as well as legislate for stakeholder representation in governance of urban areas. This shall help local members to participate in the governance of urban areas.

NUDP also notes that there is no policy guidance on the creation and management of metropolitan areas and therefore recommends that legislation for management of metropolitan areas and a criterion for the designation and management of metropolitan areas is made.

NUDP finally highlights the fact that there needs to be more informed urban planning mechanisms which involve stakeholder engagements as well as international planning standards in order to increase global competitiveness.

### 3.1.7 Nairobi Metro 2030 Strategy (NM2030)

NM2030 was developed to optimize the role of the Nairobi Metropolitan Region (NMR) in the national development effort as well as be applied as an instrument for developing other regions of the country through effective economic and structural linkages. Hence, the NM2030’s main purpose was to give the NMR a world class status. In actualizing this agenda, the NM2030 proposes seven key result areas whose goals include:

- Establishing the Nairobi Metropolitan Region as a regional and global service center, increasing market share in identified niche market areas and enhance productivity of individuals and Firms within the NMR;
- Establishing world class infrastructure and utilities;
- Reducing travel times and costs, improving connectivity and accessibility and enhancing customer choice and satisfaction;
- Enhancing quality of life in the region through eradication of poverty;
- The NMR shall have the goal to position itself as the place of choice for people to work, live, rest and invest;
- To make the NMR safe and secure for persons and property; and
- To build and sustain inclusive and effective metropolitan governance which shall be supportive of the expectations and vision of the metropolitan region.

The NM2030 also recognized that the transformation into a competitive economy shall require various measures to be put in place including investment into measures of safety and security, a strong public private partnership framework, investor incentives and infrastructural services.

## 3.2 Legal Framework

The plan been prepared in accordance to among others, the following acts; the Constitution of Kenya 2010, Physical and Land Use Planning Act, 2019, Urban Areas and Cities Act, 2011, County Government Act, 2012.

### 3.2.1 The Constitution of Kenya 2010

The Constitution of Kenya, 2010 (hereinafter referred to as the “Constitution”) establishes a devolved system of governance in Kenya. Article 6 (2) thereof establishes the national government and the 47 county governments set out in the First Schedule of the Constitution which include Nairobi City County Government (NCCG). The Fourth Schedule of the Constitution outlines the respective functions of the national government on one hand and the functions of the county governments on the other hand.

Under Part I of the Fourth Schedule of the Constitution, the national government is responsible for general planning and the coordination of planning by the counties. Under Part II of the aforesaid Schedule, the counties are responsible for county planning and development including;

- Statistics;
- Land survey and mapping;
- Boundaries and fencing;
- Housing; and
- Electricity and gas reticulation and energy regulation”.

Accordingly, there is a two-tier approach to regulation of land use planning in Kenya so that the national government is largely responsible for framework policy development while the counties are largely responsible for local policy formulation and implementation. However, the Constitution under Article 187 also allows for transfer of functions and powers between levels of governments. This is the premise upon which NCCG transferred some of its functions, including the County Planning and Development function to the National Government. The President thereafter released the Executive Order No. 1 of 2020, which established the Nairobi Metropolitan Services (NMS) as the institution to execute the transferred functions<sup>4</sup>. Pursuant to the Constitution, several statutes governing land use planning have been enacted.

### 3.2.2 The Physical and Land Use Planning Act, 2019

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

Section 45(1) of the Act requires the county to prepare a Local Physical and Land Use Development Plan (LPLUDP) in respect of a city, municipality, town or unclassified urban area for zoning, urban renewal or redevelopment among other objectives. Subsection (2) also prescribes that the LPLUDP may long or short term physical and land use development, development, urban renewal or redevelopment or for other purposes set out in the second schedule of the Act. Hence, this section is the premise upon which this Development Plan has been prepared.

Section 46 provides the purpose of the LPLUDP to include:

---

<sup>4</sup> Any future reference to NCCG in this Plan shall be taken as including reference to NMS for functional implementation.

- For zoning, urban renewal or redevelopment purposes;
- For guiding and coordinating the development of infrastructure;
- For regulating land use and land development;
- To provide a framework for coordinating various sectoral agencies; and
- To provide a framework and guidelines on building and works development in the city, municipality, urban area, or other smaller urban centers including local centers and market centers.

### **Approval process of the LPLUDP**

- a. Initiation of the preparation of the LPLUDP;
- b. Within 30 days of the preparation of the LPLUDP, a County Planning Authority shall publish a notice in the gazette, in at least 2 newspapers of national circulation and thorough electronic media informing the public that the Plan is available at the places and times designated in the notice for inspection and that an interested person may comment on the content of the Plan;
- c. Members of the public may give their comments on the LPLUDP and the County Executive Committee shall consider the comments.
- d. Any person aggrieved by a decision of a County Planning Authority concerning the LPLUDP or matters connected therewith, may within sixty (60) days appeal to the County Physical and Land Use Planning Liaison Committee in writing against the decision and the Committee shall determine the objection. Any aggrieved party may thereafter appeal to the Environment and Land Court.
- e. The CEC member shall submit the LPLUDP to a County Physical and Land Use Planning Consultative Forum for comments;
- f. The County Physical and Land Use Planning Consultative Forum shall consider the LPLUDP and propose any changes, which shall be incorporated.
- g. The CEC member shall the complete LPLUDP to the County Governor who shall have it placed before the County Assembly for approval; and
- h. Upon approval, the CEC Member shall publish the Approved Plan in the Gazette and in at least 2 newspapers of national circulation and through electronic media within 14 Days indicating that the LPLUDP has been approved, with or without modification.

The Act also gives room for amendment or revision of the LPLUDP where its implementation shall face practical difficulty or where there has been a change of circumstances.

Further, the first schedule of the Act provides for the structure of the contents of the Plan.

### **3.2.3 The Urban Areas and Cities Act, Act No. 13 of 2011**

This is an Act of Parliament enacted to give effect to Article 184 of the Constitution (Urban Areas and Cities). In particular, the Act provides for the classification, governance and management of urban areas and cities and provides for the principle of governance and participation of residents.

The Act recognizes Nairobi City as the capital city of the Republic of Kenya. Under section 6 of the Act, the capital city is to be governed and managed in the same manner as a county government. The principal law governing county governments is the County Government Act as set out herein-below.

Note however that under section 6 (2) of the Act, the two levels of government, that is, the national government and the county government are required to enter into an agreement

regarding the performance of functions and delivery of services by the capital city. This agreement may provide for the administrative structure of the capital city, subject to the provisions of this Act; funding of operations and activities of the capital city; and the joint projects to be undertaken by both governments in the capital city, among others.

### **3.2.4 The County Government Act, Act No. 7 of 2012**

This is an Act of Parliament to give effect to Chapter Eleven of the Constitution; to provide for county governments' powers, functions and responsibilities to deliver services and for connected purposes.

Chapter 11 of the Constitution as read with provisions of the Act provide for establishment of the county government which is comprised of the county assembly, being the legislative arm of the county government and the county executive as the executive arm of the county government.

Of key relevance to this Project is section 91A of the 2014 Amendment of the Act which establishes the County Development Board. The Board provides a forum, at the county level, for consultation and coordination between the national government and the county governments on matters of development and projects in accordance with the Constitution and, more specifically, Article 6(2), Article 10 and Article 174 of the Constitution. The Board also considers and gives input on any county development plans before they are tabled in the county assembly for consideration.

Nairobi City County Government (NCCG) is a key stakeholder in the Project. As indicated under section 2.1.1, vide Gazette Notice No. 1609 of 2020 the NCCG transferred some of its functions to the National Government including County Health Services, County Transport Services, County Planning and Development Services and County Public Works, Utilities and Ancillary services. Further to the execution of the Gazette Notice, the President of the Republic of Kenya signed the Executive Order No. 1 of 2020 establishing the Nairobi Metropolitan Services (NMS) and adding it to the Executive Office of the President. NMS is therefore tasked with the implementation of the functions transferred under the Gazette Notice herein mentioned for a period of 24 months from the date of execution of the Gazette Notice. This entails that the Development Authority, during the term of the Gazette Notice, shall make the applications for approval of development plan to NMS.

### **3.2.5 A Guide of Nairobi City Development Ordinances And Zones**

This guide gives a simplified guide to those aspects of the development ordinances that every property developer in the project requires in setting up any form of development – be it residential, commercial, industrial, institutional or religious. With the continued high rate of urbanization, the City Council of Nairobi has a duty to use planning controls to ensure that development is allowed only where it is needed, while ensuring that the character and amenity of the area are not adversely affected.

Key considerations of planning aspects are Ground Coverage and Plot Ratio, the Plan allows a maximum Plot Ratio of 600 and Ground coverage of 80% within the Core CBD, as outlined in the guidelines.

### **3.2.6 Planning and Building regulation in Kenya (2009)**

This regulation cover provisions for national, regional and local physical planning, siting, site operations, building design, building and infrastructure services, disaster risk management on construction sites and maintenance of all buildings as contained in these regulations. Especially the Plan reflects the user population number by this regulation.

# **Chapter 4. SITUATIONAL ANALYSIS**

## 4.1 Physical Characteristics



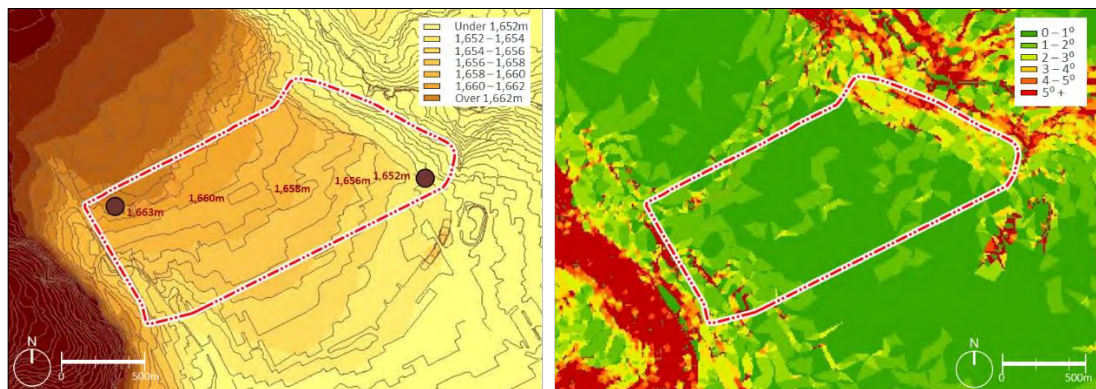
Figure 4-1 Current Situation Map

### 4.1.1 Topography

The general topography of Nairobi City County varies from steep slopes valleys in the northern zone to the mild slopy central and flat terrain in the southern and eastern zones. Land elevation increases from east to west. The elevation varies from 1,800m a.s.l to the north (Kiambu, Limuru, Kikuyu and Ngong) to 1,600m a.s.l. in the south and east (Kajiado) over 50km providing reasonable slope.

The project area is however located in a flatty terrain that gently slopes southwards with a slope gradient of about 5% with its average altitude estimated at 1660m a.s.l.

GIS tools were used to obtain the topography of the project area. The lowest level is at +1,652m while the highest level is at +1,663m, giving a 11m difference. The overall general slope of the project area is 1 degree, indicating the land is generally flat. The steepest part within the project is site lies towards the southwest area near Ngong River bank area, which has a slope of over 5 degrees.



**Figure 4-2 Altitude and Slope Analysis of the Planning Area**

Source: GIS analysis

### 4.1.2 Geology and Soils

Nairobi city lies at the edge of the Athi Kapiti plain and the lower slopes of the Kikuyu and Aberdare escarpment. The rocks in the Nairobi area mainly comprise a succession of lavas and Pyroclastic of the Cainozoic age and overlying the foundation of folded Precambrian schist's and gneisses of the Mozambique belt (Sag Gerson 1991).

The geology of Nairobi is dominated by volcanic rocks derived from volcanic activity associated with the formation of the Rift Valley. These are a thick succession of alkaline lavas and associated tuffs, the oldest being the Kapiti phonolite which lies directly on rocks of the Basement Complex, the oldest rocks in the East Africa region. The lavas then thin out in an easterly direction. Nairobi is underlain by Nairobi Trachyte that is separated from Nairobi Phonolite by a narrow agglomerate tuff. The Nairobi Phonolite is itself underlain by the Athi Series. The Athi Series is a sequence of sediments of volcanic origin deposited in a lacustrine environment the upper portion of which (the Upper Athi Series) form the most significant source of groundwater in the Nairobi area as a whole. The Athi Series lie atop the Kapiti Phonolite.

The soils of Nairobi are products of weathering of mainly volcanic rocks. Weathering has produced red soils that reach more than 50 feet (15m) in thickness (Sag Gerson, 1991). A number of subdivisions are recognized in the Nairobi area according to drainage, climatic regions and slopes, and other categories have been introduced for lithosols and regosols. Over the Athi plains, the soils are black to dark grey clays (grumosolic) comprising black cotton soils with calcareous and non-calcerous variants. These soils mainly overlie the Nairobi and

Kapiti phonolites, both lava formed impermeable strata over which ill-drained soils in the Ngong area would also form under similar conditions due to poor drainage.

The planning area is characterized by haplic ferralsols according to the World Reference base (2014) for soil resources. These are soils of wet (sub-)tropical regions that have a very low cation exchange capacity and are virtually devoid of weatherable minerals. The soils are well drained according to the drainage classes based on FAO guidelines (FAO, 2006). The soil has high sand (38 to 48%) and clay (37 – 45%) in the 0-50 cm soil profile hence characterized by sandy clay texture. The soil has a pH in water of an average 6.3

### 4.1.3 Biological Environment

Most natural vegetation within Starehe and Makadara Sub-Counties where the site is located, has been lost through social and economic development. In most areas, the biodiversity has been altered to pave way for development of high-rise commercial and residential buildings.

#### Vegetation within the planning area

Some of the flora identified within the planning area as shown in below table.

**Table 4-1 Tree Species in the Planning Area**

Common Name	Scientific Name
Whistling pine/Casuarina	Casuarina equisetifolia
Persea	Persea americana
Nandi flame	Spathodea campanulata
Grevilia	Grevillea robusta
Markhania	Markhamia lutea
Jacaranda	Jacaranda mimosifolia
Yellow fever tree	Acacia xanthophloea
Senna	Senna spp.
Red stinkwood	Prunus africana
Weeping fig	Ficus benjamini
Blue gum/Eucalyptus	Eucalyptus grandis
Kei apple/Kaiyaba	Dovyalis caffra
Croton	Croton megalocarpus
Loquat	Eriobotrya japonica
African pencil cedar	Juniperus procera
Shoe flower	Hibiscus rosa-sinensis
Falcon's claw acacia	Acacia polyacantha
Caricature plant	Graptophyllum pictum

Most of the area within the Railway Museum, marshalling yard, Workshop area, and KR HQ is covered with grass. The grass at KR HQ is planted while that at the Railway Museum, marshalling yard and workshop area have grown naturally within the area. below shows vegetation composition within the project area.



**Figure 4-3 Vegetation Composition within the Planning Area**

**Fauna**

Despite the built-up nature within the planning area, the parched green and open spaces and even some structures host numerous bird species. The major roosting and nesting sites for major birds’ species in and around project area are presented in below table.

**Table 4-2 Major Roosting and Nesting Sites for Birds in Nairobi and its Neighborhood**

Sites	Major species
(CBD) and surrounding suburbs buildings	Little Swifts <i>Apus affinis</i> , Speckled Pigeon <i>Columba guinea</i> and Red-winged Starlings <i>Onychognathus morio</i> .
Nyayo Stadium	Marabou Storks <i>Leptoptilos crumeniferus</i>
Muthurwa	Black Kites
Mombasa Road at City Cabanas	Sacred Ibis <i>Threskiornis aethiopicus</i> and Cattle Egret <i>Bubulcus ibis</i>

Source: CCN, Aeronautical survey and Bird strike potential for JKIA, 2011

Most of the birds such as Marabou storks (*Leptoptilos crumenifer*) visit the area to scavenge for food. The protected area that is closest to the planning area is the Nairobi National Park (NNP) located about 5km from the Nairobi Railway Station. NNP borders the South Kapiti plains and Kitengela Migration Corridor. The park covers an area of 117.21km<sup>2</sup> and altitude ranges between 1,533 meters above seas level (msl) and 1,760 msl (Prins et al., 2000). The location of the Park within the County coupled with an improved public transport system through a TOD that is well linked to the city airports (JKIA and Wilson) and the CBD; as well as provision of world class MICE facilities at The Railway City; will provide an excellent opportunity to enhance income generation in the tourism sector in Nairobi County.

**Aquatic Ecology**

An unnamed tributary of Ngong River passes through Uhuru dam in Uhuru Park and Railway Golf Club before it enters the planning site and exits the site through Bunyala Road. In some of these sections, the river channel sides are lined with concrete. The waters of the tributary which passes through the site is mixed with raw sewerage from the commercial, industrial and residential area causing it to have a stale odor. The physical quality of the waters as observed during the site visit is as presented in the below figure.

The Ngong River tributary then flows parallel to Mombasa Road (A104), crosses Lusaka Road then joins the main Ngong River at industrial area, just beyond Shimo la Tewa Road. From a meeting held with Water Resources Authority (WRA) on the planning for Railway City, the main concern raised was the need to improve the water quality of the tributary as it passes through the planning site.



**Figure 4-4 Ngong River Tributary Passing Through the Planning Area**

#### 4.1.4 Climate

Although Nairobi is situated close to the equator, its altitude of about 1700m results in a modified climate as opposed to a tropical climate. The differences between the seasons are minimal and are generally described as the 'wet' season and the 'dry' season. They can be categorized as follows:

- Mid-December to mid-March: warm, sunny and dry.
- Mid-March to May: main rain season.
- June to mid-October: cool, rather cloudy (especially July-August), and dry.
- Mid-October to mid-December: secondary rain seasons.

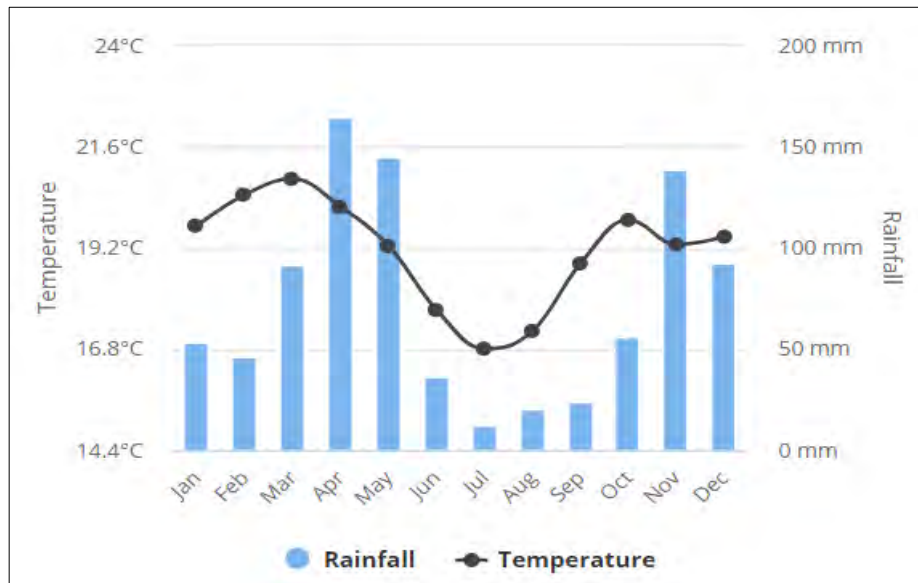
According to the Kenya Meteorological Department (KMD), the following is the description of specific weather elements in Nairobi County.

#### Rainfall and Temperature

The average rainfall in Nairobi is about 900mm, but the actual amount in any one year may vary from less than 500mm to more than 1500mm. The dates on which these rainy seasons start and end may vary. The beginning and end of a wet season are seldom ever well defined. These seasons coincide approximately with the time of changeover of the monsoon currents which affect Eastern Africa, the South-West Monsoon becoming established in April, and the North-East monsoon in November.

Nairobi's mean annual temperature stands at 19°C. The hottest months are from January to April, where maximum temperatures can reach 27°C and relative humidity can fall to below 10%. The coolest months averaging 16.5°C are between June and August before it starts to

warm up again in October. Figure shows the average monthly rainfall and temperature of Nairobi city.



**Figure 4-5 Average Rainfall and Temperature in Nairobi**

Source: World bank climate knowledge portal

### Sunshine

The early part of the mornings is often cloudy and the sun nearly always breaks through by mid-morning. The annual average daylight hours are 7 hours. The month with most sunshine is February (Average sunshine: 9.5h) and the month with least sunshine is August (Average sunshine: 4.1h).

### Wind

The wind near the ground is predominantly easterly throughout the year, generally between north-east and east from October to April, and between east and south-east from May to September.

The strongest winds occur during the dry season just prior to the ‘long rains’ when speeds of 20-25 meters per hour (mph.) are not uncommon from mid-morning to early afternoon. At other times of the year, wind speeds reduce to 10-15 m.p.h.

During the night, the wind is usually light. In the squalls sometimes associated with thunderstorms, short-lived winds of up to 70 mph have been known to occur.

### Humidity

In the early mornings the air is frequently at or very close to saturation, but in the afternoons the humidity is usually about 50% and may fall as low as 10% on clear sunny days in February and March.

## 4.2 Population and Demographic Characteristics

### 4.2.1 Population

The population of Nairobi City as at 2009 national census was 3.14 million, with the male leading slightly at 51.1%. Nairobi County has a transitional population structure due to a shrinking child population, where 0-14-year old constitute 31%. This is a result of low fertility rates among women as with most household sizes consisting of 0-3 members. The county also has a high youthful population where 15-34-year old constitute 49% of the total population.

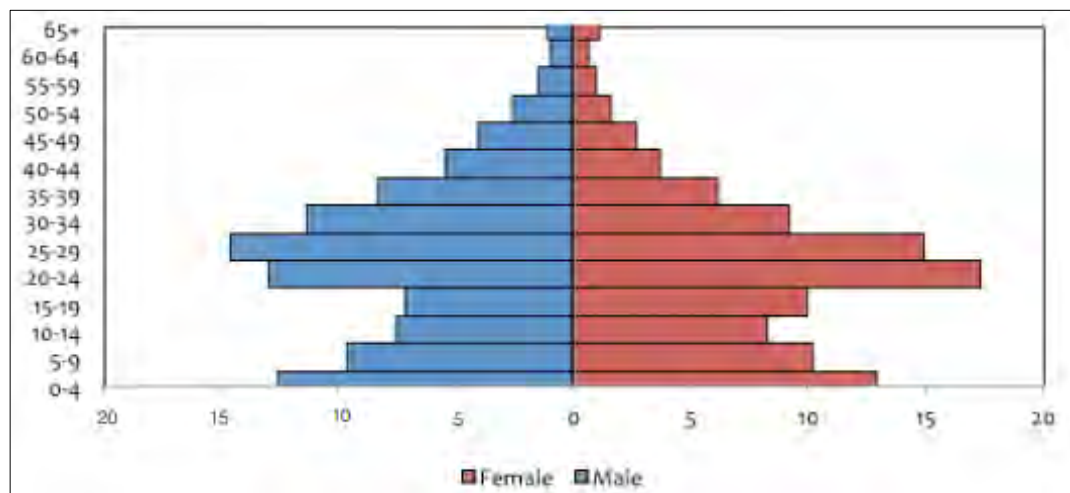


Figure 4-6 Population Pyramid of Nairobi

Source: KNBS and SID, 2013

Labor migration from the rural areas in search for jobs is the main reason why the county has a very high proportion of the working age population composed of those aged between 15-64 years old, who form 68% of the total population. The city population is growing at a rate of over 4% annually primarily because of immigration. This upward growth can be traced back to 1989 as shown in below table

Table 4-3 Population Growth Trend in Nairobi

Year	1989	1999	2009	2019
Population numbers	1,324,570	2,143,254	3,138,369	4,397,073

Source: Kenya National Bureau of Statistics (KNBS)

It is estimated that the city will continue on its upward trajectory in terms of population, reaching 5 million in 2025. From the 2019 National housing and population census, Nairobi's population is estimated at 4,556,381. This typically includes Nairobi's population in addition to adjacent suburban areas.

The planning area exists in Starehe sub-county. The population changes and composition of the planning area of Starehe sub-county is as shown in below table. At first glance, the population since the 1989 census indicates rapid growth up to the 2009 census. The cause of the population growth could be linked to the high fertility rate in the previous decades, and increased life expectancy from 54 years as at 2010 to 68 years by 2050 (Fengler, 2010).

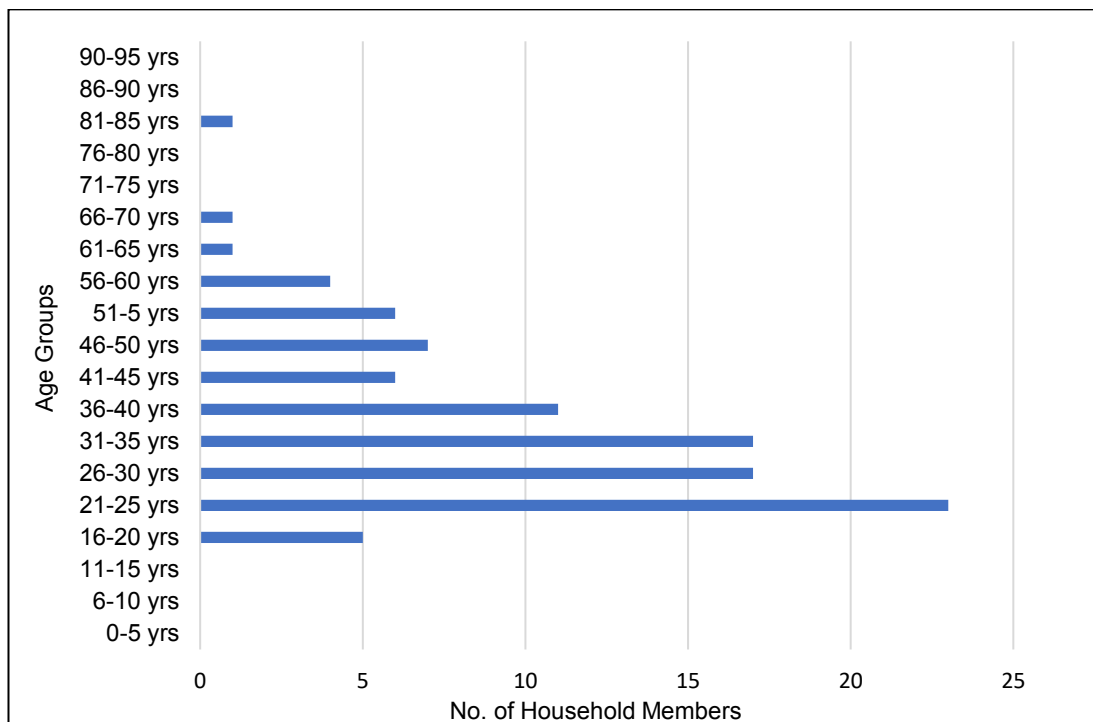
**Table 4-4 Population Growth in Starehe Sub-County from 1989 to 2019**

Census year	Population				
	Male	Female	Sex Ratio	Total	No. of Households
1989	28,687	19,585	1.5	48,272	10,308
1999	81,504	77,826	1.0	159,330	49,636
2009	142,097	132,510	1.1	274,607	87,519
2019	109,173	101,238	1.1	210,423	69,389

Source: Kenya National Bureau of Statistics (KNBS)

In 2019 however, the population reduced, and could have been due to reduced birth rate as a result of advanced use of contraceptives among women. Hence, as birth rate reduces, and the life expectancy continues to improve due to the implementation of the National Government’s universal health care program, the demography of the planning area could change so that the proportion of the working-age population will grow much faster than the young and elderly population groups that depend on them.

Already, the household survey conducted in 2012 by the Mazingira Institute (Ishani and Lamba, 2012) did not capture any children population below 15 years of age in Muthurwa area as shown in below figure, indicating the demographic transformations of the planning area and Kenya as a whole. This presumes that Kenya’s population pyramid is taking a constrictive shape which has a smaller percentage of people in the younger age cohorts, which is typical of countries with higher levels of social and economic development.



**Figure 4-7 Population Distribution by Age in Muthurwa Estate**

Source: Mazingira Institute (2012)

Hence, the planning area and Kenya as a whole is at the starting point of a demographic change. As fertility declines and Kenyans live longer, there could be an improvement in the “dependency ratio” (Fengler, 2010).

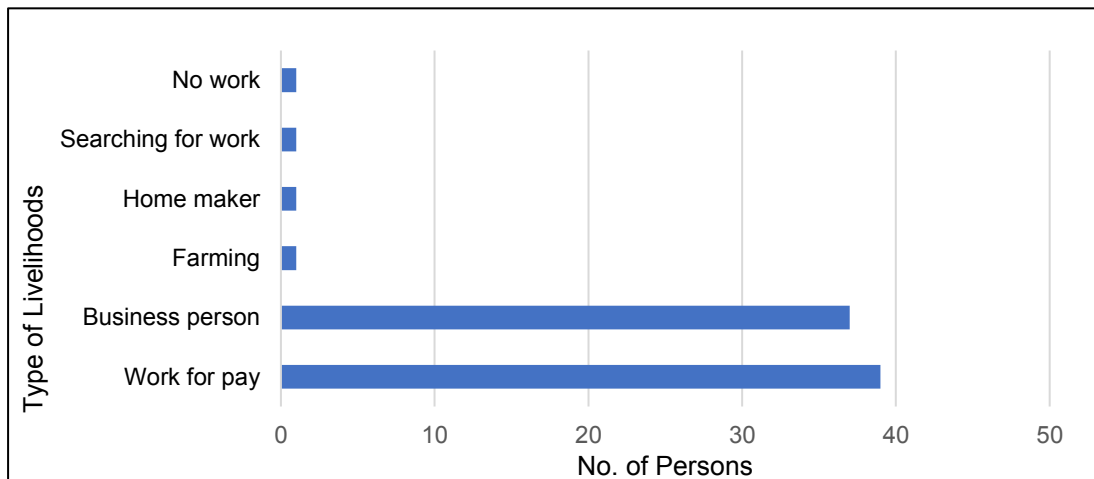
The households in the planning area of Starehe have continued to increase from the 1989 census to date. The sex ratio has remained relatively stable after 1999 with a greater male population compared to females. This has also resulted in a higher proportion of male headed households compared to female headed households.

#### 4.2.2 Livelihoods and Economic Activities

The primary economic activity in the planning area is related to railway operations. Other small-scale economic activities observed taking place include more of informal businesses where people are observed to work as hawkers of second-handed clothing, tent makers, *jua kali* metal artisans, car wash attendants, shop keepers in small kiosks, cobblers as well as vegetable vendors in Muthurwa and Wakulima Markets. Also observed are drivers and touts of public service vehicles where a majority of *matatus* could park in the planning area awaiting passengers, specifically at the Railways bus terminus and the Muthurwa bus terminus.

According to a RAP study for the Nairobi Viaduct and Road Improvement Project by JICA (2018), majority of the Muthurwa business residents indicated that they were engaged in informal business while a small percentage (20%) indicated they were engaged in formal business. Food kiosks were the major types of informal business carried out by majority of the business operators. Majority of the business operators (37%) indicated the monthly net income from the business as between 0 to 5,000 KES. while 20% indicated that that they earned a net income of more than 20,000 KES. per month.

Below figures shows the type of livelihood of residents of Muthurwa estate.



**Figure 4-8 Livelihoods of Residents in Muthurwa Estate**

Source: Mazingira Institute (2012)

According to Muthurwa Residents Welfare Association, the various forms of livelihood enterprises include the following in below table

**Table 4-5 Detail of Livelihood Activities in Muthurwa Estate**

Types of Livelihood Enterprises	No. of Enterprises
Retail shops/kiosks	15
Barbershop	8
Saloon	12
Bar	11
Hotel (food canteen)	24
Dhobi/Laundromat	4
Pharmacy/Chemist shop	1
M-pesa attendant shop	12
Pool table sites	8
Video halls	5
Tent making enterprise	8
Public toilets for pay	8
Welding machine enterprise	3

Source: Muthurwa Estate Residents Association, 2018

Apart from Muthurwa Estate, other livelihood activities occur in the adjacent Muthurwa Market. The market was established in 2007-2008 to relocate over 10,000 hawkers formerly operating in the Nairobi CBD. The market is supervised by the in-charge who is backed by officers from Environment and Enforcement sector of NCCG. The market currently has a total of 1,500 active stalls with over 10,000 traders operating in a 24-hour economy (Nairobi City County Assembly, Sept. 2015).

The Muthurwa bus terminus next to the market has been converted into a trading area, an incidence that has both congested the market and made the walk ways impassable (Nairobi City County Assembly, Sept. 2015).

### 4.2.3 Settlement Character

During the Uganda railway construction, housing in the planning area of Muthurwa and Landi Mawe was constructed from around 1914 and 1916. The houses were meant to accommodate the railway workers constructing the railway line from Mombasa into Uganda.

The general housing conditions in Muthurwa Estate is deteriorated due lack of proper renovations of the housing units since their construction in the early 1900s. The KRSRBS had intended to demolish these houses and construct new units but these plans did not come to fruition due to legal issues on the site. Illegal extensions have been developed so as to increase the living space for residents, or to rent out, and or to cater for small scale trading and home-based economic activities carried out within the Estate as a means of gaining additional income.

Currently in Muthurwa, the housing is occupied by a few KR retirees and tenants who had been paying a rent of KES. 2,500 to KRSRBS until December 2010 when they stopped paying rent as KRSRBS planned to evict the tenants from the property. The houses are dilapidated and are in dire need of upgrading. Since KRSRBS no longer collects rent from the existing occupants; the houses are disconnected from both power and piped water supplies following the 2016 court ruling allowing the eviction of the tenants.

As portrayed by the census data by Kenya National Bureau of Statistics, the housing conditions in the planning area is reflective of the housing in Nairobi County, as flooring is cement, walls are stones while roofs are of asbestos and corrugated iron sheets. Tiled roofs majorly exist at the KR headquarters building, Railways museum and neighboring buildings to the planning area.

## 4.3 Land Use Analysis

### 4.3.1 Land Tenure

About 80% of land in Nairobi is owned by the Government but those lands are held by several types of users. About 41% of government land (33% of total land) was alienated to private and other parties (City of Nairobi Environmental Outlook, 2010). Freehold land is privately owned either by individuals or by groups of individuals and can be sold without limits to the period of ownership. This covers a small portion (about 19%) of land mainly to the west and north-west of Nairobi and includes suburbs such as Dagoretti, Mwimuto, Runda, and Gigiri. And part of the Kahawa area in the north. Over 50% of Nairobi is estimated to be under private ownership (City of Nairobi Environmental Outlook, 2010).

GIS calculation shows that the total Project area is 1,768,560m<sup>2</sup> (435 acres), which is composed of 1,183,390 m<sup>2</sup> (292 acres) KR land (Owned by Kenya Railways) and 585,170m<sup>2</sup> (143 acres) Non Kenya Railways land. Kenya railways owns 66.9% of the project site with rest of the land owned by others. The privately-owned land is located in the outward area of the site, accounting for ease of development. In the planning area, almost 67% of the land is owned by KR while the rest is privately owned, under long term (99 year) lease

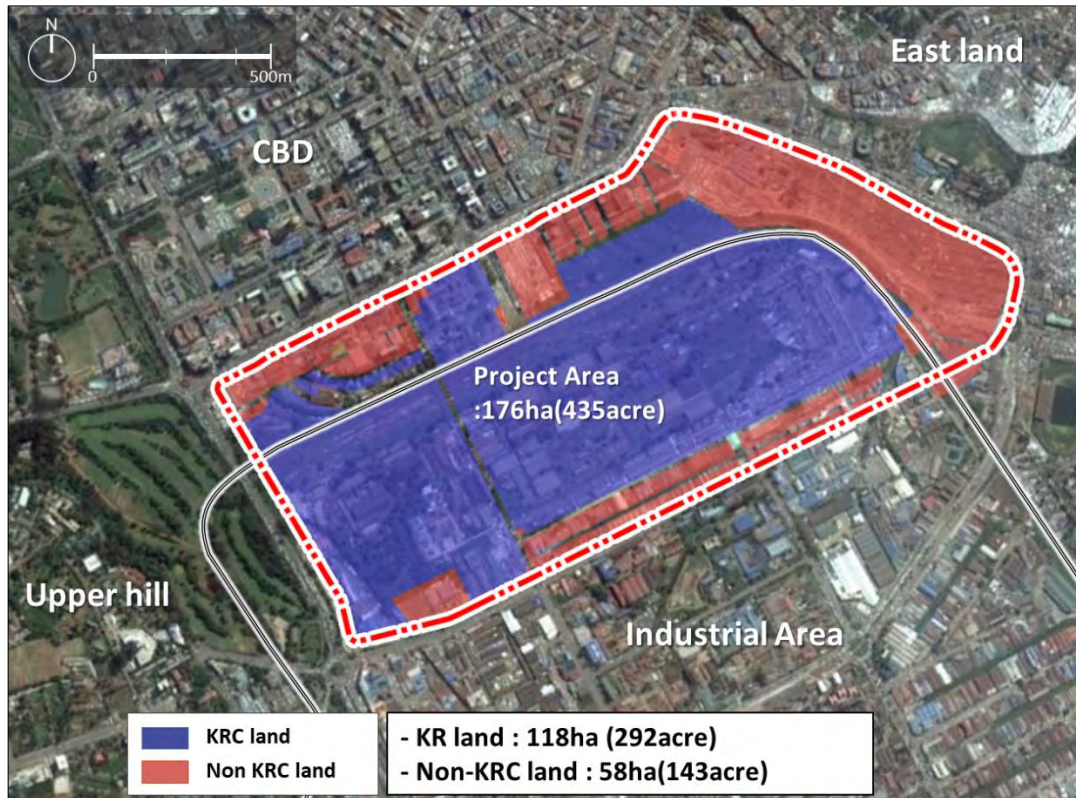


Figure 4-9 Land Ownership in the Planning Area

#### 4.3.2 Landuse Pattern

Nairobi, including the planning area was initially an uninhabited swamp land<sup>5</sup>. The change in its environmental character was triggered by the construction of the Kenya - Uganda Railway line starting from the port of Mombasa in 1896 and completed in 1903 in Kampala Uganda. That saw Nairobi established as a supply depot by the British colonizers in 1899, resulting in drainage of the wetland due to:

- central location between Mombasa and Kampala; and
- cool weather that was conducive for the British settlers supervising the railway construction project, as well as the Indian labourers who had come to Kenya seeking employment on the railway construction.

Consequently, Nairobi became the railway headquarters. Currently, in the planning area, most land appears to be covered mostly by structures mostly along the boundary, and trees and grass especially in the marshalling yard area.

Between 1988 and 2015, the area of the city under urban built-up, open and transitional land cover increased from 73 sq. km to 228 sq. km whereas agricultural, grass, secondary growth and riparian vegetation areas which initially covered 126 sq. km increased to 189 sq. km (Oyugi *et al.*, 2017). The gradual decline in the ratio of the city under vegetation cover to the area under urban built-up, open and transitional lands has had implications on the urban air quality levels (i.e. reduction of carbon sinks that would otherwise reduce greenhouse gas concentration and consequently climate change effect), surface temperature values (i.e.

<sup>5</sup>History of Nairobi <https://nairobi.go.ke/history/> accessed on 4 September 2019

elimination of shade that would otherwise reduce heating of the ground) and other environmental quality parameters.

The area of Nairobi under the forest cover in the year 1988 was 59 sq. km, and improved to 122 sq. km in 1995 and afterwards declined by roughly 50% reaching 63 sq. km in the year 2000. This decline was attributed to the undiscerning extraction of forestry resources and clearance of the same for urban developments. This situation was somewhat reversed in the year 2003 when the new government reactivated strategies geared towards increasing the forest cover in the country. Such approaches included the clearance of illegal structures within the forest reserves. This has since made the area of the city under forest cover to gradually increase to 93 sq. km in 2015 from 63 sq. km in 2000 (Oyugi *et al.*, 2017).

The area of the city under rangeland and shrub foliage cover has reduced from 1988 when it covered 453 sq. km of the city to 200 sq. km in 2015 due to major land use and land cover conversions (Oyugi *et al.*, 2017).

### 2km Radius Land Use Analysis

The following map shows superimposed layers of land use pattern as urban functionality surrounding the planning area. In broad glance, each urban function is dominant at a certain area. For example, while existing CBD area has mix-used function with institutional use of the biggest percentage, on the eastern of the site, residential and commercial functions are dominant. In the west, linear green strip divides the existing CBD and Upper hill which has mixed use function with residential and institutional urban functions. A mono-functioned industrial area is dominant on the southern of the site.

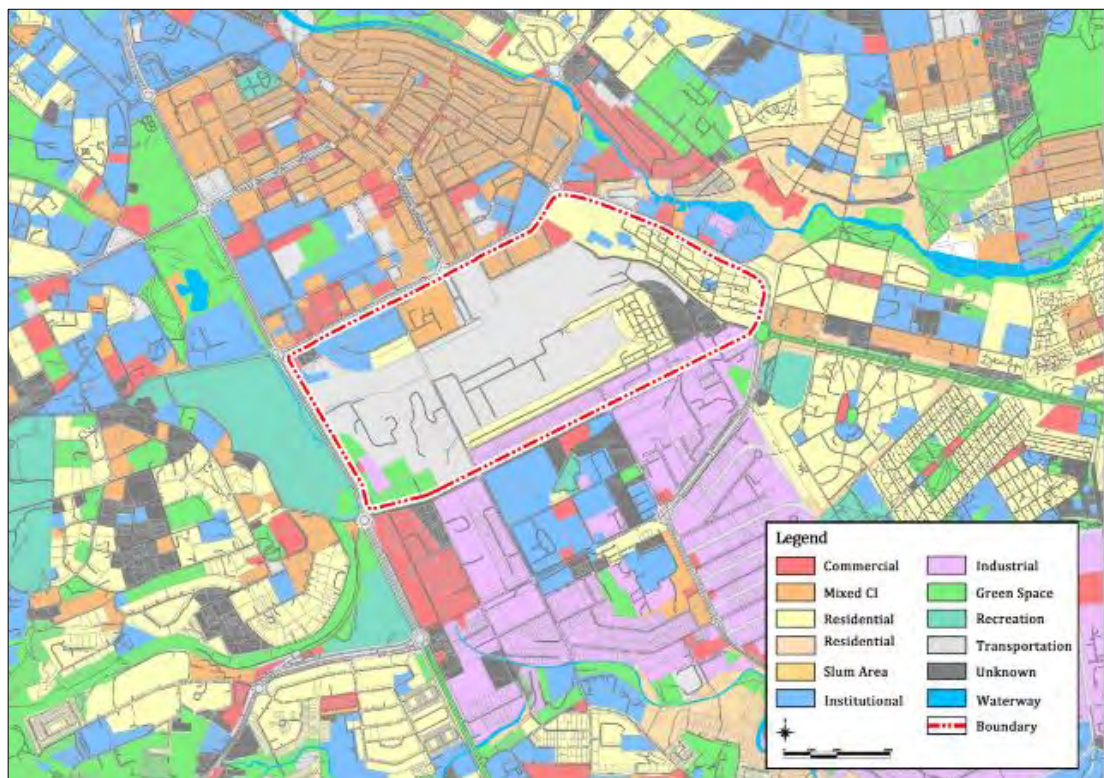
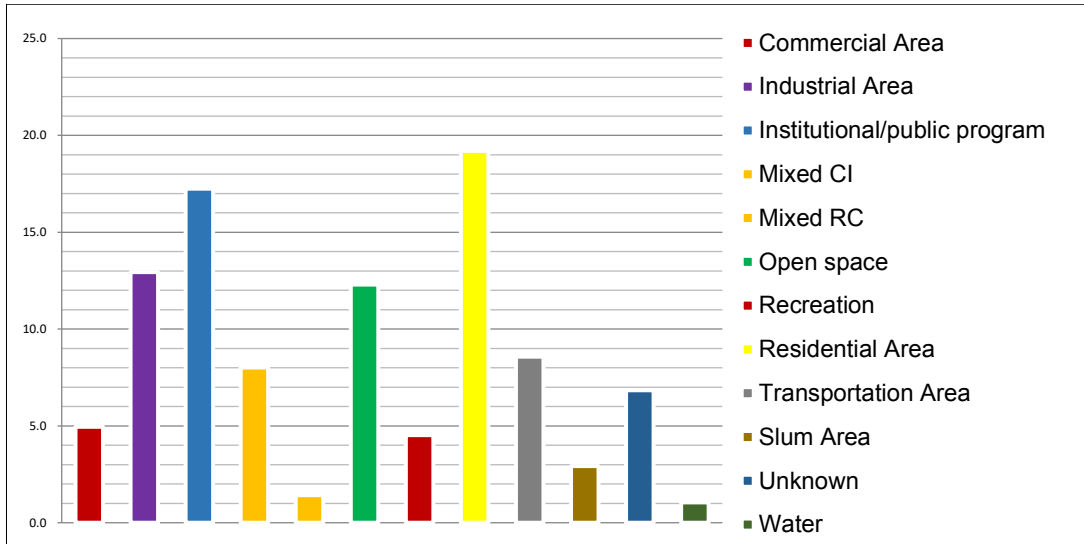


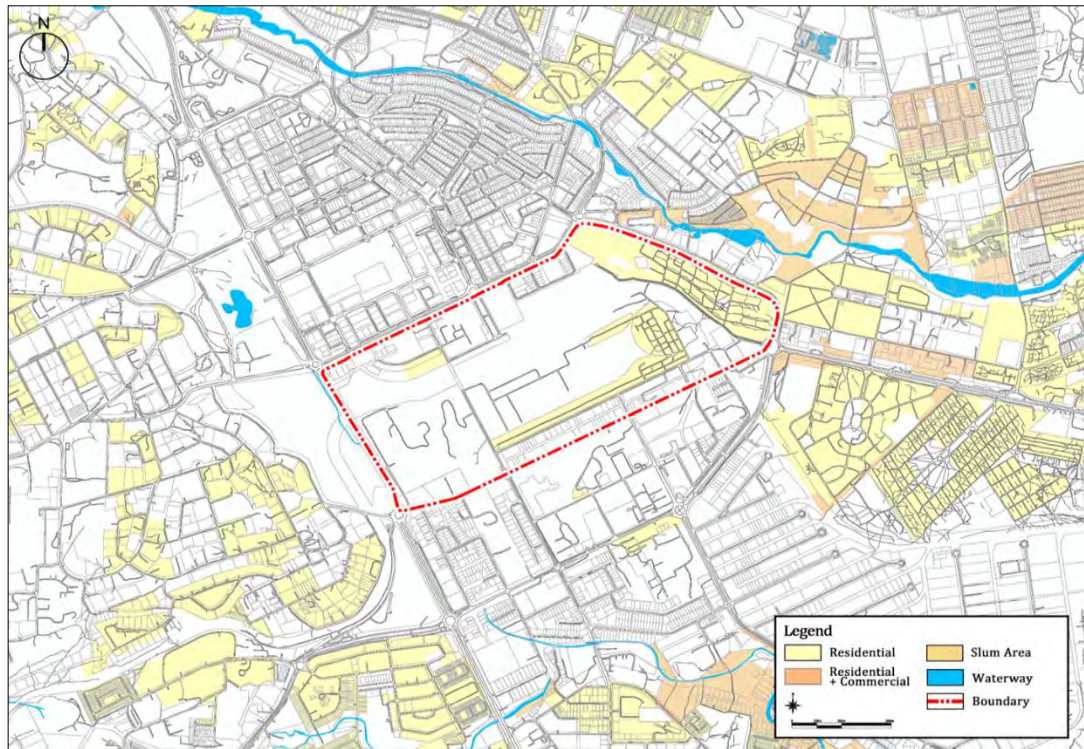
Figure 4-10 2km Radius Land Use Map



**Figure 4-11 2km Radius Current Land Use**

Source: GIS mapping

Proportionally, residential land use covers 19.2% of the entire 2km radius sphere, located mainly in the eastern and western areas with little residential use in the existing CBD. The commercial land use occupies 13.2%, and is mostly concentrated in the CBD area. Institutional and public programs are another main function covering 17.2% of the area with low coverage on the eastern side as regards hospital and education facilities. but part. The Southern area of the site shows a clear dominance of industrial use at 12.9%. The Green area covers a significant area at 12.3% although within the CBD green spaces are limited.



**Figure 4-12 2km Radius Land Use Map - Residential Use**

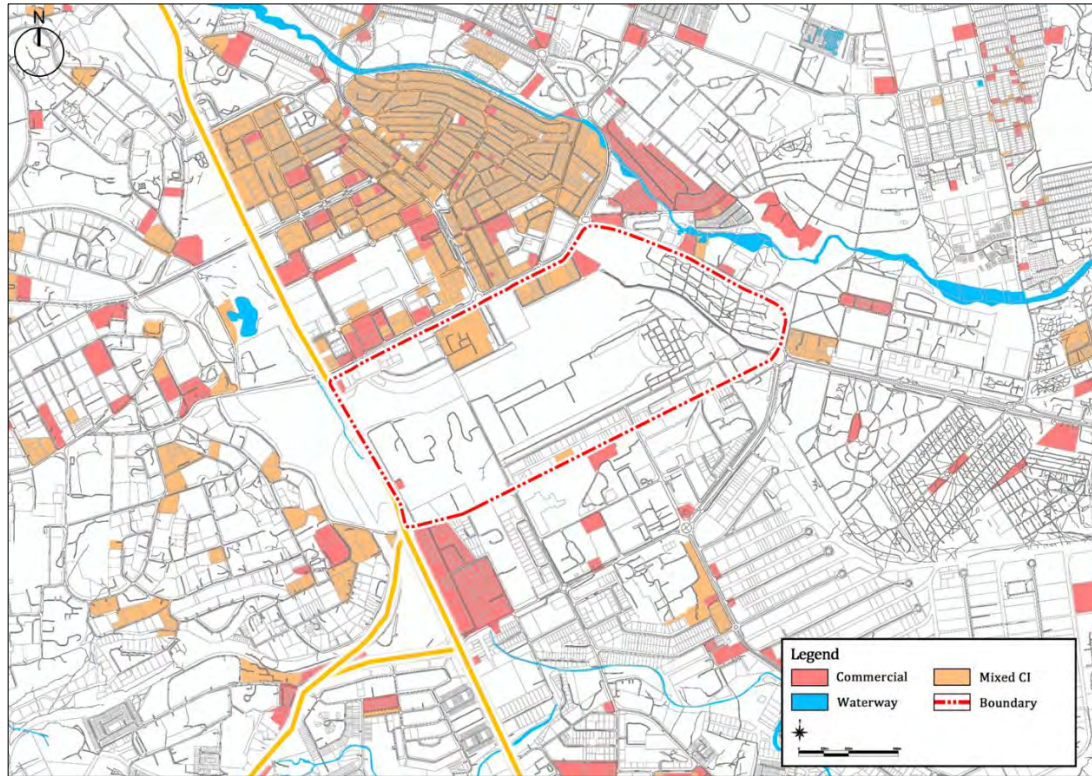


Figure 4-13 2km Radius Land Use Map - Commercial Use

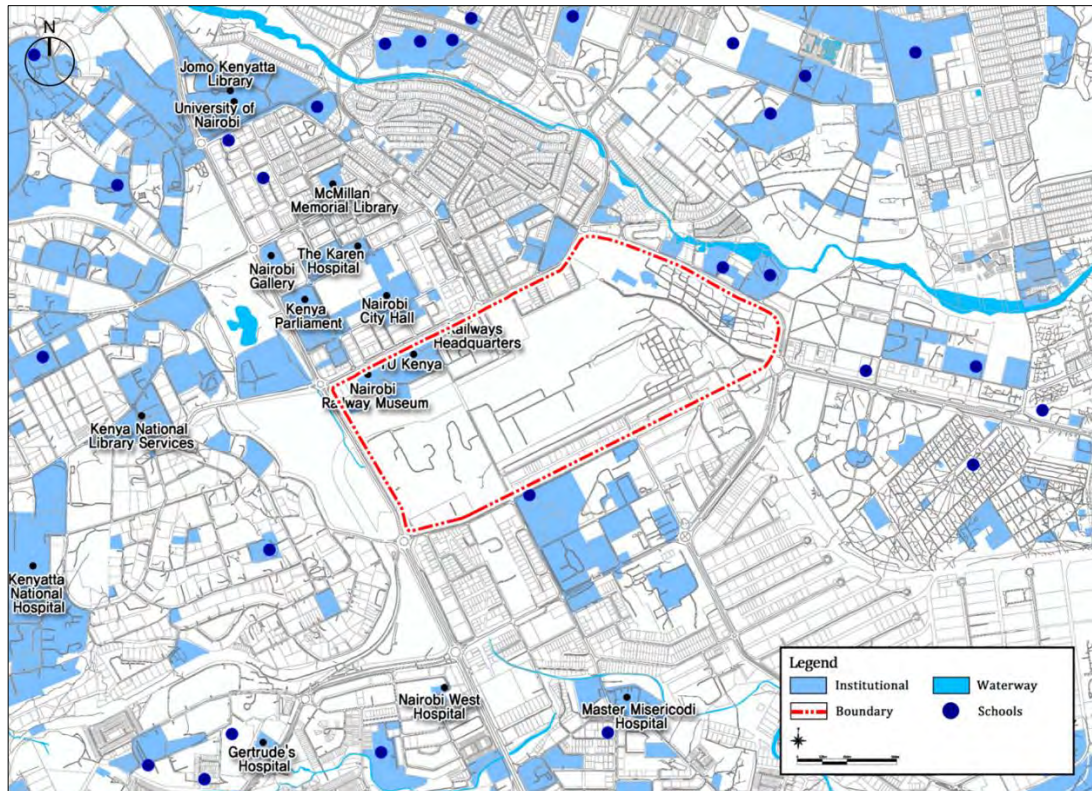


Figure 4-14 2km Radius Land Use Map - Institutional Use

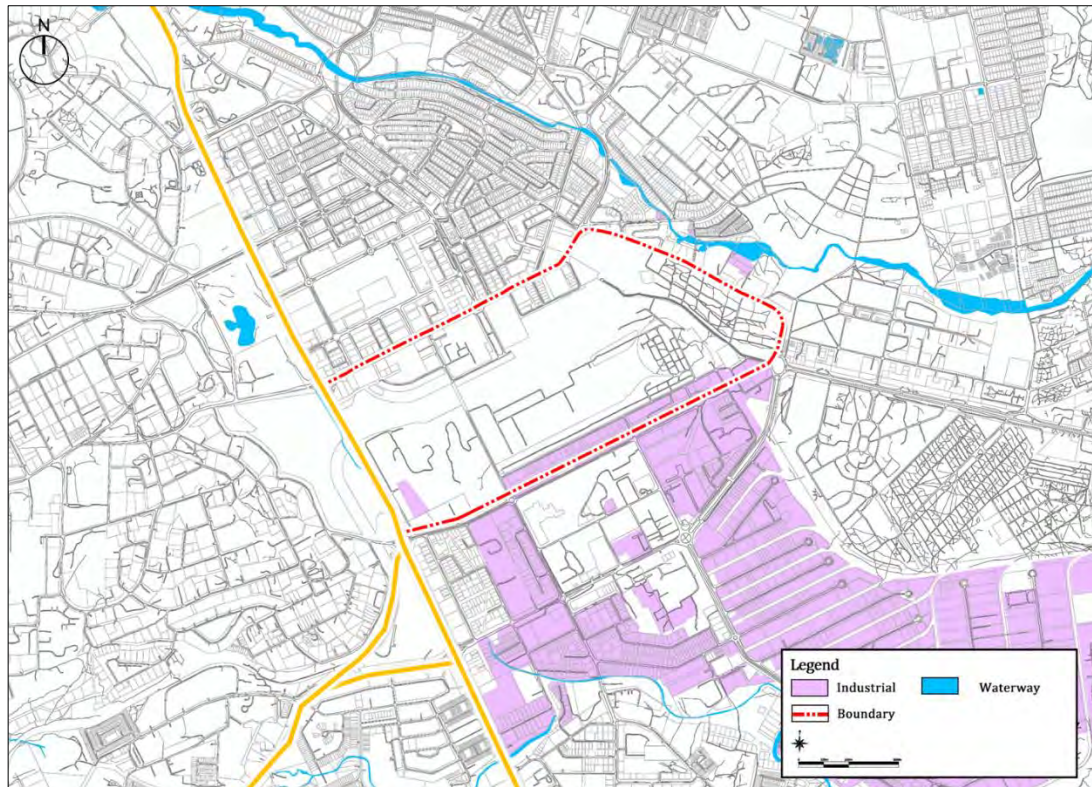


Figure 4-15 2km Radius Land Use Map - Industrial Use

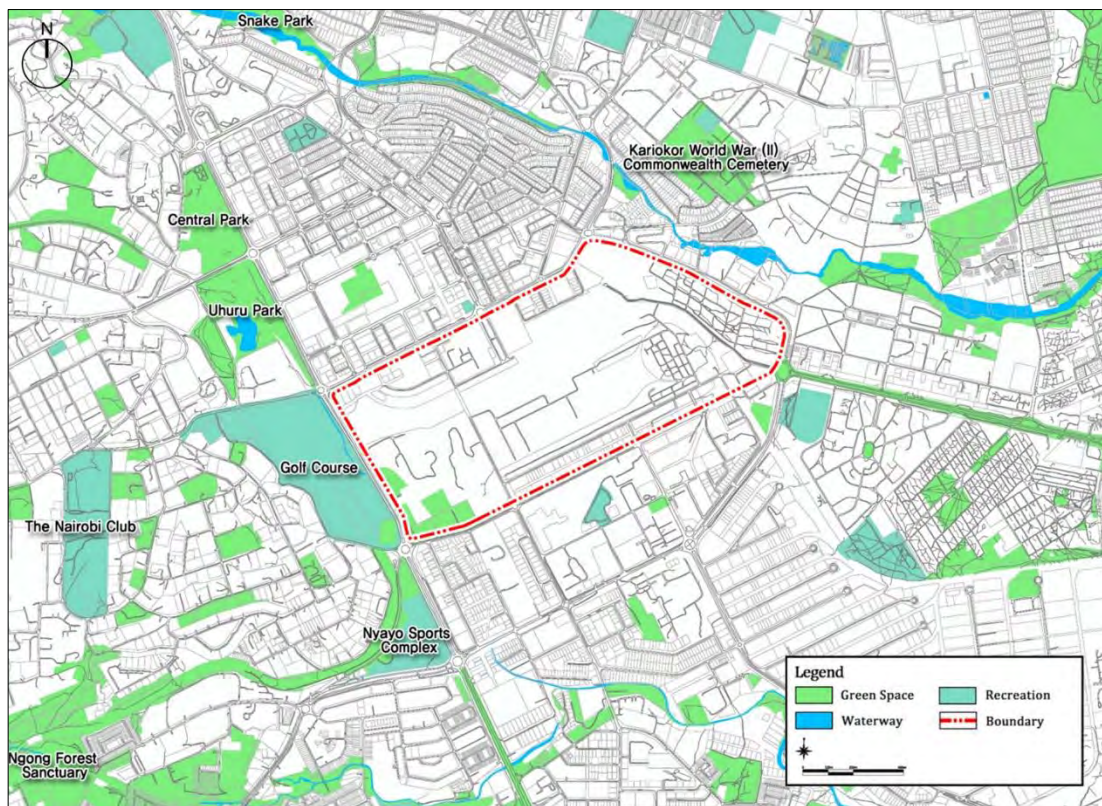


Figure 4-16 2km Radius Land Use Map - Green Space Use

### 4.3.3 Built Environment

#### Buildings' Inventory List

Survey information was obtained for a total of 691 buildings in the project site through site survey by the Consultant, as well as GIS data provided by Nairobi City County. Most of the buildings on the project site comprise railway utilities such as train storages, garages, offices and staff quarters.

The buildings on the private land on the project site comprise a market, garages, factories and warehouses. These will need to be gradually developed to fit in with the long-term vision. Below figure shows the main buildings within the planning area. Of environmental concern are the asbestos roofs on KR workshops, Muthurwa and Landi Mawe estate houses, and at the Wakulima market.



No.	Name	No.	Name
1	Central Railway Station	10	Easy Coach building
2	Marshalling yard (Railway Tracks)	11	Muthurwa market
3	Staff Quarters (Pension Scheme)	12	Muthurwa estate
4	Nairobi Railway Museum	13	Sikh Temple (Siri Gurdwara Ramgarhia)
5	Workshops and warehouses	14	Government Printers
6	Technical University of Kenya, (TUK)	15	Muthurwa's Dallas Social Hall
7	CBD Post office & Huduma Center	16	Police housing
8	Railways Headquarter office	17	Railways golf course
9	Railways bus terminus		

Figure 4-17 Inventory of Structures / Facilities in the Planning Area

Majority of the building structures are low rise old masonry load bearing wall type with the exception of the head offices buildings which were recently rehabilitated. Most of them have tiled roofs that have deteriorated with age.



Nature of houses in Landi Mawe estate

Typical housing block in Muthurwa estate

**Figure 4-18 Typical Houses in Landi Mawe and Muthurwa estates**

### Bridges and Drainage Structures

There are two pedestrian crossing bridges at Nairobi central station which provides safe crossing over the railway lines as shown in below figure. The first one runs from the south east to north west direction and is about 120m long spanning over several supports. The second one runs from the south west to north east direction with a span length of about 40m. Both have enough head clearance for the accommodation of the trains passing under.



Pedestrian footbridges within the planning area.

Foot bridge connecting Workshop Street with Factory Street in industrial area (# 1.)

Footbridge connecting Muthurwa estate and Landi Mawe estate (# 2.)



Footbridge 1 connecting Workshop Street and Factory Street

Footbridge 2 connecting Landi Mawe estate with Muthurwa estate

**Figure 4-19 Pedestrian Bridges Crossing Railway at the Planning Area**

The pedestrian bridges are similar in construction and comprise structural steel members supporting timber decking. Neither the superstructure nor the substructure has any visible structural signs of failure except for age. The timber decking is worn out and the steel structure was observed to have patches of rusts at some of its parts inferring the need for rehabilitation of the structure. Though they are equipped with guard rails to reduce the risk of pedestrians falling, they don't give access to the disabled. Although main purpose of the bridge was to provide a safe crossing over the rail tracks, they lack aesthetic quality and do not fit well with the environment. In addition, they were not designed to give long clear spans and are not stiff enough to counter the usual problems of vibrations of foot bridges. Drainage in the planning area is poor as shown in below figure, where waste water from laundry and kitchen activities in homesteads are disposed in the storm drains. This could also be attributed to the high population in the area that has surpassed the capacity of the sewerage/drainage structures and the relatively flat topography.



**Figure 4-20 State of Drainage in the Planning Area**

**Encroachment of Informal Structures/Businesses in the planning area**

There is a scarcity of trading spaces in Nairobi County and especially in the CBD due to the increasing population, which has resulted in encroachment to the planning area by informal businesses (See below figure). Informal businesses are located on the southern edge of the planning area at the junction of workshop road and Factory Street. Other informal businesses exist at Muthurwa towards the Muthurwa bus park and a section along Ladhies Road.



● Areas encroached by informal businesses in the planning area



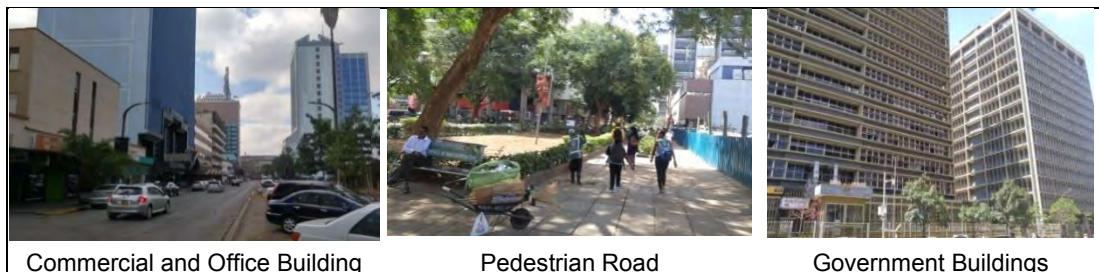
**Figure 4-21 Encroachment of informal business in the Planning Area**

Existence of encroachment by informal businesses within the project boundary especially along Factory Street in Muthurwa, and Workshop Road will imply resettlement of these people to areas outside the planning area. Private land owners also exist along Bunyala Road all the way through to Commercial street where there exist warehouses and factories. All the affected land and property owners will have to be rightfully compensated before the development of the project. Hence, this plan recommends a Resettlement Action Plan(RAP) be undertaken to identify the Project Affected Persons(PAP) and compensate them with an alternative site, or compensated by cash in the implementation stage.

### Surrounding Area’s Built Environment (off-site)

#### 1) North: Central Business District (CBD)

The northern part of the site, the CBD, has a clean and well-organized environment due to the cluster of many facilities in the CBD, such as government agencies, Nairobi City Hall, banks and businesses. The cityscape is made up of high-rise buildings with shops and restaurants developed along the pedestrian routes.



**Figure 4-22 Spatial Image of Nairobi CBD Area**

#### 2) Western Area

The western area is made up of gentle hilly land and it comprises both residential and commercial land uses. Currently, Nairobi City County has plans to foster the area as a center of finance and there are numerous upcoming high-rise buildings developments.

The open spaces of western area are connected along Uhuru Highway from north to south, and Central park, Uhuru Park, Railway golf course and the Nyayo Sports Complex. These are linearly connected and provide leisure space for residents to use.

The project site faces these green areas and they will complement the proposed MICE convention facilities within the project site.

### 3) Eastern Area

Using Moi Avenue as the demarcation, the eastern area of the CBD is the urban service center. Narrow roads, shops and on-street retail as well as the bus and matatu terminal cause crowding in this area and traffic jams are prevalent.

**Kenya Railways Pension Scheme:** This is a residential area for Kenya railways old employees. These are monolithic townhouses, distributed along Factory St. Most of the houses have deteriorated and require either renovations or redevelopment. Motor vehicle repair workshops and street vendors have set up some commercial activities along some sections of the roads.

**Wakulima and Muthurwa Market:** The Wakulima Market, located along Haile Selassie Avenue is Nairobi's largest fresh produce market. As the largest permanent market in Nairobi, Wakulima handles fresh food such as fruits and vegetables.

The market that was built in 1966 has a holding capacity of 300 traders. It currently accommodates about 7,000 dealers, which results in overcrowding. Despite it being a market for agricultural products, the market is in a poor sanitary state.

**Muthurwa Main Bus Terminus:** In connection with the market, this terminus has a role of attracting floating population from the eastern metropolitan area. It occupies about 1.2ha of the area and there is only one access point into the site, resulting in traffic congestion and hence some improvements are required.



**Figure 4-23 Spatial Image of Eastern Boundary Area**

### 4) South: Industrial Area

The industrial area in the southern area of the site is composed of large-scale factories and warehouses of international companies such as Nestle Foods and British Tobacco as well as other local corporations such as Kenya Pipeline, plastics and chemical manufacturers among others. The industrial area faces the railroad and it is characterized by the fact that the rail facilities are placed so that they can be accessed from each block of the site for easy and rapid transfer of the products. Monotonous land use influences the lack of urban activity in this area.

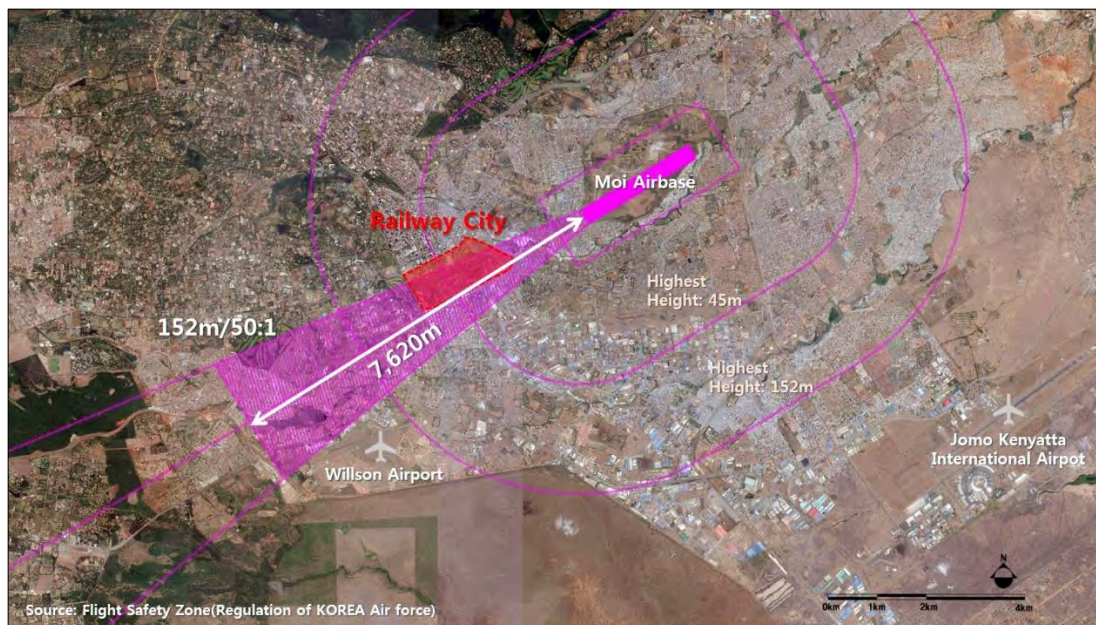


**Figure 4-24 Spatial Image of Southern Boundary Area**

### 5) Moi Air Base

The Nairobi Metropolitan Region has two public airports and one airbase. These are located in the east and south of the project. The largest airport is Jomo Kenyatta International Airport (JKIA), which is 15km away from the project site. JKIA boasts over 40 passenger airlines and 25 cargo airlines per day. The Wilson Airport, which is 5km away from the project site, handles flights comprising 90% domestic and 10% international flights. The Moi Airbase is a military airport located to the east of the project site and is used by the Kenya Air Force and the East African School of Aviation. The Project site is within 13km radius of all the three airports (JKIA, Wilson, and Moi Airbase), and these may present constraints to The Railway City Development Project. The Consultant has had discussions with the KCAA, KAA and Kenya Air Force to figure out the limitations by aviation laws regarding the building height in The Railway City development

Moi Air base is located approximately 2km to the east from the project site and is used as an airfield. Since the runway is located in the direction of the project site, it is necessary to consider the development controls such as limiting the height of the building for the take-off and landing of the aircrafts. The picture below shows the flight altitude limitation. The proposed plan is set up in accordance with the Kenyan Civil Aviation regulations and being agreed by KCAA.



**Figure 4-25 Illustrative Figure of Flight Safety Zone from Moi Airbase**

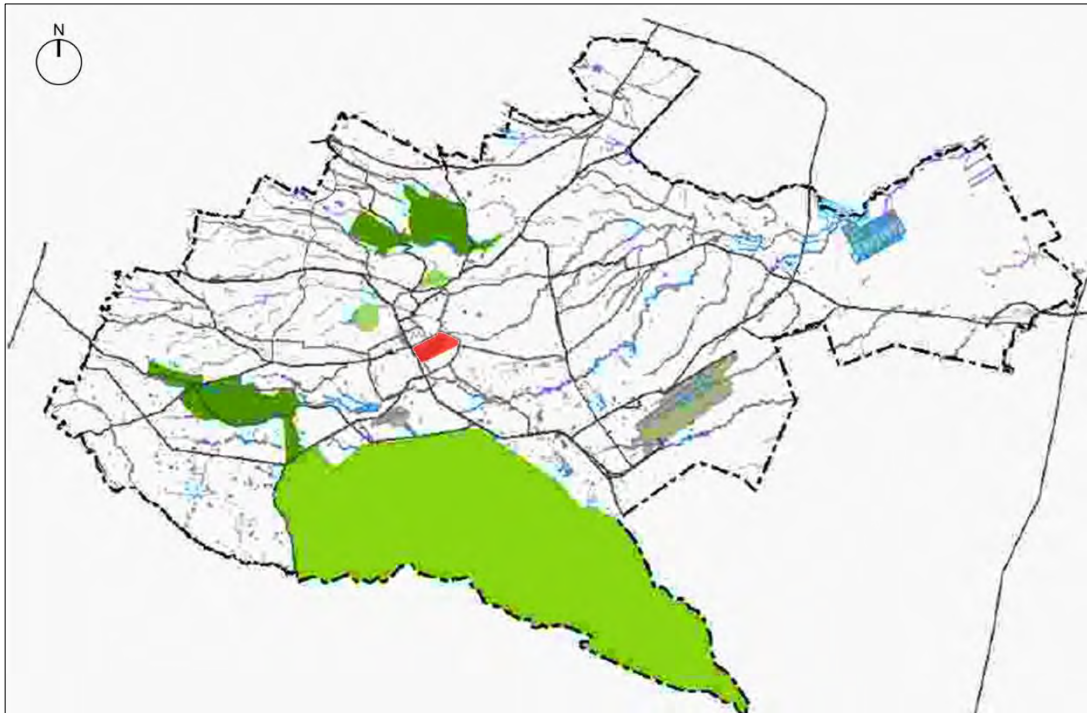
Source: Regulation of ICAO (2016)

\*Note: ICAO- International Civil Aviation Organization

#### 4.3.4 Urban Green and Recreational Space

##### Broad view

An overview of Nairobi shows that the Nairobi National Park is a main ecological footprint. Others are Ngong Forest Sanctuary in East and Karura Forest in North with Nairobi Arboretum, City Park and Uhuru Park close to the CBD area. The two main rivers are Ngong and Nairobi River, flowing from west to east. Part of the Ngong River runs through The Railway City site whereas the Nairobi River is in close proximity to the site on the Eastern side.



**Figure 4-26 Ecological Environment in Nairobi City**

Source NIUPLAN (2014)

The green and recreational spaces below are all located adjacent to the boundary of the planning area.

- Uhuru Park
- Central Park
- Kenya Railways Golf Club
- August 7 memorial park
- Nairobi City stadium
- Nairobi South Cemetery

### **Uhuru Park**

Uhuru Park is situated on the north-western outskirts of the plan area. The park is bordered by Kenyatta Avenue to the North, Community area to the West and Haile Selassie Avenue to the South. Uhuru Park is hailed as the most popular recreation park in Nairobi complete with green lawns, artificial lake, commemorative monuments and amusement parks. The park is equally the main assembly point for celebrating national holidays, for political rallies and for prayer meetings by different religious groups. Entry to the Park is free to the public with the exception of boat rides and use of public toilet facilities that are charged by NCCG.

### **Central Park**

Central Park is located within Nairobi's CBD and directly opposite Uhuru Park. The Nyayo monument (*Fimbo ya Nyayo*) is a key land mark within the park. The park has a lawn with shade trees which is popular with city residents as a picnic site. It also has a children's playground with facilities for games by children.

### Kenya Railways Golf Club

The Kenya Railways Golf Club is situated on the western outskirts of the planning area adjacent to Uhuru Highway with its entrance off Haile Selassie Avenue. It was established in 1922 as a private club for the Railways staff as the Kenya Uganda Railways Golf Club. The club opened its membership to non-railways staff in 1924. Membership to the golf club is subject to payment of membership fees.

### August 7 Memorial Park

The park is located within the vicinity of the planning area. It is adjacent to the northern outskirts end of the planning area along Haile Selassie Avenue. The August 7th Memorial Park is built on the site of the 1998 bombing of the US Embassy and Cooperative Bank. The Memorial Park was opened on August 7th 2001 to honor the victims and as such serves as symbol of memorial remembrance and peace building center. It has a marble wall on which the victims' names are written, a garden, a visitor's center, and a sculpture made from the explosion's debris.

### Nairobi City Stadium

City stadium is located on the South Eastern outskirts end of the plan between the roundabout junction of Lusaka Road and Jogoo Road. It was formerly named African Stadium; Donholm Road Stadium then renamed Jogoo Road Stadium in 1963 before it was finally named Nairobi City Stadium. The stadium is managed by the City County of Nairobi and has a capacity of 15,000 persons.



Figure 4-27 Nairobi City Stadium

### Nairobi South Cemetery

The cemetery is located beyond the western boundary of the planning area at the corner of Bunyala Road and Uhuru Highway (A104). The cemetery has three sections; the war cemetery, a Jewish cemetery and a general cemetery.

The cemetery was first used in 1900 and the last burials were around 1920 except for the Jewish section which was in use until the early 1950's. It therefore hosts about 155 Commonwealth graves from the First World War and a number of graves from the Second World War. In September 2009 the cemetery was given protected status as a site of historic interest.

## Existing CBD street network

In regards to the urban fabric, the existing CBD provides considerable examples of pedestrian experience for the planning area. Every main street has ample pedestrian sidewalk with continuous commercial space activities. Arcade-style architectural approach on the ground floor generates more pedestrian friendly atmosphere.

In addition, mild urban block sizes make the area walkable as long urban blocks discourage walking. A 100 X 50 m block size is shown in CBD.

Aga Khan Walk is a good case study for the Plan. The continuous experience of a series of open space is collected in a row by one pedestrian way. These spatial experiences of existing CBD were directly reflected in the Plan for extension of CBD as spatial sense.



Figure 4-28 Urban Fabric of Existing CBD- Aga Khan Walk

## 4.4 Technical Analysis of Railway Structure

### 4.4.1 Direction

The improvement of the NCS railway facility will resolve the disconnection of the Nairobi city area and adjust the railway function so that it harmonizes with “railway city” development plan, and obtain an economic and viable result for the railway facilities.

A future railway plan will be established with the following objectives;

- Minimizing the civil disturbances and environmental effects during the NCS Railway development,
- Processing of smooth consultation with Nairobi City County and other stakeholder institutions,
- Anticipated preparation for the future extension of the station area in parallel with the expansion of Nairobi Metropolitan Area.

The Consultant conducted a site survey and literature review of previous studies. Based on the initial survey, the Consultant would like to suggest the preliminary plan for the platform layout and the number of tracks, with a proposal of freight rail transferring to another station. The Initial station layout and operation scheme will be suggested. Finally, a cost estimate will be prepared in Kenya Shillings.

### NCS Passenger Rail

The Plan will set up the initial operation scheme for passenger train in the following directions:

- Linkage with the relevant railway projects such as Mombasa ~ Nairobi SGR.
- Consideration of future LRT/ MRT/ BRT scheme in Harmonization study by Gauff

### NCS Freight Rail

Embarking on the study of freight rail, it is recommended that freight rail function should be relocated to the Makadara Station<sup>6</sup>.

## 4.4.2 Railway Current Status and Site Survey

### Mombasa ~ Nairobi Railway Status

The Kenyan railway was constructed during the colonial era to facilitate the travel between the neighboring countries and transportation of the plundered goods to England. (From Uganda, Kenya and other British colonies through the Mombasa Port)

The Total Length of the Kenya Railway network is 2,156km and all the sections were 1,000mm narrow gauge. The original Kenya Uganda Railway mainline was from Mombasa to Kisumu and was 930km long. However, later when East African railways was established, the mainline became Mombasa –Nairobi- Malaba (1,083km) and Kisumu is now a branch line from Nakuru. The Nairobi station has served as intermediate supply base for the Mombasa-Uganda railway line.



**Figure 4-29 Kenya-Uganda Railway Route**

Source: <http://www.skyscrapercity.com/>

Due to the government's monopolistic operation and inefficiency, the railway operation has been declining. In 1980s, the railway authorities in each country realized the need for structural improvement and there have been attempts for privatization. Many sections of the railway network have longitudinal slope that is greater than 10% and have minimum radius of curve of 150~200m. Due to the inadequate maintenance, derailment accidents are frequent, resulting in damaged cargo and injuries to passengers.

Due to the topographical characteristics, the train is operated at a limited average speed of 30~55km/h. The signaling and communication equipment are outdated and unreliable.

The railway condition is deteriorated. Most sections are light weighed, 30~47kg per meter (47kg/m: Mombasa- Nairobi section, 40kg/m: Nairobi – Malaba section, 30kg/m: Nakuru –

<sup>6</sup> Moving of the freight function from NCS, it should be developed as another project.

Kisumu section), and the axle load is limited by the rail section sizes and the capacity of bridge structures and viaducts.

Most railways are of Diesel-electric traction system. The 6,500km North and South African Railway sections, including Congo, utilizes the electric system.

**Site Survey for the Nairobi Railway Station**

NCS is located in center area of Nairobi. It used to provide services to Mombasa three times per week. However, as of 2017, the new Mombasa-Nairobi Standard Gauge Railway (hereafter SGR) has taken over services to Mombasa, starting from a new Nairobi South Station (hereafter NSS), 20 km from Nairobi CBD. NCS does not have any operation data for Mombasa ~ Nairobi long distance passenger railway since May 2017.



**Figure 4-30 Current figure of Current Nairobi Central Station**

Source: KR officer (Feb. 2018)

NCS currently has commuter passenger services and the long-distance freight services. The commuter service travels through the Nairobi-Makadara-Imara-Syokimau section and operates 3 times per day. It departs from NCS at 08:00, 17:50, 19:50 and arrives at 8:40, 18:30, 20:30, respectively. At Syokimau Station, it departs at 6:50, 9:05, 18:50, and arrives at NCS at 7:35, 9:45, 19:30, respectively.

Limited service is provided, from NCS to the following areas with only one trip each way per day.

- Embakasi Village(12.6km),
- Kikuyu(31km),
- Kahawa (24km), and
- Ruiru(32km)

The average commercial speeds range from 12km/h~ 20 km/h per hour.

**Table 4-6 Current Commuter Line Operation Status**

Nairobi - Syokimau				
Classification	Nairobi	Makadara	Imara	Syokimau
OP	08:00	08:14	08:28	08:40
P	17:50	18:04	18:18	18:30
P	19:50	20:04	20:18	20:30
Syokimau - Nairobi				
Classification	Syokimau	Imara	Makadara	Nairobi
P	06:55	07:09	07:23	07:35
OP	09:05	09:19	09:33	09:45
P	18:50	19:04	19:18	19:30

\*Note 1. P: Peak Time, OP: Off Peak Time / 2. No service on Saturday, Sunday and Public holiday

Source: KR (2017)

The Syokimau, Imara Daima, and Makadara stations on the Nairobi-Syokimau route were rehabilitated in November, 2012. Parking lots are installed at each station as “Park and Ride” facilities. NCS currently provides limited commuter and freight services. Though the yard area and several railway facilities are in operation now, an overall improvement is required as cited in some relevant studies

After the construction of Mombasa-Nairobi SGR, the NSS was constructed. For the connection between NSS and NCS, additional train operations are required in consideration of the current operation (3 times per day) and the new transport demands.

#### 4.4.3 Related Projects Analysis

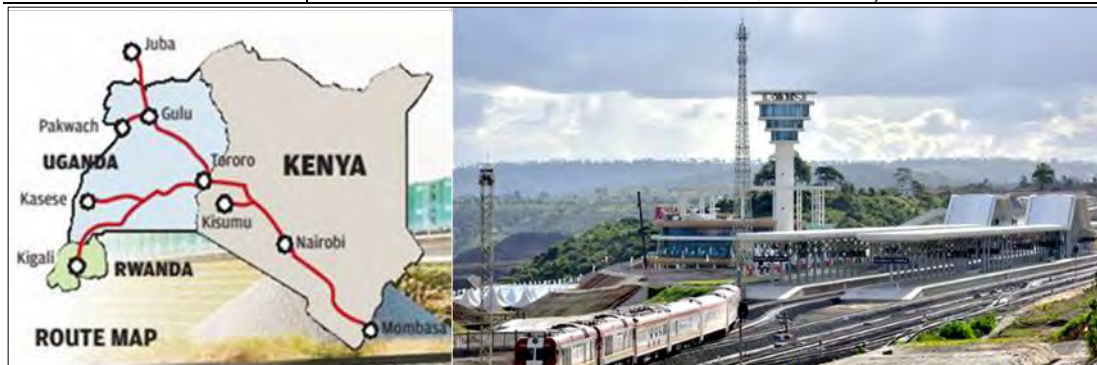
##### SGR Project

Kenya Railway currently operates the 2,156km railway section between Mombasa-Nairobi-Malaba (National Borderline of Uganda). In 1980s, it transported 4.5million tons per year, but since 2005, it has reduced to 2 million tons. Though the railway transportation reduced, the Mombasa port still handles 35% of the long-distance exporting/importing freights.

IN 2017 the government completed the construction of the Mombasa-Nairobi Railway Modernization project through a Chinese loan. Below is the general information of the project.

**Table 4-7 General SGR Information**

Project title:	SGR Phase 1- Mombasa ~ Nairobi
Classification:	Standard Gauge Railway, Non-electrified Single-Track Railway
Total Length	480km
Project Cost	USD 3.6 billion (90% by the Export-Import Bank of China, 10% by the Kenyan government)
Construction Standard	China National Class 1 Railway (Class 1 standard: axle load 25ton),
Design Speed	Passenger Train 120km/h. Freight Train 80km/h
Contractor	China Road & Bridge Corp
Construction Period:	2014.12.12. ~ 2017.05.31.
Travel time:	Takes about 10 hours (Used to take 16-24hours ~ reduced 8hours)
Railway Operation (2 different patterns)	Intercity Train: Madaraka Express Train (Mtito Andei ~ Voi Station) Inter County Train: Intermediate-stop (Mariakani, Miasenyi, Voi, Mtito Andei, Kibwezi, Emali, Athi River)



**Figure 4-31 SGR Route and Mombasa New Station**

Source: Africa’s Current Affairs (2017)

### Green Mall Project

KR together with NCCG and Directorate of Urban development jointly carried out detailed feasibility studies for a selected corridor and a green mall bus station boulevard in NCS area. The project is situated within the area containing the NCS, the marshalling yard, the KR pension scheme land, the locomotive and wagon workshops, and extends beyond the KR's land to include parts of the industrial area.

A new concept for alternative road network was proposed, the Green Mall and associated urban planning with The Railway City area. The figure below illustrates the suggested new road network, parking lots and bus terminal, with the general spatial scheme of land use and green space. In particular lowering of the railway track was suggested, to create the linkage of northern CBD and southern industrial area as which is currently not possible with the railway At-grade.

### Nairobi Commuter Rail Masterplan

Kenya Railways envisioned an Expanded Commuter Rail Network beyond the Core Network so as to improve on utilization of existing commuter network and extend it with new rail links to un-served areas with high potential demand as identified from land use plans such as the NIUPLAN and Nairobi Spatial Plan.

A number of different rail alternative were evaluated including all existing rail alignments in NMR, including the extension of passenger services to Thika, Lukenya and Limuru; and potential extensions, as identified by the 2014 Harmonization Study, to Ngong (from Riruta), Kiambu (from Githurai), Ruai (from Embakasi Village) and JKIA (from Syokimau).

Based on future demand estimates, the 2030 Core Scenario includes all existing lines that currently have a commuter rail service, extensions over existing railway alignments and two of the most promising new alignments, to Ngong and JKIA. This 2030 Core Scenario would be Phase 1 of the Commuter Rail master plan, with all implementation proposed to take place by the year 2030.

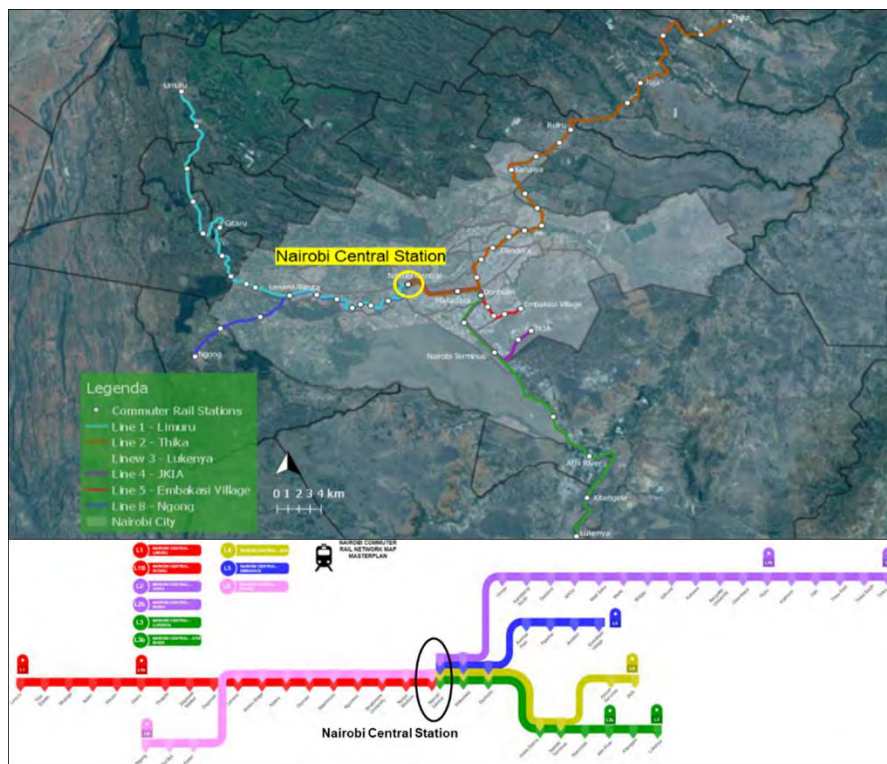


Figure 4-32 Core Scenario Lines of Commuter Rail Network

Source: Nairobi Commuter Rail Master Plan (2019)

#### 4.4.4 Preliminary Railway Operation Scheme

##### Current Operation Status of NCS

The operation status of the current commuter line is as follows.

**Table 4-8 Current Operating Status of NCS**

<Nairobi – Ruiru >

Classification	Track Application	Remark
Route Section	Nairobi - Ruiru	
Length	L = (29.4km)	
Operation Hour	TIME = ( 90 )minute	
Number of Daily Operation	(Two) / day	Morning & Evening
Depart and Arrival Time	Morning: Ruiru-Nairobi Dep. 06:10 Arr. 07:40 Afternoon: Nairobi- Ruiru Dep. 18:40 Arr. 20:10	

<Nairobi – Embakasi >

Classification	Track Application	Remark
Route Section	Nairobi - Embakasi	
Length	L = (12km)	
Operation Hour	TIME = (45)minute	
Number of Daily Operation	(Two) / day	Morning & Evening
Depart and Arrival Time	Morning: Embakasi-Nairobi Dep. 07:05 Arr. 07:50 Afternoon :Nairobi- Embakasi Dep. 18:05 Arr. 18;40	

<Nairobi – Kikuyu>

Classification	Track Application	Remark
Route Section	Nairobi - Kikuyu	
Length	L = (30.6km)	
Operation Hour	TIME = (80)minute	
Number of Daily Operation	(Two) / day	Morning & Evening
Depart and Arrival Time	Morning: Kikuyu-Nairobi Dep. 06:15 Arr. 07:35 Afternoon :Nairobi- Kikuyu Dep. 17:40 Arr. 19:10	

Source: KR (2017)

Operating frequency and passenger demand are below.

**Table 4-9 Current Operating Frequency and Passenger Demand of NCS**

Section	Operation Frequency (Non-scheduled)	Passenger Demand per day	
		Morning	Evening
Nairobi - Ruiru	One round trip per day (Morning & Evening)	3,377	1,631
Nairobi-Embakasi	One round trip per day (Morning & Evening)	2,207	1,090
Nairobi - Kikuyu	One round trip per day (Morning & Evening)	571	1,090
Nairobi - Athi	Terminated	-	-

Source: KR (2017)

Vehicle information is as below.

- Length of one car of the passenger train: 20,40 meters
- Seating capacity of passenger coach (third class Swedish): 80 seated passenger rows of 2\*3
- Number of cars per freight train and the length of freight train (by rolling stock type) -on average, a freight train has 22no. Wagons
- Type of freight train: Mixed Freight Train with Flat wagons, Tank wagons, Container wagons, Open wagons & Covered wagons

### Preliminary Operation Scheme of NCS Commuter Rail

The regular passenger railway line between Mombasa and Nairobi has not been in service since May 2017, Nairobi Central Railway Station will only operate the commuter rail. The opening of the SGR on June 1st resulted in a dramatic change in transportation system. New NSS has already been in operation for the SGR as intercity network. Consequently, increasing demand for linkage of NSS and NCS should be considered.

Speed and safety enhancement need to be considered. The current 20km/h should be increased to 50km/h and the old railway track requires rehabilitation to prevent railway accidents such as derailling. In addition, MRT/LRT/BRT concept in the Harmonization study is applicable in the NCS area though it requires a more flexible approach for adapting to future transportation needs.

All suggestions listed below are based on the site survey and interview data from the KR with the technical insight of the Consultant.

### Rolling stock (suggestion)

**Table 4-10 Rolling Stock of NCS (Suggestion)**

	Max. Operation Speed	Train Formation	Train Capacity	Ridership (Assumed 200%)	Remark
Passenger Train	70 km/h (Assumed )	1 train set (8 couches)	700	1,400	

### Number of daily operation (suggestion)

**Table 4-11 Number of Daily Operation of NCS Commuter Rail (Suggestion)**

Classification	Nairobi – Syokimau*	Nairobi - Ruiru	Nairobi-Embakasi	Nairobi - Kikuyu
Max. Passenger Occupancy	4,400/day/Both/*	3,377/day/Both**/	2,207/day/Both**/	571/day/Both**/
Transport Capacity	1,400	1,400	1,400	1,400
Output Value	1.57	1.21	0.79	0.21
Applied Count**	2 trip/day	2 trip/day	1 trip/day	1 trip/day
Comment	The Nairobi – Ruiru section which has the greatest max. Passenger occupancy (Data provided in 2017) would require the operation of more than 1 trip per day.			

Note 1. \*Source: Nairobi - Syokimau: Suggestion should be evaluated by KR in next step.

2. \*\* Applied Count Result could be modified as the extent of quality of passenger rail service.

3. It is necessary to distinguish between the peak and non-peak times in future.

## Operation Headway (Suggestion)

**Table 4-12 Operation Headway (Suggestion)**

Classification	Number of daily operation	Operation Hour	Operation headway
Nairobi - Ruiru	1 /day	19 hours	On Average 1,140 minutes

## Train Formation (suggestion)

**Table 4-13 Train Formation (Suggestion)**

Classification	Formation	Operating train sets	Reserved train sets	Total
Passenger Train	8 couches per train set	1 train set	1 train set	2 train sets (16 couches)

## Railway suggestion

The preliminary operation scheme and structure<sup>7</sup> is as proposed below.

**Table 4-14 Railway Track in NCS (Suggestion)**

Class	Operation Section	Operation Frequency	Result		Application
			Platform	Required tracks	
1	(Depart, Arrive) Nairobi – Ruiru, Westbound	1/day	1	2	1 platform 2 lines
2	(Depart, Arrive) Nairobi – Embakasi(Syokimau), Southbound	1/day	1	2	1 platform 2 lines
3	(Depart, Arrive) Nairobi – Kikuyu, Eastbound	1/day	1	2	1 platform 2 lines
4	Siding track		-	2	2 lines
5	Emergency platform				1 platform
Total					4 platforms 8 lines

\*Note

1. The facility scale and the track layout that are required for the performance were reviewed after the review of the future passenger railway operation plan.
2. In case the Nairobi Central Station is used exclusively for the passenger railway station, it is necessary to review the required number of tracks and the size of the platform facilities.
3. It is necessary to establish the layout plan which minimizes the conflict due to the level crossing.
4. It is necessary to review the effective use of land in order to maximize the development effect of the station area.

Although the current frequency of train operation is low, the NCS is planned to have 4 platforms and 8 lines in consideration of the increased railway operations with NCS being the hub of the railway transportation and the projected future demand increase.

### 4.4.5 Initial Layout

#### Pre-condition

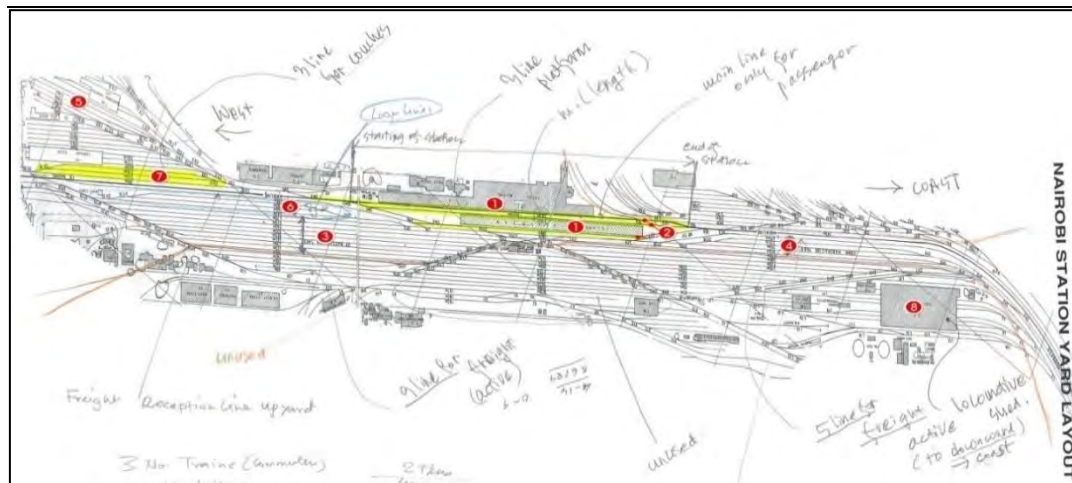
The Consultant has developed the initial platform layout with the consideration of the future operation plan of commuter rail. According to the Green Mall project, the station area has 4 platforms and 8 lines, with platform length of 400m, 10m for the width of each platform, and station width of 100m.

<sup>7</sup>This scheme is preliminary stage so it should be modified and developed more in future.

The outside station area will be designated for the long-distance freight services and the passenger line shall have 4 lines. The station width will be 27-30m with a height of 7.5-8m in consideration of the future electrification. The dimensions of the infrastructure should accommodate future expansion. Building on the previous studies and a preliminary railway operation scheme, the station will have 4 platforms and 8 lines including the freight trains.

**Basic Direction**

As the NCS facilities are outdated, it is recommended the complete renovation of the terminal into a modern terminal in sync with urban development. Based on the recommendations of previous plans and studies the relocation of freight trains from NCS, some or entire section of the following facilities must be decommissioned.



	Classification	Quantity	Note
①	Platform	2EA (length : 450m)	
②	Passenger Transport Tracks	3 lines	
③	Freight Transport Tracks UP marshalling YARD	9 lines	
④	Freight Transport Tracks DOWN marshalling YARD	5 lines	
⑤	Marshalling YARD	-	
⑥	Turn-Around (Loop Line)	3 lines	
⑦	Couches Tracks	3 lines	

**Figure 4-33 Status of Current Railway Tracks in Operations at NCS**

Source: KR (2017)

**Design Standards**

MGR design standard of the current NCS will be maintained but newly constructed line shall have the target speed as 70km/h.

**Table 4-15 Track Design Standard Proposal**

Classification	Existing Line	New Construction Line	Remark
Track Gauge	MGR	MGR	
Operating Speed	20~25km/h*	70km/h	
Min. Radius of Curvature	Greater than 150m	Greater than 200m	
Max. Gradient	Max 25‰	Underground section = less than 10‰	

Cant	31.8mm (Minimum Cant)	25.4mm (Minimum Cant)	
Radius of Vertical Curve	(Insufficient Data)	Greater than 3,000m	
Track Spacing	4.3m	4.0m	

Note

1. Source: KR and Japan rail standards
2. \*number is feasible speed, not design speed.

#### 4.4.6 Horizontal Alignment Review

The Plan shall have considered the following while developing the initial layout;

- Converting the NCS to an exclusive Passenger Railway station, requires a number of tracks and platform sizes need to be redesigned.
- Based on the initial railway track proposal, the consultant will prepare 2 alternatives for the railway track, one underground (lowering) and the other on grade. However, both shall have the same layout plan.
- The starting point section would utilize the NCS approaching section of existing railway track.
- The railway track end section is closely placed to the KR’s golf course; hence it requires a phased construction. A separate graded crossing is necessary at Uhuru highway.
- The front and back section of the station has a speed of less than 70km/h, therefore the minimum radius of curvature will be set as 200m. Radius of Curvature for the existing service line is 150m, so it should be realigned by target speed.

The figures below show the initial track layout proposals.

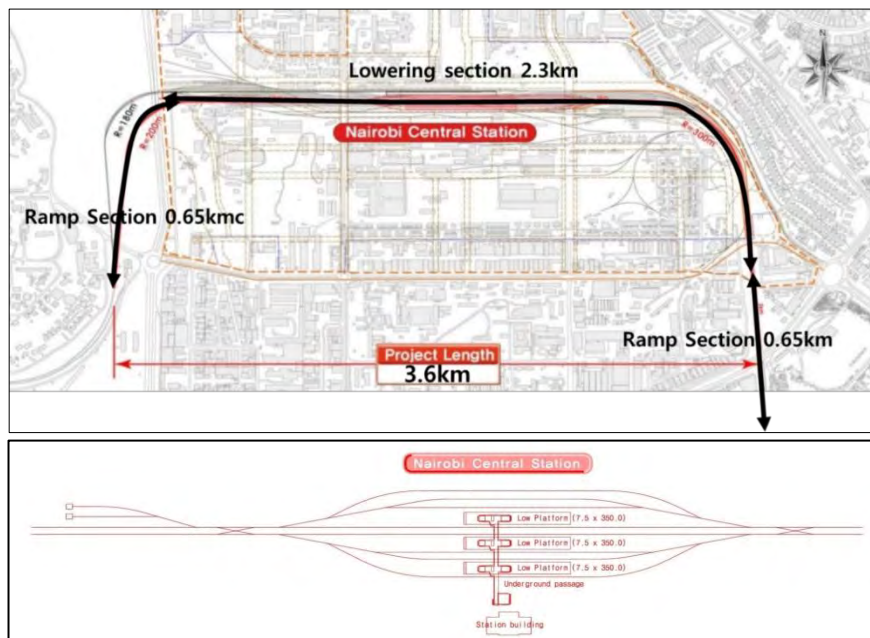


Figure 4-34 Proposals Initial Track Layout in NCS area

To mitigate the inconvenience of operation during construction, 3 phases are suggested.

- Phase 1: New lines are constructed for the southern 4 platforms and 6 lines - The northern existing 2 platforms and 3 lines continue to operate.
- Phase 2: Once Phase 1 is complete, and northern 4 platforms and 6 lines are in operation, the existing northern lines -2 platforms and 3 lines- will be removed.
- Phase 3: Two lines will be maintained as siding track for the future extension, emergency and temporary line during construction.

#### 4.4.7 Vertical Alignment Review

It is considered that the vertical alignment of railway structure is based on two different concepts. While one is lowering the rail case referring the idea of affiliate project of Green Mall by GAUFF, the other is Railway At-grade concept as conventional approach of the railway as it is.

##### Alternative 1: Lowering

The underground line was planned to be less than 10 ‰ considering the braking power of passenger train. The new section should guarantee the height of 8.0M under the ground level. From the initial layout, it is estimated that the total length of the lowered line as 3.6km.

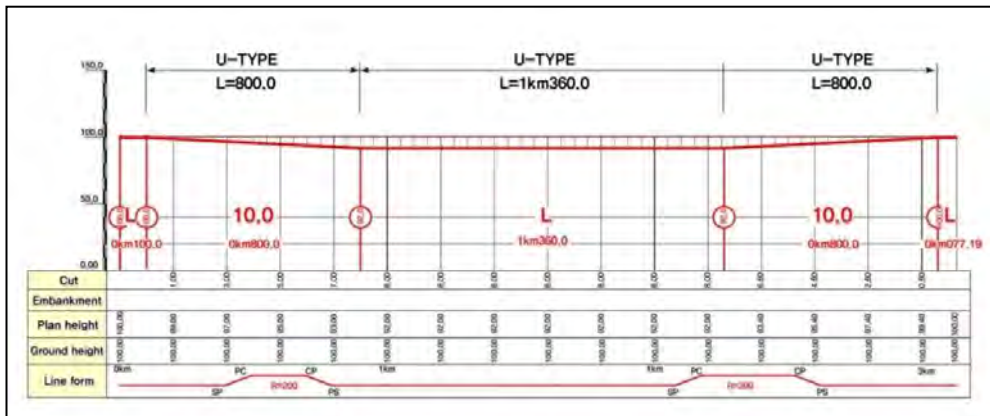


Figure 4-35 Section Proposal of Initial Track Layout - Lowering Case

##### Alternative 2: At-grade

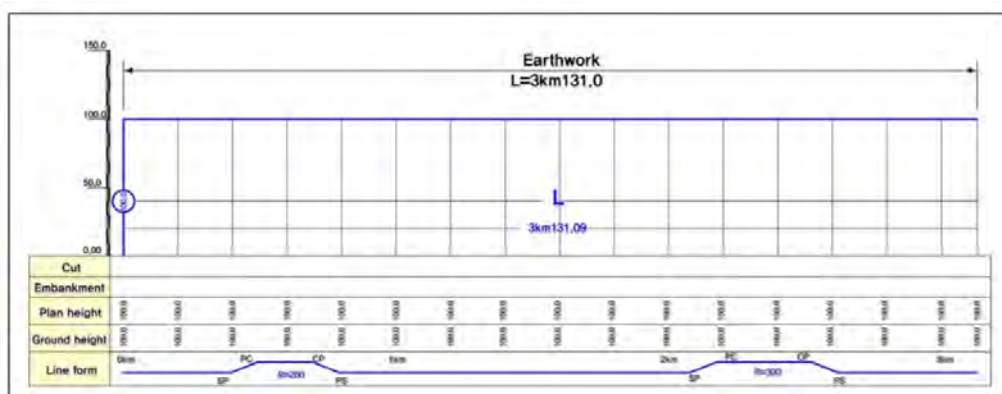


Figure 4-36 Section Proposal of Initial Track Layout – At-grade Case

**Table 4-16 Advantage of Each Alternative**

Division	Lowering	At-grade
Summary	<ul style="list-style-type: none"> <li>Platform will be installed at a lower level than the surrounding ground</li> </ul>	<ul style="list-style-type: none"> <li>Platform will be installed At-grade with the surrounding ground</li> </ul>
Project Length	<ul style="list-style-type: none"> <li>L=3,137km</li> </ul>	<ul style="list-style-type: none"> <li>L=3,137km</li> </ul>
Structure	<ul style="list-style-type: none"> <li>Earth work: 177m</li> <li>Bridge: 0m</li> <li>U-TYPE : 2,960m</li> </ul>	<ul style="list-style-type: none"> <li>Earth work: 3,137m</li> <li>Bridge: 0m</li> <li>U-TYPE : 0m</li> </ul>
Key Features	<ul style="list-style-type: none"> <li>Advantage as long term plan for railway and urban roadway condition</li> <li>Maintaining the surrounding landscape by underground installation of the railway facilities</li> <li>Forced drainage treatment facility should be considered</li> <li>Disadvantage of future expansion of the station</li> <li>Disadvantage in construction cost</li> </ul>	<ul style="list-style-type: none"> <li>A bridge across the railway (viaduct) is required</li> <li>The existing Landscape can't be retained due to the ground installation of the railway facilities</li> <li>Advantage in future expansion of the station</li> <li>Advantage in construction cost</li> </ul>
Total Project Cost	Ksh 17,593,729,550	Ksh 15,648,799,550

\*Note: The total project cost is tentative and does not reflect the system cost - power equipment, communication equipment, and signalling equipment. (For details, refer to Appendix 2 Railway cost breakdown)

Appendix 1 Comparison of Lowering and At-grade Railway Track elaborates the comparison between the two cases in terms of technical and economic aspects. In conclusion, the lowering concept was selected as the better option based on multiple aspects

## 4.5 Transportation Analysis

Studies carried out in the NIUPLAN show that out of a total of 6,769,8618 citywide trips, 39.7% are made on foot, while private vehicles only account for 13.6% of the total. However, the rapid increase in vehicle ownership has intensified the congestion facing the city roads leading to productivity losses of approximately \$570,000 daily<sup>9</sup>. Despite the large amount of non-motorized traffic –NMT-, transport infrastructure across the city has been designed and constructed for vehicles, leading to increased conflicts, especially at major crossing points.

The public transport system as currently constituted is profit driven, informal and unreliable which negatively affects its critical role as a people mover. Importantly, issues with first and last mile connectivity reduce the overall effectiveness of the public transport services. Poor route connectivity, particularly in the East – West direction plagues all modes of transport resulting convergence of transit traffic from major arterials in the CBD.

<sup>8</sup> NIUPLAN Chapter 7, Table 7.1.5 Number of trips by Trip Purpose by Travel Mode

<sup>9</sup> Bloomberg Article: Traffic Costs Nairobi \$570,000 a Day as No. 2 Africa Hub



**Figure 4-37 Existing Road Network around the Planning Area**

The Nairobi Railway City planning area lies immediately south of the existing CBD and is bound by heavily trafficked roads; Haile Selassie Avenue to the north, A104 Uhuru Highway to the west, Bunyala Road and Commercial Street to the south and Railway lane to the east. There are some access roads leading to the project site; however, there are no North-South or East-West through ways. Haile Selassie Avenue is also a key pedestrian route.

#### 4.5.1 Roads

Currently, through traffic movement to access the CBD in the North - South direction is only available along A104 Uhuru Highway which is part of the key Northern Corridor that serves landlocked East and Central Africa. This results in crippling congestion particularly in the morning and evening peak periods.

In addition to Uhuru Highway, there are a total of 9 traffic outlets from the CBD on the vicinity of The Railway City site, shown in below figure:

- Ngong' Road
- Chiromo Rd/ Waiyaki Way
- Thika Rd/ Limuru Rd/ Waiyaki Way
- Thika Rd
- Jogoo Rd
- To Langata Rd/ Mombasa Rd/ Enterprise Rd
- Mombasa Rd
- Langata Rd
- Enterprise Road - Industrial Area

The figure below also shows the barrier effect caused by the project site with traffic from the North being forced to drive around the development site to exit the CBD towards the South. It also highlights the lack of continuity in the East – West direction.



**Figure 4-38 Traffic Outlets in the Immediate Surroundings of the Planning Area**

#### 4.5.2 Public Transport

Public Transport in Nairobi currently consists mostly of road-based transport (buses and matatus) supported by commuter rail services. Most public transport routes converge in the CBD where the major termini are located. Route continuity is poor and necessitates multiple connections by commuters as there are no north-south or east-west through routes. This lack of continuity has negatively affected the first and last mile of almost all services. This gap has been filled by motorcycle taxis, commonly known as BodaBoda which have grown astronomically (209%)<sup>10</sup> across the country from a total of 371,747 in 2010 to 1,147,403 registered motorcycles in 2016.

##### Road-based Public Transport

Road-based public transport makes up 40.6<sup>11</sup>% of all trips in Nairobi. The service is primarily provided through 14-seater minivans and 33-seater buses popularly known as matatus which make up 28.4% of all trips in the Nairobi CBD. Buses make up the remaining 12.2% of trips, and are mostly used for high volume, longer distance trips.

Haile Selassie Avenue is a major ingress and egress route for PSVs that operate services on Ngong, Langata and Mombasa Roads. This is principally because a number of major termini are either located along or in close proximity to the road. Previous studies carried out over 3 days show that over a 12-hour period running from 6.30 am to 6.30 pm, PSV's make up 42% of the traffic along Haile Selassie Avenue (Railways to Uhuru Highway). A 1-day study, also undertaken by the consultant, at the Railways Roundabout showed that PSV's make up 46% of the total circulating traffic.

This highlights the critical role Haile Selassie Avenue plays in the movement of public transport in the CBD and the traffic loading it is currently subjected to. The figure below highlights the

<sup>10</sup> KNBS Statistical Abstract 2017

<sup>11</sup> NIUPLAN Chapter 7, Table 7.1.5 Number of trips by Trip Purpose by Travel Mode

traffic congestion on the outbound lane of Haile Selassie Avenue especially in the evening peak period. The inbound lane is also highly congested and experiences long queues due to the inadequate capacity of the roundabout.

The existing pick-up and drop-off points in the CBD consist of designated bus termini as well as on-street parking/termini for specific routes. The current layout results in congestion at morning and evening peak times and is characterized by long waiting times for vehicles to fill up and conflict of different modes due to convergence of all PSV services in the CBD. The following map shows the distribution of these parking lots and termini in the vicinity of the Nairobi Railway City planning area.

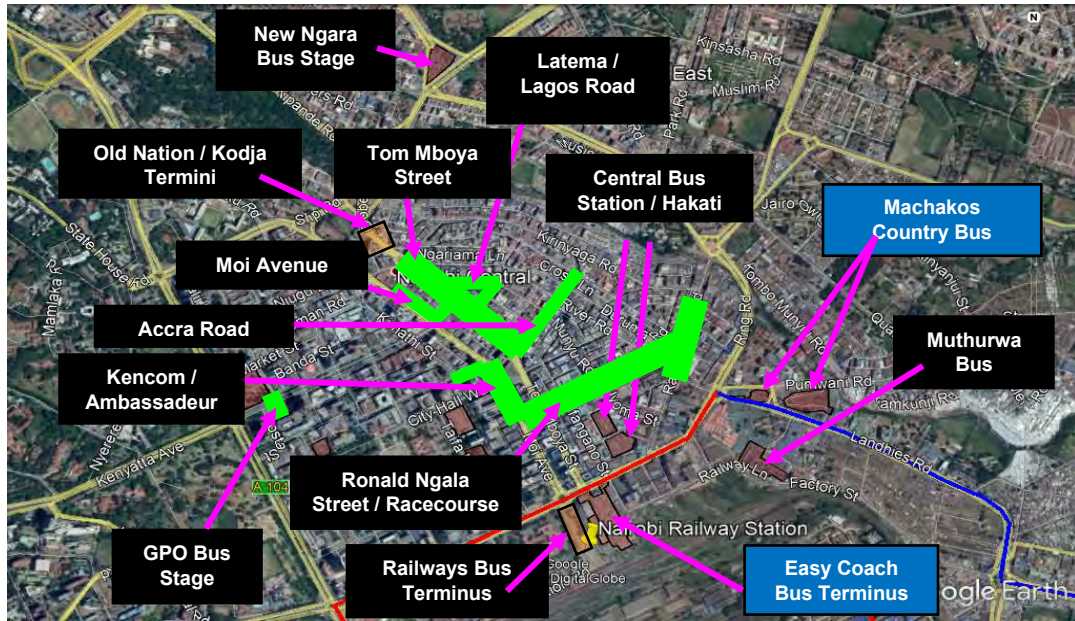


Figure 4-39 PSV Traffic on the Congested Haile Selassie Avenue

Below table shows the main PSV routes, route description and destination at the Railway Matatu Stage terminal.

Table 4-17 Short Distance PSV Routes at Kenyatta Railway Matatu Stage

PSV terminal	Route No.	Route description	Destination
Railways Matatu stage	1	Haile Selassie Ave, Kenyatta Hospital, Ngong Rd, Adams Arcade, Woodley, Jamhuri, Dagoretti Corner, Karen, Dagoretti Market	Dagoretti Market
	2	Haile Selassie Ave, Kenyatta Hospital, Ngong Rd, Adams Arcade, Woodley, Jamhuri, Dagoretti Corner, Waithaka, Dagoretti Market	Dagoretti Market
	3	Haile Selassie Ave, Kenyatta Hospital, Ngong Rd, Adams Arcade, Woodley, Jamhuri, Dagoretti Corner, Kabete, Dukas, Kinoo	Kinoo
	4	Haile Selassie Ave, Kenyatta Hospital, Ngong Rd, Adams Arcade, Woodley, Jamhuri, Dagoretti Corner, Riruta, Dukas, Satellite	Riruta Satellite
	5	Haile Selassie Ave, Kenyatta Hospital, Ngong Rd, Adams Arcade, Woodley, Jamhuri Estate	Jamhuri
	8	Haile Selassie Ave, Kenyatta Hospital, Ngong Rd, Mugo Kibiru Rd, Kibera Drive, Kibera Ayany Estate	Kibera
	24	Haile Selassie Ave, Uhuru Highway, Nyayo Stadium Roundabout, Langata Road, Madaraka, Bomas of Kenya, Langata South Road, Karen Blixen Museum, Karen Road, Karen Country Club, Karen Shopping Center	Karen

	46	Haile Selassie Ave, Uhuru Highway, Serena, Panafric, Valley Road, Argwings Kodhek Road, Hurlingham, Kilimani, Yaya Center, Korosho Rd, Gitanga Rd, Kawangware	Kawangware
	105	Westlands, Waiyaki Way, Kangemi, Uthiru, Gitaru, Kikuyu	Kikuyu
	110	Haile Selassie Ave, Uhuru Highway, Nyayo Stadium, Mombasa Rd., City Cabanas, Mlolongo, Athi River, Kitengela	Kitengela
	111	Haile Selassie Ave, Kenyatta Hospital, Ngong Rd., Adams Arcade, Dagoretti Corner, Karen, Ngong Town	Ngong Town
	120	Pangani, Muranga Rd, Muthaiga Roundabout, Kiambu Rd, Kiambu, Githunguri	Githunguri
	126	Haile Selassie Ave, Uhuru Highway, Nyayo Stadium Roundabout, Langata Rd, Madaraka, Wilson Airport, Langata, Bomas of Kenya, Magadi Rd., OngataRongai, Kiserian	Kiserian

Source: Field Survey 2017

Below table show the long-distance PSV routes, destination at the KRSRBS Bus and Car Park.

**Table 4-18 Long Distances Routes at KRSRBS Car Park Stage**

PSV Terminal	PSV Operator	Round Trip Routes from Nairobi
KRSRBS Car Park Stage	Easy Coach Bus Line and Shuttle Services	Sirare., Maseno, Kaimosi, Kisumu, Busia, Mumias, Siaya, Kakamega, Usenge, Bungoma, Kampala, Kitale, Mbale, Kericho, Eldoret, Malaba, Rongo, Homa Bay
	Guardian Bus Line and Shuttle Services	Kisii, Kisumu, Ugunja, Maseno, Bondo, Migori, Mbale, Kericho, Kakamega, Rongo, Oyugis, Awendo, Sotik, Busia, Narok, Sirare, Bumala, Siaya, Homabay, Keroka
	Galaxy Shuttle Services	Keroka, Kisii, Oyugis, Rongo, Migori, Sirare, Homabay, Kendu Bay, Kisumu, Narok, Busia

### Inter-City Transport

Similar to the intra-city public transport system, the major inter-city services begin and terminate their journeys in the CBD. The main inter-city service terminals in the vicinity of the planning area include the Easy Coach terminal located at the old District Traffic headquarters, and Machakos Country Bus station also shown in above figure (blue labels). The other inter-city bus termini in Nairobi are mostly informal on-street termini for example along River Road, Latema Road, Accra Road and Ronald Ngala Street.

### Commuter Rail

Commuter rail transport is the dominant mode of transport within the plan area owing to the central location of the Nairobi Railway Station and the spread of railway related facilities. The Nairobi Railway Station currently ferries passengers and goods from areas such as Kikuyu, Syokimau, Embakasi, Ruiru and Thika. The Railway service is run by RVR under a concession agreement with KR. shows the current commuter rail routes terminating within the planning area.

**Table 4-19 Current Commuter Rail Routes Terminating at NCS**

Route	Frequency	Arrival	Departure
Daily commuter train within Nairobi (Monday to Friday)			
Ruiru to Nairobi	One service	07:40 hrs.	18:40 hrs.
Embakasi Village to Nairobi	One service	07:40 hrs.	18:05 hrs.
Kikuyu to Nairobi	One service	07:45 hrs.	17:40 hrs.
Syokimau to Nairobi	Three services	07:35 hrs.	08:00 hrs.
		09:45 hrs.	17:50 hrs.
		19:30 hrs.	19:50 hrs.

Source: Kenya Railways website

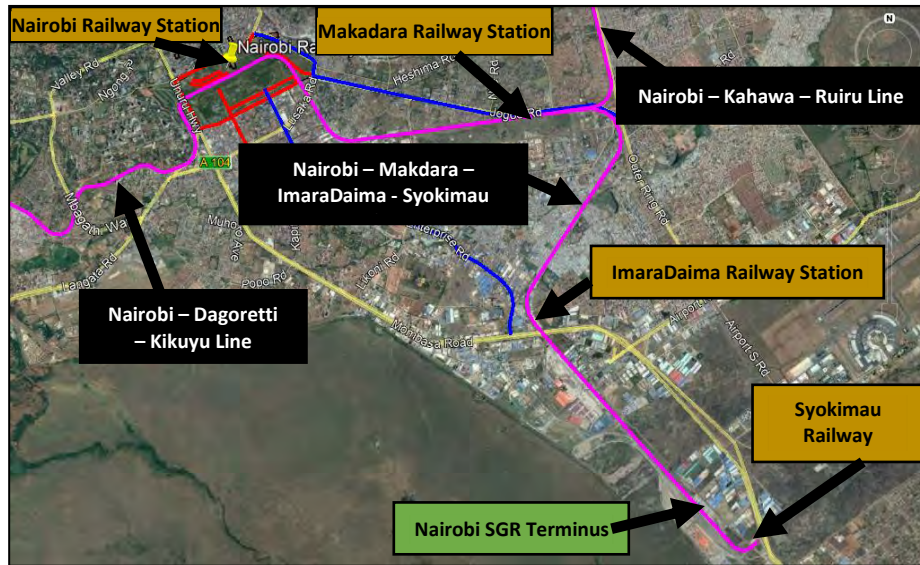


Figure 4-40 Commuter Rail Routes Around NCS

### 4.5.3 Non-Motorised Transport

Non-motorized Transport (NMT) has been determined to be the primary mode of travel in Nairobi. This includes pedestrians, cycles and handcarts. Ironically, provision of infrastructure for NMT is almost always an afterthought with the only true pedestrian corridor in the Nairobi CBD being along the Aga Khan Walk. Facilities such as footbridges are few, sometimes poorly located and not designed and built to capacity.

Lack of provision of the necessary and adequate facilities for NMT triggers a lot of conflict between NMT and other modes in Nairobi. This is evident in the high number of pedestrian related traffic accidents in Nairobi, which account for 65% of all accidents in the city. Below figures show examples of traffic conflicts between NMT and motorized modes in the vicinity of the planning area at Ladhies Road roundabout and at the junction of Uhuru Highway and Haile Selassie Avenue due to lack of sufficient facilities for NMT.

The Plan is designed as a Transit-Oriented Development (TOD) where, in most cases, the pedestrian and other NMT modes e.g. cycling is given 'Priority consideration'



The Ladhies Road Intersection

The Haile Selassie-Uhuru Highway Intersection

Figure 4-41 NMT and MT Conflicts Around the Planning Area

#### 4.5.4 Personal Vehicles and Motorcycles

Personal vehicles are utilized by persons working within the industrial area, clients seeking vehicle repair services within the open-air garages and garage yards in the plan area, persons working within the KR and RVR, as well as persons seeking for car parking services within the KRSRBS Car Park.

Motorcycles are mostly used to ferry goods and people to and from the bus terminals within the plan area. These motorcycles are preferred because they can drive through traffic jam with ease during rush hour. However, the NCCG through a notice on 11 November 2015, banned motorcycles carrying passengers (also known as BodaBoda) from operating within the CBD due to increased levels of crime committed using them. The BodaBoda riders have now been directed by the NCCG not to enter the CBD, but to drop off and pick up their passengers at City stadium or at the Ngara bus terminus.

#### 4.5.5 Parking

Parking in Nairobi is made up of on-street parking managed by the County Government and several privately-run parking lots spread out across the city. The figure below shows the designated parking lots within 2 km of the planning area of the Railway City.

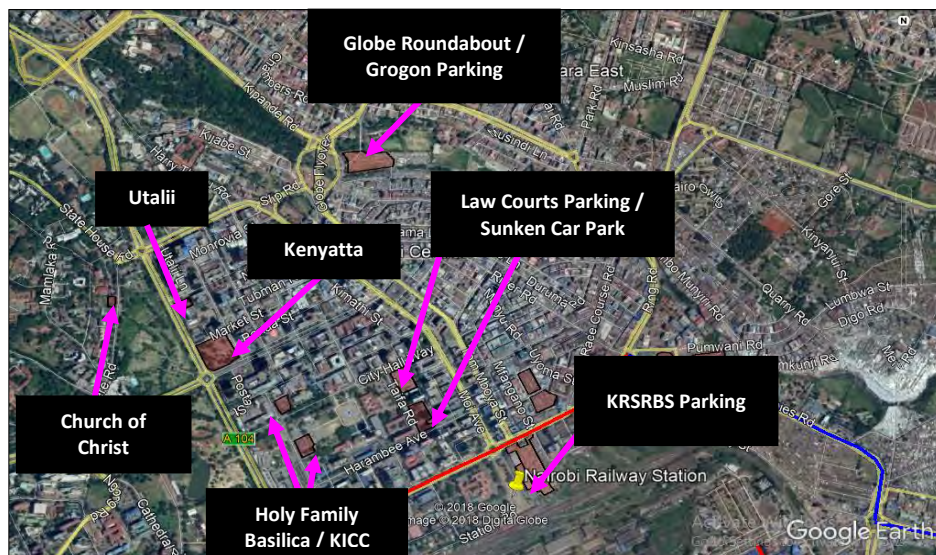


Figure 4-42 Parking Within 2km of the Planning Area

### 4.6 Physical Infrastructure

#### 4.6.1 Storm Water and Drainage Facilities

There is a major storm water drain that runs along Uhuru Park and drains southwards through the Railway Golf Course, it passes under the railway and then turns under Uhuru Highway through a semi-circular arch culvert and continues through the industrial area and then onto Nairobi river. It is evident that during heavy rainfall that the lined sections of the channel were overtopped because vegetation on its flanks had been flattened by storm flows. From previous studies and reports accessed, it was found that the level difference between Uhuru Highway and the Nairobi River is approximately 17 meters and the distance from the existing channel to a suitable outfall point on the river is approximately 1900 meters. In the report, the major proposal to sort out the storm water flood problem is constructing a tunnel. The suggested route for such a tunnel is to have it passed under the railway marshalling yards, right through the project site providing a direct connection to discharge point on Nairobi River.

The roadside drainage is mainly piped culverts, lined and unlined earth ditches. There is ponding on most sections of the road especially along the major roads especially during heavy downpour. The drainage infrastructure around the area is generally not functional and requires maintenance. It is mainly characterized by the following:

- Inadequately sized drainage channels and structures particularly at openings;
- Siltation due to obstruction of drainage channels;
- Blockage of drainage structures, manholes and catch pits;
- Encroachment of buildings/structures on waterways;
- Dumping of garbage along waterways.

Downstream, there several drainage structures including bridges, box culverts and pipe culverts as shown in the below map. The Green Mall report had sited some structures that are inadequate to pass the current flows while others are seriously clogged with debris. This was confirmed by the site visit and the same scenario was witnessed along the Nairobi river.



**Figure 4-43 Site Drainage Map Around the Planning area**

The structures along Ngong river and in the vicinity of the railway station are built across a trapezoidal concrete channel. This channel is approximately 3m wide at the top, 2m wide at the bottom and 2m deep. Though all structures are in use, there are signs of them being overtopped during high storm water discharge.



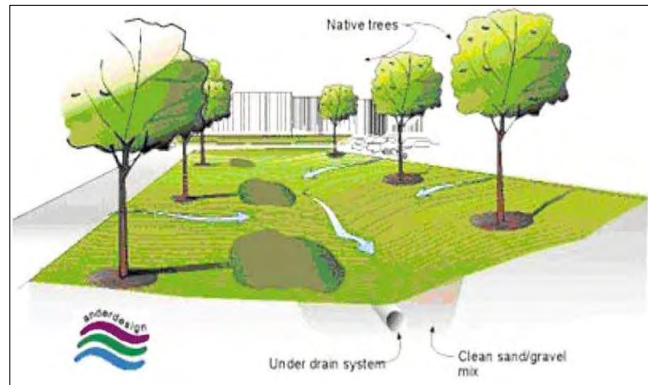


**Figure 4-44 Existing Drainage Facilities Around the Planning Area**

**Proposed drainage measures**

The two rivers namely Ngong and Nairobi should be retained as the main outlets for storm water originating from the planning area. The hydrological study of the area has determined the current and expected peak flows and the flows that will be picked by the various channels considering the water that will be channelled to the proposed underground tank below the proposed New railway station and the various greening areas.

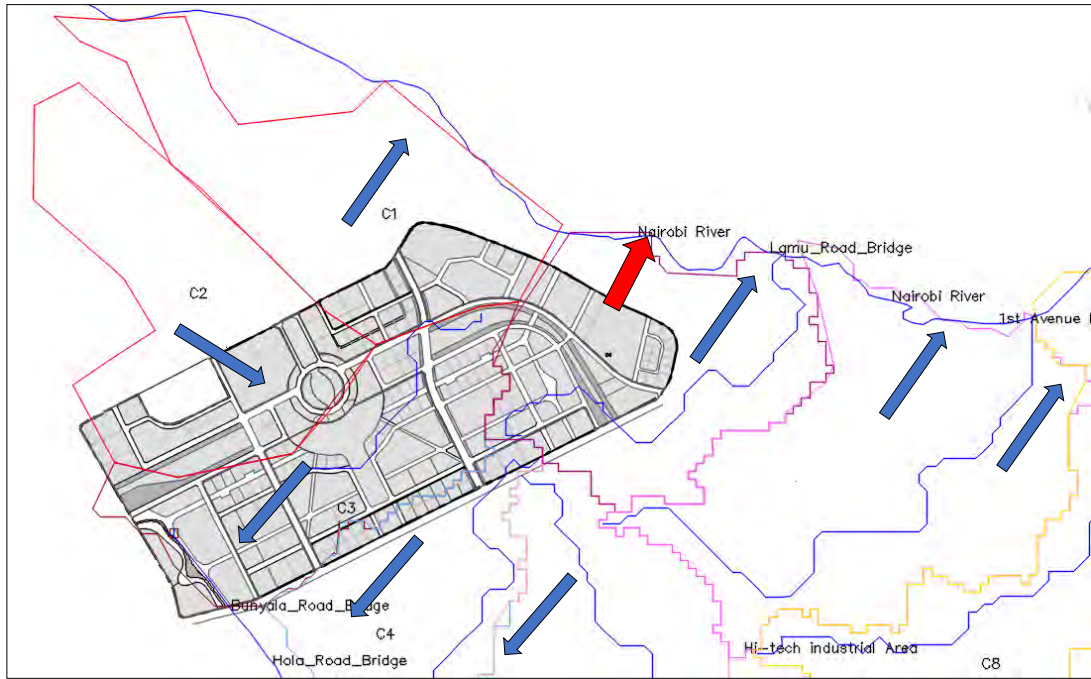
Storm water drainage facilities that have been sized on the basis of the hydrological and hydraulic studies have been proposed on both sides of all the roads within the development. The proposed side drains will be covered, concrete u-shaped drains, allowing for utilization of the full width of the transit corridors. These will also reduce cases of blockage common with open channels.



**Figure 4-45 Water Harvesting Exemplary Figure**

New pipe and box culverts shall be provided at crossing points as determined by the hydraulic requirements. Relevant existing bridges, pipe and box culverts that are outside the site area will be assessed for both hydraulic and structural capacity to confirm the measures that had been proposed in earlier studies and/or propose new measures.

Utilization of open green spaces – e.g. attenuation ponds and swale for storage of surface runoff; infiltration boxes where water is temporarily stored and before draining it into the soil or use it for landscape irrigation.



**Figure 4-46 Proposed Drainage Measures**

Peak discharges have been estimated for all the catchments 1 to 8 as given in the table below. Catchment C3 to C5, flow towards Ngong River while catchments C1, C6 to C8 flows towards Nairobi River. The discharge from Catchment C2 is channeled to the proposed underground tank for storage. Considering a 24-hour storm of a 10-year period, 38.9 m<sup>3</sup>/s will flow to Ngong River while 59.19m<sup>3</sup>/s flows to Nairobi River. For the discharge to Nairobi River, a box culvert is proposed across Ladhies Road as shown by the red arrow in the figure above. This to be designed based on the proposed design for the upgrading of the Ladhies Road.

**Flood Estimation Using Rational Formula**

**Table 4-20 Delineated Drainage Catchment Analysis**

Catch. No		C1	C2	C3	C4	C5	C6	C7	C8
Area		(km <sup>2</sup> ) 0.88	0.75	0.7	0.77	1	0.9	1.4	1.2
Longest stream	Length	(km) 1.85	1.5	1.42	1.82	2.08	2.07	2.66	2.95
	Slope	(m/m) 0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Catchment slope	(m/m)	0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.01
	%	1.3	1.4	1.4	1.5	1.6	1.4	1.7	1.4
Concentration time		T (hr.) 0.627	0.533	0.511	0.619	0.686	0.684	0.829	0.898
Peak discharge	Q2	m <sup>3</sup> /s 7.64	7.19	6.88	6.74	8.25	7.38	10.16	8.08
	Q5	m <sup>3</sup> /s 10.77	10.14	9.7	9.5	11.62	10.41	14.32	11.39
	Q10	m <sup>3</sup> /s 13.6	12.79	12.24	11.99	14.67	13.14	18.08	14.37
	Q25	m <sup>3</sup> /s 18.2	17.12	16.38	16.05	19.64	17.58	24.19	19.24
	Q50	m <sup>3</sup> /s 22.52	21.19	20.27	19.86	24.3	21.76	29.94	23.8
Q100	m <sup>3</sup> /s 27.74	26.1	24.97	24.47	29.93	26.8	36.87	29.32	
Flow to		Nairobi	Tank	Ngong	Ngong	Ngong	Nairobi	Nairobi	Nairobi

\*Note:

$Q = 0.278CIA$

$T_c = 0.0663 * L^{0.77} * S^{-0.385}$

$I = ARF * R_d * (1/24 * (24.33 / (T + 0.33)))^n$

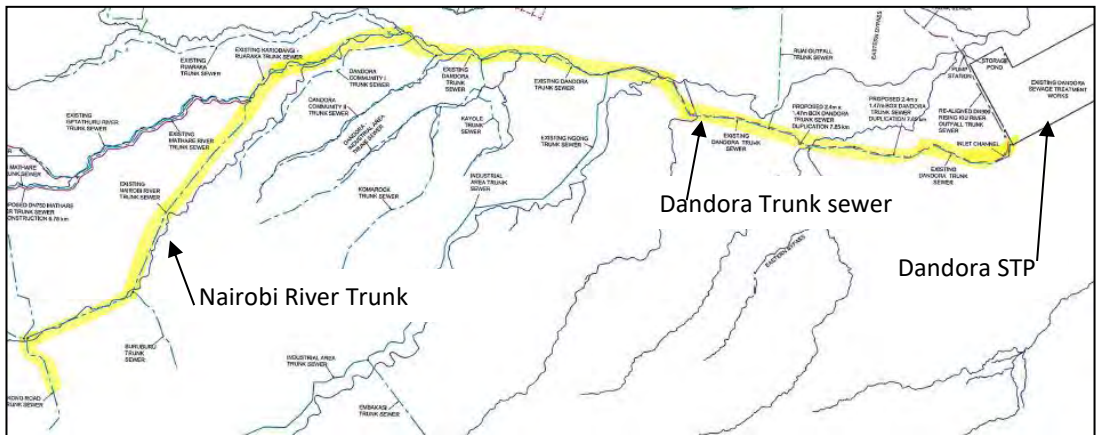
$ARF = 1 - 0.044 * T^{(-1/3)} * A^{0.5}$

**Waste Water Disposal**

Waste water is collected using concrete pipes of various sizes as shown below and conveyed to the Municipal trunk sewers. Much of it is taken to the Nairobi River trunk sewer which conveys it to the Dandora Treatment works through Dandora trunk sewer. The capacity of the Dandora treatment plant has been recently upgraded to 160,000 m<sup>3</sup> per day although it is still operating at 120,000 m<sup>3</sup> per day.

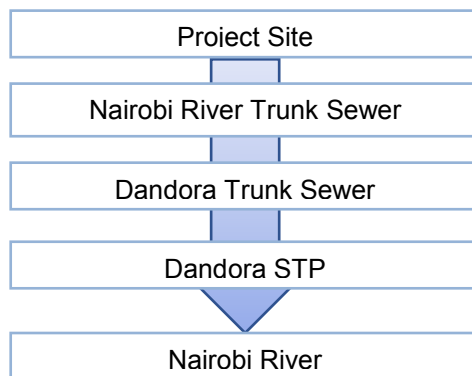


**Figure 4-47 Waste Water Collection System Around the Planning Area**



**Figure 4-48 Waste Water Disposal Route in Zone 7**

The below chart gives a summary of the waste water disposal route from the site to the Dandora STP.

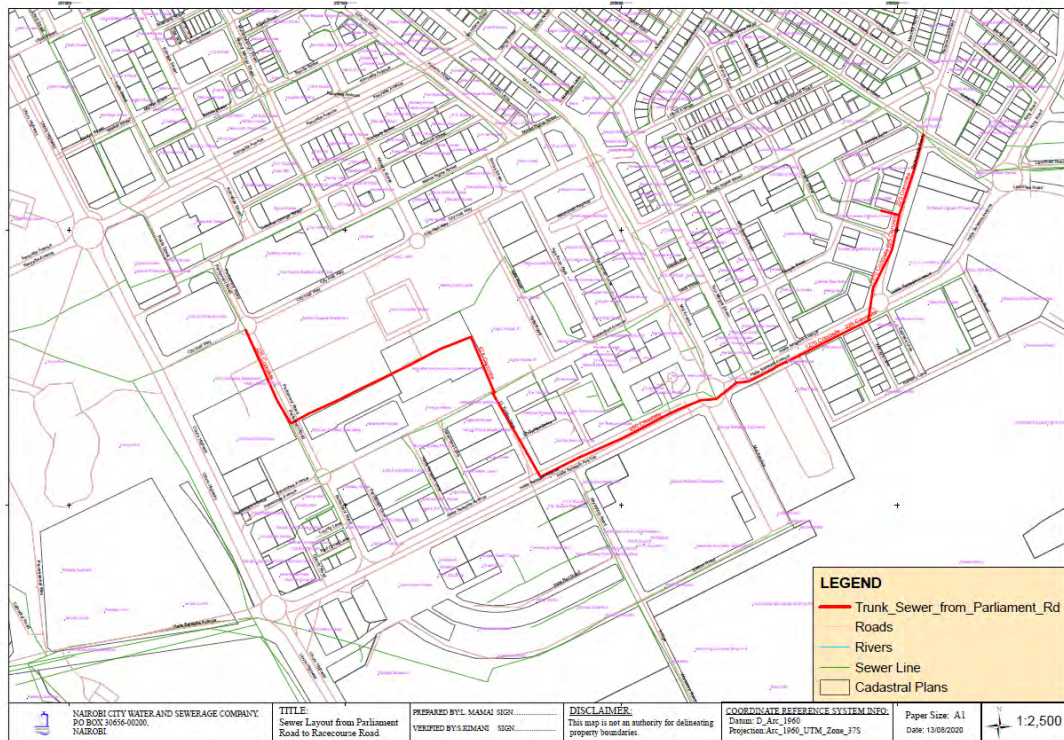


**Figure 4-49 Waste Water Disposal Scheme**



**Figure 4-50 Dandora Sewerage Treatment Plant and Dandora Trunk Sewer**

Another consideration is the level of the 450mm sewer line at the Moi/ Haile Selassie Avenue roundabout which is approx. 2.5 - 3m deep from existing ground level. In detail design stage, the design shall address any existing underground utilities.



**Figure 4-51 Sewer Layout from Parliament Road to Racecourse Road**

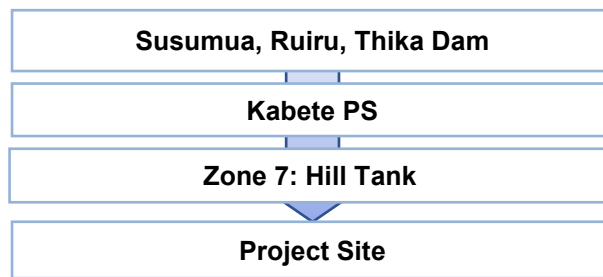
Source: NCCG

#### 4.6.2 Water Supply

The planning area lies in Zone 7 within the Nairobi County. Zone 7 is supplied with water from the Hill Tank which has a capacity of 18,000 m<sup>3</sup> and is fed from the Kabete Reservoir and the Kabete Water Treatment Plant (WTP) which has a capacity of 27,000 m<sup>3</sup> per day. The Kabete WTP is supplied with water from three sources: Ruiru dam, Thika dam and Susumua dam all having a total capacity of 544,700 m<sup>3</sup> per day (See the provided map and flow chart below).



**Figure 4-52 Kabete WTP/ Reservoir Map**



**Figure 4-53 Kabete WTP/ Reservoir Flow Chart**

- The piped water is supplied to the Railway Station compound from every entrance of the compound. The water supply pipelines include:
- 150mm diameter Steel pipes (S150);
- 150mm diameter Cast Iron pipes (Ci 150);
- 100mm diameter Galvanized pipes (GI 100);
- 100mm diameter Polyvinyl Chloride pipes (PVC 100);
- 100mm diameter Special Ductile Cast Iron pipes (BLS100).



Figure 4-54 Existing Water Supply System Around the Planning Area

### 4.6.3 Power Supply and Telecommunication

A survey was carried out to establish whether there is adequate power supply infrastructure within the project. The table below gives the utility provider’s existing substations within and near the planning area.

Table 4-21 Existing Substations in and Around the Planning Area

S/No	Substation Name	Substation Capacity (MVA)	HT Line Capacity	Status
a	Ragati Road	2 x 45.00	66 / 11kV	In operation
b	Muthurwa	2 x 3.00	66 / 11kV	In operation
c	City Center	2 x 200.00	220 / 66kV	In operation
d	Jivaji	2 x 23.00	66 / 11kV	In operation
e	South C	2 x 23.00	66 / 11kV	In operation

Several communication service providers are with the vicinity of the proposed development including the following:

- Airtel Kenya Ltd;
- Safaricom Ltd;
- Wananchi Ltd;
- Liquid Telecom Ltd;
- Jamii Telecom Ltd;
- Orange Kenya Ltd;
- Access Kenya Ltd.

Telecommunication requirements shall be discussed with the private suppliers and communication infrastructure shall employ the use of fiber optic for connectivity. This will give easier connectivity to the planning area with less communication media being installed which normally takes a large space due to their bulkiness.

#### 4.6.4 Energy

The use of various types of energy is influenced by its cost rather than access. For instance, a total of 20% of residents in Nairobi County use liquefied petroleum gas (LPG), and 63% use paraffin which is the most common cooking fuel. Over 1% of Nairobi residents use firewood and 11% use charcoal, as a total of 68% of residents in Nairobi County use electricity as their main source of lighting. A further 13% use lanterns, and 13% use tin lamps, however, less than 1% use fuel wood.

**Table 4-22 Various Types of Energy Sources Used in Nairobi County**

County	Electricity	Paraffin	LPG	Biogas	Firewood	Charcoal	Solar	Other
Nairobi	68.2	28.8	20.2	2.2	1.8	10.5	0.0	0.6

Source NCIDP, 2014

### 4.7 Social Infrastructure

#### 4.7.1 Education Facilities

The current educational facilities within the planning area are Technical University of Kenya (TUK) at the north-west end of the site and a Nursery School located within Landi Mawe Estate. According to Nairobi City County Education Department Data on Public ECD Centers and Primary schools, Starehe Sub County has a total of forty-seven (47 No) primary schools and twenty-six (26 No) secondary schools as outlined in the Table below.

**Table 4-23 Education Facilities in Starehe Sub-County**

	Public	Private	Total
<b>Primary Schools</b>	36	11	47
<b>Secondary Schools</b>	9	17	26
<b>Total</b>	45	28	73

Source: Nairobi City County Education Department, 2018

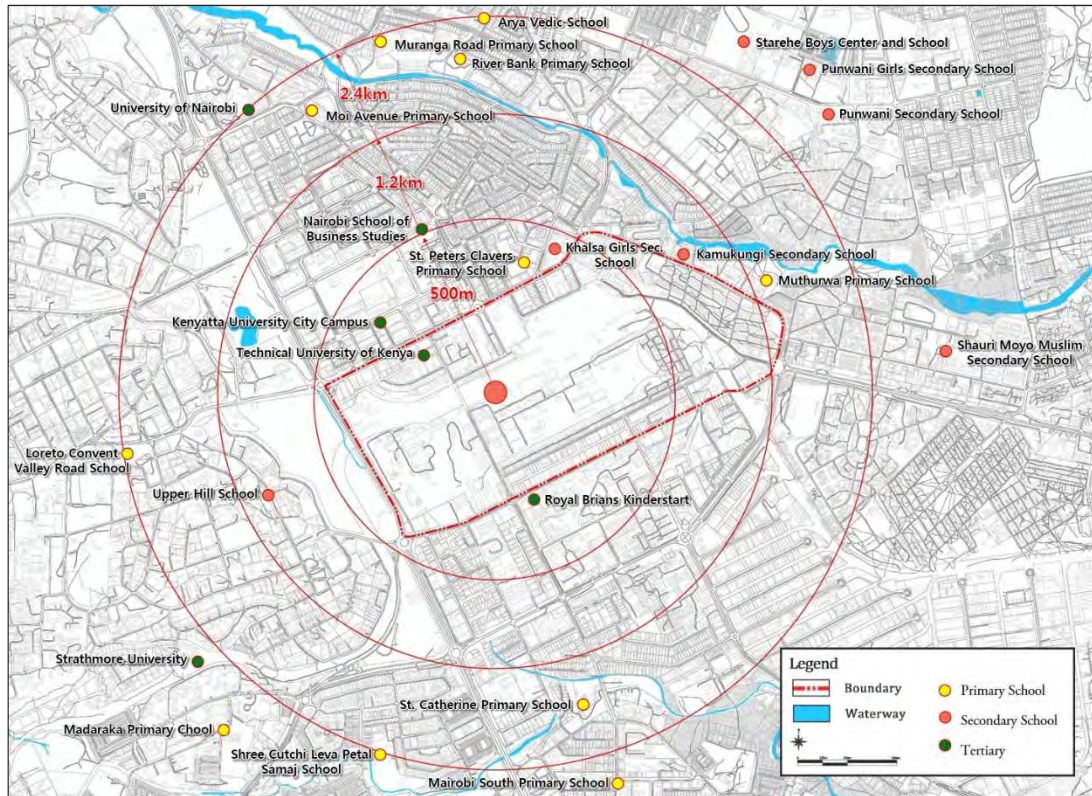
There are seven (7) primary schools that are located within a 1km radius of the project area as follows:

- Moi Avenue Primary School;
- S.S.D Primary School
- Royal Brains Kinder Start;
- Muthurwa Islamic Academy;
- C.G.H.U Primary School;
- Shauri Moyo Muslim Primary School;
- Nairobi South Primary School.

Three (3) secondary schools are located at least within 1km radius of the project area as follows:

- Khalsa Secondary School;
- Pumwani Secondary School;
- Kamukunji Secondary School.

Distribution of these facilities as well as other education facilities located within a 2km radius of the project zone of influence are shown in the below figure.



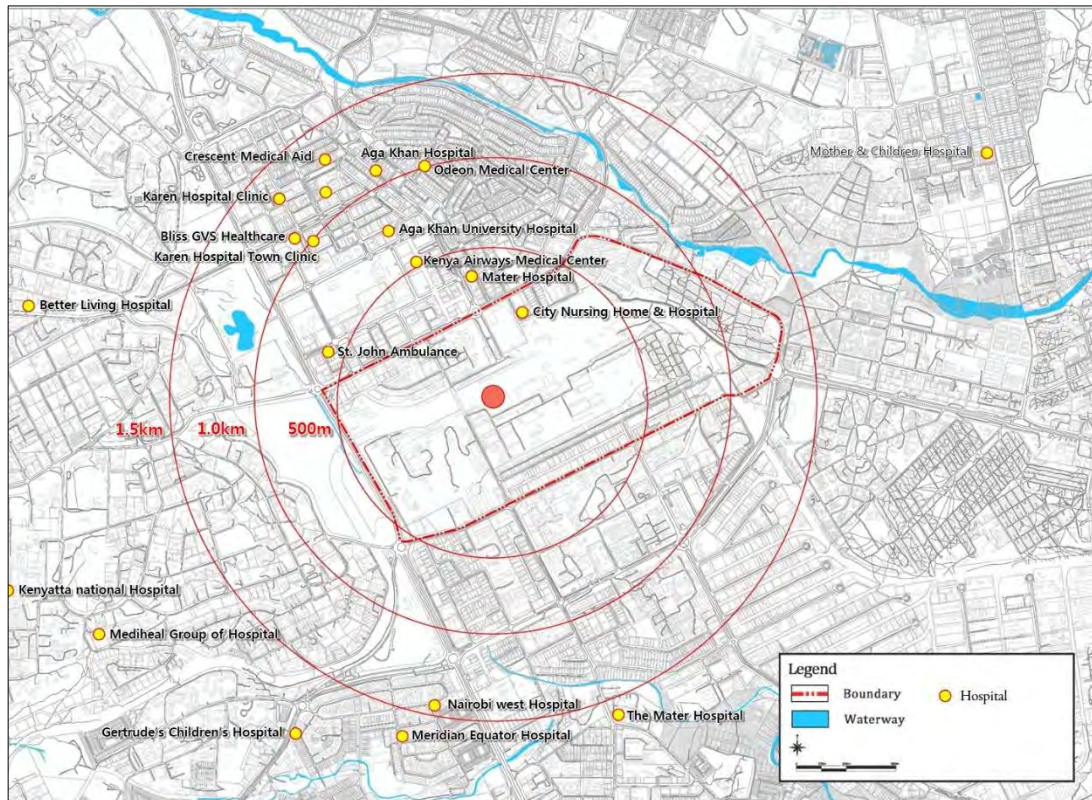
**Figure 4-55 Education Facilities Within 2km Radius**

#### 4.7.2 Health Facilities

There are three (3) health centers within the project area.

- Ngaira Health Center;
- Bliss Healthcare Center;
- Clinix Healthcare-Central Workshop.

Within the Starehe constituency there are many health facilities. There is a total of 137 (no.) public and private health facilities. Private health facilities outstrip public health facilities since there are only a total 8 (no.) public health facilities (dispensaries and health centers) within Starehe Sub County. The Figure below shows the distribution of health facilities within the project area and major hospitals in the surrounding area.



**Figure 4-56 Health Facilities Within 2km Radius**

### 4.7.3 Markets

There are three (3) designated markets located within and next to the plan area. These are Wakulima Market, Land Mawe Market and Muthurwa Market. Landi Mawe Market is located along Workshop Road of the plan area. Traders within the market are mostly engaged in the sale of clothes, and shoes for both men and women. There are equally mobile phone shops, money transfer services, tailoring shops and hair dressing shops. Landi Mawe Market equally hosts the Truworths mall business center that contains stall for hire for small scale business activities.

Wakulima Market is located just at the edge of the planning area towards the north eastern end of the plan area along Haile Selassie Avenue. The market was built in 1966 with a holding capacity of 300 traders. It currently accommodates about 7000 dealers. It is the oldest, largest and best-known fresh produce market in Nairobi dealing in a variety of vegetables and fruits. The market is owned and governed by Nairobi City County and feeds more than 50% of Nairobi's residents.

Muthurwa Market is located along Ladhies Road at the beginning of Haile Selassie Avenue. The market was established in 2007-2008 to relocate over 10,000 hawkers formerly operating at the CBD. The market currently has a total of 1,500 active stalls and over 10,000 traders operating in a 24-hour economy. The market's monthly revenue collection ranged from KES 3.3 million to 3.5 million in the year 2014, but after deployment of new market in-charge in Jan. 2015, the monthly revenue rose from between KES. 3.4 million to 4.2 million (Nairobi City County Assembly, Sept. 2015).

#### 4.7.4 Sports Stadia

The main sports stadia in the vicinity of the project area are City Stadium and Nyayo National Stadium.

City stadium is located about 50m from the south-eastern border of the project area and is accessible through Jogoo Road. The stadium was originally known as the African Stadium then renamed as Donholm Road Stadium, to Jogoo Road Stadium in 1963 before it was finally named Nairobi City Stadium. The stadium is managed by NCCG and has a seating capacity of 15,000 persons.

Nyayo National Stadium is located off Uhuru Highway at a distance of 450m from the south west border of the project area. Construction of the stadium was completed in 1983 and is one of the main sports stadia in the Country and hosts the Football federation of Kenya as well as Athletics Kenya. It has the following main facilities:

#### 4.7.5 Administrative Facilities

From the field survey, eight (8) institutional facilities within the vicinity of the planning area were identified. These are highlighted in the table below.

**Table 4-24 Institutions Facilities Around the Planning Area**

Institution	Functions	Location
Technical University of Kenya (TUK)	Public University.	Northern part of the project area along Haile Selassie Avenue
Government Press	Government Printer in charge of printing classified Government documents, revenue forms, annual, recurrent and special reports as well as The Kenya Gazette and subsidiary legislations – Kenya Supplements, Bills, Acts and revised laws, stationery and parliamentary Hansard.	Northern part of the project area along Haile Selassie Avenue
Kenyatta University City Campus	Public University.	Beyond the northern border of the project area, along Haile Selassie Avenue.
Kenya Revenue Authority	Authority is charged with the responsibility of collecting revenue on behalf of the Government of Kenya.	Beyond the northern border of the project area, along Haile Selassie Avenue.
Kenya Medical Supplies Authority	State corporation under the Ministry of Health established under the KEMSA Act 2013 responsible for provision of reliable, affordable and quality health products and supply chain solutions to improve healthcare in Kenya.	Southern section of the project area along Commercial Street
National Industrial Training Authority	State corporation established under the Industrial Training (Amendment) Act of 2011. Its mandate is to promote the highest standards in the quality and efficiency of Industrial Training in Kenya and ensure adequate supply of properly trained manpower at all levels in industry.	Beyond the southern boundary of the project area along Commercial Street
Directorate of Occupational Safety and Health Services	The Directorate of Occupational Safety and Health Services (DOSHS) was established as one of departments within the Ministry of Labour and East African Community Affairs. It is the designated national authority for collection and maintenance of a database, and for the analysis and investigation of occupational accidents and diseases, and dangerous occurrences.	Beyond the southern boundary of the project area along Commercial Street

Institution	Functions	Location
Kenya Institute of Highways and Building Authority	Originally established as a training division within the Public Works department in May 1948. The purpose was to cater for skills improvement which had become necessary in the country. The training areas included Roads Road Foremen, Water Foremen, Inspectors, Survey Assistants, training for the infrastructure sector and client countries from the sub-Saharan region	Beyond the southern boundary of the project area along Commercial Street

#### 4.7.6 Cultural Heritage Sites

Cultural Heritage refers to the cultural aspects such as heritage sites, heritage buildings, monuments, folklore, traditional activities and practices that are deemed as vital for preservation for future generations within a given locality. Cultural heritage within the planning area is evident through following cultural aspects;

- Nairobi Railways District Traffic Headquarters (currently hosting the Easy Coach Bus Ltd. Head office);
- The Kenya Railway Headquarters and the Nairobi Railway Station Building;
- Sikh Temple (Sri Gurdwara Ramgarhia Temple) Landi Mawe;
- Nairobi Railway Museum.

The following cultural/historical buildings and sites are located within the planning area and in its immediate vicinity.

**Table 4-25 Cultural / Historical Buildings Around the Planning Area**

Site	Location
Kenya Railways Headquarters	Within the planning area
Railway Museum	Within the planning area
Sri Gurdwara Ramgarhia Temple, Ladhies	Within the planning area <i>Gazetted by NMK (as at 2016)</i>
August 7 <sup>th</sup> Memorial Park	Opposite planning site, along Uhuru highway
Nairobi South Cemetery	Opposite planning site, along Uhuru highway ( <i>Gazetted by NMK (as at 2016)</i> )
Railways Golf Club	Opposite planning the site, along Uhuru highway
Muthurwa' Dallas social hall	Within the planning area
Shaffi mosque	Within the planning area. <i>Gazetted by NMK (as at 2016)</i>

#### Nairobi Railways District Traffic Headquarters

The building was constructed in 1924 and occupied in 1929. The building has historical value as it served as the Nairobi district traffic headquarters from where traffic operation was controlled until 2009. The building was part of the assets transferred to the Kenya Railways Staff Retirement Benefit Scheme (KRSRBS) for management and income generation to the pension scheme. The building is currently under tenancy to the Easy Coach Bus Line Limited.

#### Kenya Railways Headquarters and the Nairobi Railway Station Building

The Kenya Railways Headquarters is located at the northern border of the planning area. It was designed by Sir Herbert Baker, the then City Architect and opened in 1927. The Nairobi Railway Station was constructed earlier, in 1899 with various additions in later years.

Both the Headquarters and Station Buildings are classified by the Kenya National Museums as national monuments.

### Sikh Temple, Landi Mawe

According to [allaboutsikhs.com](http://allaboutsikhs.com) Sikh Temple, (Siri Gurdwara Ramgarhia) was the first Gurdwara established in Nairobi, Kenya in 1903. The Gurdwara was built in the vicinity of the main train station by the pioneering Sikhs who had worked on the East-African Railway Line during Kenya's colonization by the British.

The entire area around the Gurdwara at that time was occupied by Sikh rail workers and their families. As times changed the Sikhs moved to other parts of the growing city but the Temple remained. As the Sikh community grew in Nairobi, the worshipers had to move to a bigger space and built a new Temple named Gurdwara Ramgharia located in South C area<sup>12</sup>.



The original entrance to the Sikh temple (Landi Mawe) as shown in a 1923 photo.

Entrance to the Sikh temple (Landi Mawe) as it looks today.

**Figure 4-57 Sikh Temple (Siri Gurdwara Ramgharia) in Landi Mawe**

Source: Siri Gurdwara Ramgarhia Railway, Nairobi, [www.sgrr.co.ke](http://www.sgrr.co.ke)

### Nairobi Railways Museum

The railway museum is located at the north-west end of the planning area. The museum was established in 1971 by the then East African Railways and Harbors Corporation to preserve and display records and relics of the railways of East African from their inception to present day.

The museum is still connected to the rail network thus allowing restored locomotives access to the main line for steam excursions.

The indoor exhibits are relatively well preserved compared to the outdoor exhibits that have been affected due to exposure to weather elements over the years. As such, some of the outdoor exhibits are in a deplorable state as evident from open carriage wagons that occasionally get filled with rainwater, vegetation growth on the locomotive engines, peeling paint and broken hoses on carriages, as well as rust on the exhibits.

The museum and its exhibits are currently under the guardianship of the National Museum of Kenya. It is important to note that from consultations with KR, the building that houses the exhibit itself is not of historical value. Based on this, it can be concluded that subject to approval by the relevant parties and authorities, the exhibit can be moved to a more appropriate location as determined by this study.

<sup>12</sup><https://www.allaboutsikhs.com/world-gurdwaras/sikh-temple-landia-kenya>, retrieved on 5 April 2018



**Figure 4-58 The Nairobi Railway Museum**

\*Note: Coach built in 1899 in display at the Railway Museum where a British superintendent of police (Charles Ryall) was dragged out while sleeping and killed by the man-eaters of Tsavo at Kima Station, some 80 km from Nairobi in 1 June 1990

## 4.8 Real Estate Analysis

### 4.8.1 Introduction

The objective of this Real Estate Analysis is to inform the design and implementation team on the current market conditions with a view of determining the most optimal mix for the proposed project. The analysis is also to be used as inputs for the various financial models so as to determine and maximize returns

The proposed Railway City plans to rehabilitate the Kenya Railway land and unravel the highest and best use of the land in a bid to upgrade Nairobi City County. The terms of reference for the research include:

- Office/Commercial/ MICE/ Industrial demand and supply, current competitive projects and the main players in terms of developers and tenants, best practices in the Office/Commercial/ MICE/ Industrial sector, and the overall positioning of the proposed development including its impact on the Railway City.
- Competitive Strategy and preferred marketing strategy.
- Best practices and projects globally specifically those projects in direct competition with the proposed development.
- Overall positioning of the Railway City in the market.

### Methodology

The real estate analysis was conducted using the following methods;

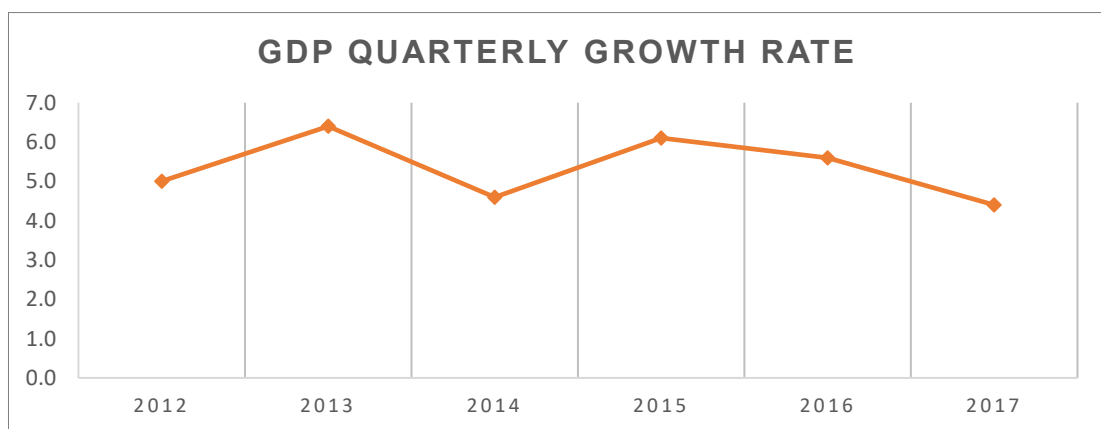
- Meeting with the Client's Personnel or Representatives
- Inspection and Collection of data with regard to the various land uses
- Primary Data: Field Survey
- Secondary Data: internet and print sources
- Key Informant Interviews: face to face, phone and email interviews with commercial agents and other real estate practitioners
- Analysis of Data and Reporting – The analysis will include of the existing (current) and proposed (planned) supply and demand of the various uses, current and

historical price points, major Players, competition. The analysis of the trends will then enable us to form an opinion on the future. This exercise is to be undertaken for each sub-sector.

### Economic Overview

Kenya’s economic growth is estimated to have decelerated to 4.4 percent in the third quarter of 2017 compared to 5.6 percent in a similar period of 2016. During the quarter, the macroeconomic fundamentals remained largely stable and supportive of growth. However, uncertainty associated with political environment coupled with effects of adverse weather conditions slowed down the performance of the economy. As a result, most sectors of the economy posted slower growths during the quarter under review compared to the same quarter of 2016. The period under review registered the slowest growth since the fourth quarter of 2013 mainly due to suppressed performance in key sectors of the economy.

The chart below shows the Third Quarter GDP growth rate from 2012 to 2017:



**Figure 4-59 Quarterly GDP Growth Rate from 2012 to 2017**

Source: Kenya National Bureau of Statistics (KNBS), 2017

Financial and insurance activities recorded the largest deceleration from 7.1 percent in third quarter 2016 to 2.4 percent in the period under review. Other industries that recorded notable slowdown include; manufacturing; health; accommodation and food services; mining and quarrying and education. On the other hand, accelerated growths were recorded in; professional, administration and support services; public administration; and real estate activities.

#### 1) Inflation

Inflation averaged at 7.5 percent during the third quarter of 2017 compared to an average of 6.3 percent during a similar quarter in 2016. The rise in inflation was mainly on account of a surge in prices of food and non-alcoholic beverages that started in the second quarter of 2017 and continued into the period under review. The increase in food prices was evidenced by comparably high wholesale prices of key food crops. This was principally attributable to adverse weather conditions that prevailed in the second quarter and for the better part of the third quarter of 2017.

#### 2) Interest Rates

Weighted interest rates on commercial banks loans and advances declined to an average of 13.67 percent in the third quarter of 2017 from 16.54 percent during a similar quarter in 2016. This was mainly attributable to the capping of interest rates that started in September 2016. The Central Bank Rate (CBR) was maintained at 10.0 percent throughout the quarter.

### 3) Currency

The Kenyan Shilling strengthened against the Pound Sterling and the Japanese Yen but weakened against the US Dollar and the Euro. Regionally, the Shilling gained against the Ugandan and Tanzanian currencies but lost against the South Africa Rand during the review quarter. The current account deficit worsened by 28.9 percent to Ksh 145.4 billion in the quarter under review from Ksh 112.8 billion in the third quarter of 2016. The worsening of the current account was mainly due to a faster growth in imports compared to that of exports that resulted to a deterioration in merchandise trade deficit. In the commodity market, the average Murban Adnoc crude oil prices increased by 10.2 percent in the period under review to USD 51.05/Barrel from USD 46.32/Barrel recorded in the third quarter of 2016.

### 4) Construction

The sector is estimated to have expanded by 4.9 percent in the review period compared to a growth of 7.8 percent in a similar quarter in 2016. The slowed growth in the sector was partly attributed to the extended electioneering period that prompted investors to scale down construction activities. The decelerated growth was mirrored in the decline in cement consumption and import of construction materials such as cement and steel bars. Cement consumption decreased by 13.1 percent from 1,620,649 metric tons in the third quarter of 2016 to 1,408,566 metric tons in the same period of 2017. The slowed growth is further explained by 66.1 and 37.9 percent decline in the volume of imports of iron and steel products and cement, respectively, in the period under review. Growth of credit to the construction decelerated significantly from 6.2 percent in the third quarter of 2016 to 0.3 percent in the quarter under review.

### 5) Existing CBD Conditions

In 1963, Nairobi became the capital of independent Kenya and annexed neighboring areas for future growth. As the Capital City of Kenya, the CBD is mainly classified under the commercial land use category. It is developed with offices, retail and wholesale shops, banks, hotels, theatres, education centers to mention but a few.

This study defines the Nairobi CBD as the area bordered by Uhuru Highway to the west, Haile Selassie to the south, Tom Mboya Street to the east and University way to the north taking a rectangular shape. Over twenty years ago, most businesses were based in the CBD and over the years with Urbanization and rezoning, Nairobi has grown into various other business districts created by demand and supply forces. These other commercial districts include Upper Hill, Kilimani/Hurlingham, Westlands and Mombasa Road.

Most Nairobi plots are sized between 0.5 acres and 4 acres. Very few plots are less than 0.5 acres in size. These small sizes are mainly found in the Central Business District area. A few land owners have large sized lands for example Kenya Railways has tracts of land in Ngara and Muthurwa area.

## 4.8.2 Office Sector

### Demand and Supply

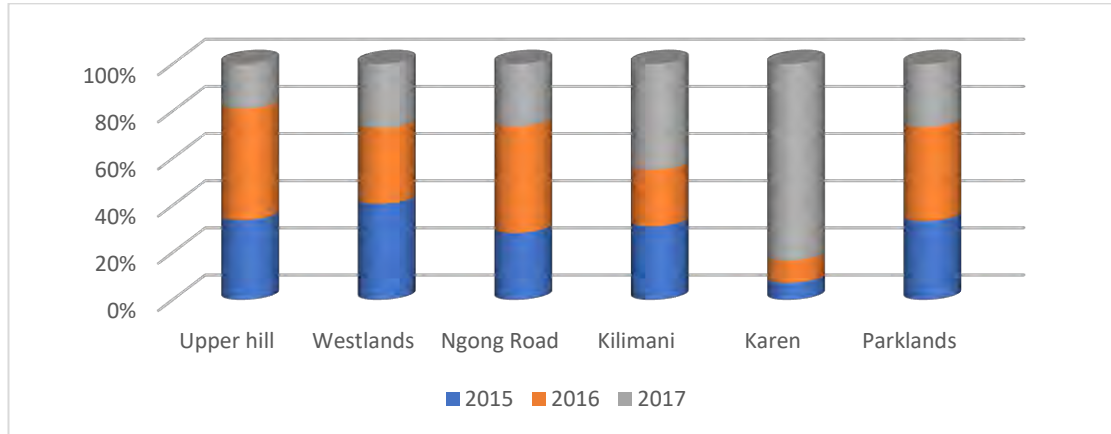
The demand for offices spaces is usually driven by growth of the services sector. The major players in the services sector include Government, Financial institutions, Professionals firms and NGO's. For the last two years the education and health sectors have emerged as great consumers of office space with the opening of satellite college campuses and new hospital branches in major expansion drives.

However, 2016 witnessed closures of some satellite's campuses following orders from the Commission for University Education as well as the Ministry of Education.

The NGO’s sector (mainly those focusing on the human rights and governance issues) have also reduced the sizes of their offices after ceasing and or scaling down of operations as their relationship with the National Government deteriorates.

In addition, with devolution, the National Government uptake of space has reduced as a significant part of the service delivery mandate is now with County Governments and State Agencies. Most of the State Agencies are well established in Nairobi, Mombasa and Kisumu.

Despite the hotly contested 2017 elections, office take up has recorded an upward trend in 2018 fueled by the need to accommodate new government servants such as members of parliament, senators and various commission bodies.



**Figure 4-60 Office Demand in Nairobi**

Unit: percentage

The Karen area has the highest demand for office space as seen in the figure above as at 2017, followed by Kilimani. Westlands and Ngong Road still remains attractive to many corporations while Upper Hill looks set to experience vacancies in excess of 40% for the next 6 to 12 months due to an oversupply in the market.

**Table 4-26 Analysis of Commercial Offices in Nairobi**

	2011	2013	2015	2016	2017	2018
Occupancy	91%	90.0%	89.0%	88.0%	84.6%	83.3%
Asking Rent Ksh/sqft	78	95	97	103	101	98
Average Selling Prices Ksh/sqft	10,557	12,433	12,776	13,003	13,058	12,875
Average Rent Yields	9.8%	10.0%	9.3%	9.4%	9.2%	9.0%

Source: Cytonn and Hass Consult Commercial Office Analysis

The office market in Kenya has experienced increased supply and is currently estimated to be in surplus. A significant number of office buildings in key office nodes of Upper Hill and Westlands have very low occupancy rates.

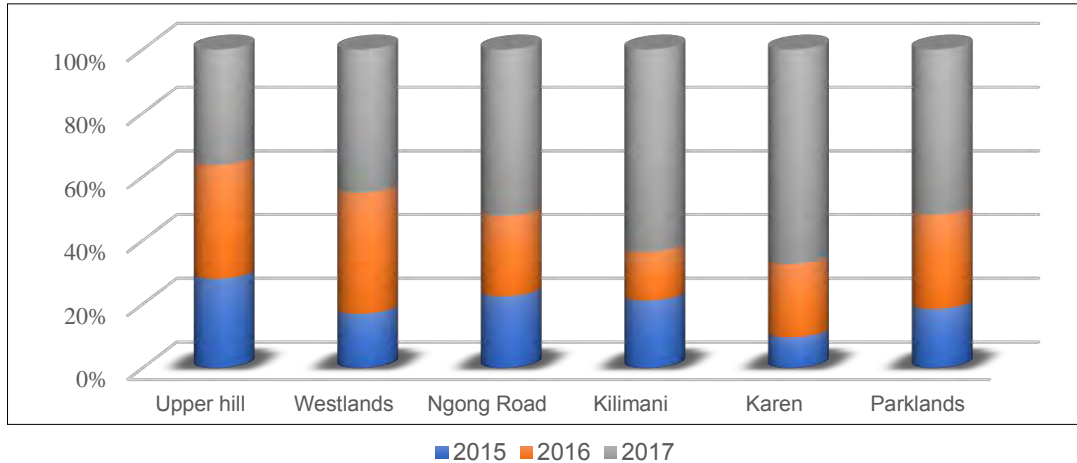
Coupled with a pipeline of new office developments, 2017 experienced an increase in stock of office space. Rents and sale prices are also likely to remain stagnant or drop further as developers and property owners jostle for the few takers that will be in the market.

2015 supplied approximately 2.8Million sqft of office space but 2018 is set to surpass this figure with expectations of approximately 3.2Million sqft of office space to be completed.

Contiguous urban centers around Nairobi are harboring 80% of office space being developed in 2018. These include Upper hill, Westlands, Ngong Road, Karen, Kilimani and Parklands which shows that these centers are key in the operations of the city.

The best performing uptake rates were in Kilimani and Westlands due to;

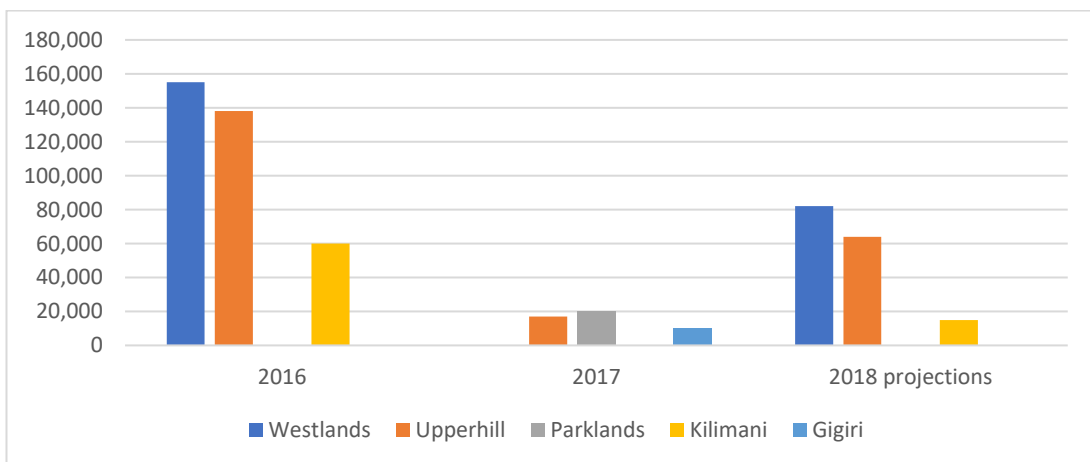
- Good infrastructure,
- Ease of access to the CBD,
- Clean and peaceful atmosphere,
- Access to amenities such as restaurants and health centers and availability of public transport.



**Figure 4-61 Office Supply in Nairobi**

Unit: percentage

Above graph indicates the supply trends in Nairobi between 2015 and 2017. From the graph, it is clear that office supply greatly increased in 2017 as compared to 2015 and 2016. Furthermore, Kilimani and Karen areas are seen to have increased their office supply significantly by about 60% and 65% respectively. The main tenants in these areas are multinational companies and corporations.



**Figure 4-62 Nairobi Office Supply**

Unit: m<sup>2</sup>

Due to increased supply of office spaces in the recent years, tenants have a much wider variety to choose from. Currently, the tenants' focus has changed from basic office space to high

finish offices, which incorporate environmental and health issues into the design. Adequate parking and recreational areas have been added to the list of requirements and it is no longer enough for a developer to put up a shell building and expect to get tenants.

Commercial setups such as Upper hill and Westlands; indicate that 70% of their current occupancy rates in most of the high-rise commercial developments are occupied by government institutions and parastatals. This creates an idealistic view of the market as the government is an assured tenant in a commercial building for the lease term signed which in most cases ranges to over 10 years. However, government occupancy skews the market into a shadow state whereby an investor cannot rely on that data to make decisions on what to invest. The vacancy rates are currently on an all-time high in Upper hill at 35% with major skyline investments registering the following rates:

**Table 4-27 Sample Occupancy Versus Occupancy Rates**

Building	Vacancy Rates (%)	Occupancy Rates By Private Clients (%)	Occupancy Rates By Government (%)
UAP Towers	55	40	60
Flamingo Towers	40	25	75
Crown Plaza	52	80	20
NACHU Plaza	45	70	30
KCB Towers	18	15	85
ZEP Place	15	10	90
KMA Center	25	40	60
Real Towers	15	30	70

Within the CBD, the average occupancy of office spaces is between 80% - 90% depending on the condition of the building and the services offered to the tenants. On average, the rental rate per square feet for office buildings within Nairobi CBD is between Ksh.130 sqft to Ksh.160 sqft, depending on the size of the office space. Office sizes vary from building to building. However, the minimum size achieved is 300 square feet with other spaces being as big as 1,000 square feet. The current service charge is roughly Ksh. 25 per square feet per month.

The tenant profiles include Institutions and colleges, medical facilities, small scale businesses, driving schools, chemists, insurance firms, law firms, and bank branches.

A notable trend in the CBD is the refurbishment of old buildings and conversion of previously office spaces into retail centers. A majority have opted to incorporate both office, retail and hospitality in one building to achieve maximum outputs.

Key points to note are as follows:

- The CBD despite its high foot traffic and centrality, has seen companies in the last few years relocate in search of quality office space, convenience, ease of access and more space.
- As regards the retail conditions of the existing CBD, mixed-use developments dominate, although it remains a strong retail node driven mainly by office workers and tourists, there is a strong trend towards suburban centers because of the need for improved security and better parking.
- Upper hill and the CBD are reported to have the highest supply of office space with market shares of 24.4 percent and 24.3 percent, respectively, with Thika Road having the lowest supply with a market share of the total office space of 0.8 percent.
- Best performing office submarkets in 2016 were Parklands and Karen with average rental yields of 10.0 percent and 9.7 percent, respectively due to prime locations enabling them to charge premium rents and attract quality tenants.

- The worst performing markets were Mombasa Road and Thika Road, constrained by poor locations, with Mombasa Road being affected by its zoning for industrial use and traffic congestion and Thika Road zoned for lower-mid income residential with low-quality office space.
- In terms of grades/class, Grade-B offices have the highest supply with a 60.0% market share with Grade-A offices accounting for only 10.0%. There is a short supply of purely Grade-A office space in the market.
- In terms of performance, Grade-A offices have the highest rents, which yield at an average 10.0%, while Grade-B offices have the highest occupancy levels at 90.6% and Grade-C are the worst performing with average rental yields of 8.6%.



**Figure 4-63 Performance of Grade-A Offices**

Source: JLL Africa (2017)

Currently Grade-A rental space is quoted between Ksh.110-Ksh. 180sqft/month, but it is anticipated that there will be pressure on rental levels in the short to medium term. Office landlords, in general, will need to compete for tenants by offering discounted rentals, while premier office locations may need to offer additional incentives such as rent-free periods and tenant installation allowances. Service charges or operating costs range from Ksh.20.00 to Ksh. 30.00 sqft /month.

Total Grade-A and prime grade stock equals to 340,000 square meters which translates to 3.6 million square feet.

**Table 4-28 Offices' Grading Criteria**

	<b>Grade-A</b>	<b>Grade-B</b>	<b>Grade-C</b>
Building Systems	HVAC systems in place, modern security system, modern high-quality speed elevators, automatic emergency back-up generator, high speed internet connectivity and back-up water supply	Modern security system, Quality elevators, Internet connectivity, Emergency back-up generator	Security system, Elevators for 3-story buildings and higher
Building Structures	High quality materials used in fit-outs	Quality materials used in fit-out of	Low quality materials used in fit out

	<b>Grade-A</b>	<b>Grade-B</b>	<b>Grade-C</b>
	and façade, modern windows and lighting, efficient layout, clear ceiling height	common areas and façade, efficient layout	of common areas and façade, poor lighting, inefficient layout
Location	Excellent location, convenient vehicle and public transport access	Good location, adequate access	Inadequate access, presence of nearby objects that have a negative impact on building image
Parking	Organized, secure and adequate parking for both tenants and guests. Parking ratio > 4:1,000 sqft	Organized but inadequate parking. Parking ratio = 3 to 2:1,000 sqft	Inefficient and inadequate parking. Parking ratio < 1:1,000 sqft.
Property Management Services	Professional property management company with international experience and / or standards	Well-organized property management	Inefficiently organized property management

**Table 4-29 Proposed/ Upcoming/ Recently Completed Competitive Office Buildings**

<b>Development</b>	<b>Location</b>	<b>Status</b>	<b>User</b>	<b>Players</b>
UAP Towers	Upper hill	Complete	Office	Insurance
Flamingo Towers	Upper hill	Complete	Office	Private Equity
Crown Plaza	Upper hill	Complete	Mixed Use	Private Equity
Montave	Upper hill	Under Construction	Mixed Use	Private Equity
KCB Towers	Upper hill	Complete	Office	Commercial Bank
Britam Towers	Upper hill	Under Construction	Office	Insurance
The Pinnacle	Upper hill	Under Construction	Mixed Use	Private Equity
Upper hill Square	Upper hill	Proposed	Office	Micro Finance Institution
The One Nairobi	Upper hill	Proposed	Mixed Use	Private Equity
NSSF Convention Center	Upper hill	Proposed	Office	Government
Hazina Trade Center	Upper hill	Under Construction	Office	Government
Nairobi Global Trade Center	Upper hill	Proposed	Office	Private Equity
88 Nairobi Tower	Upper hill	Proposed	Residential	Private Equity
Cytonn Tower	Upper hill	Proposed	Office	Private Equity
Akili Towers	Upper hill	Under Construction	Office	Micro-Finance Institution
Prism Tower	Upper hill	Under Construction	Office	Private Equity
Upper hill Chambers	Upper hill	Under Construction	Office	Commercial Bank
Parliament Tower	Upper hill	Under Construction	Office	Government
KVDA Tower	Upper hill	Proposed	Office	Parastatal
Nova Apartments	Upper hill	Under Construction	Residential	Private Equity
Mwalimu Sacco	Upper hill	Complete	Office	Micro-Finance Institution
KWFT Tower	Upper hill	Proposed	Office	Micro-Finance Institution
Xinhua Tower	Kilimani	Proposed	Mixed Use	Private Equity
Skynest Apartments	Kilimani	Proposed	Residential	Private Equity
Skye Development	Westlands	Proposed	Mixed Use	Private Equity

Source: Field Work 2018

### Current Office Trends

2018 will see the highest ever delivery of new offices with an estimated 3.8 million square feet expected to come on stream, beating the previously all-time high of 2.3 million square feet in 2011. With the rapid rate of office development, Nairobi may well be oversupplied in the office sector. At least 160,000m<sup>2</sup> of space is expected to be delivered to the market in 2018 alone, mainly in the Upper hill and Westlands nodes.

Riverside Drive and Parklands emerged as new office nodes, accounting for 14% of total supply. Grade-A office space increased marginally, by 2%, in 2015, Waiyaki Way accounting for 61% of the Grade-A office space delivered in 2015 while Grade-B office market accounted for 50% of total supply in 2015, recording an increase of 38% while Grade-A offices constitute 4% of the supplied market share.

Waiyaki Way and Westlands remain the premier locations for many tenants, recording take up levels of 81% and 62% respectively for new office space delivered in 2015. There was a slowdown in the growth of commercial office rental rates, with average asking rents increasing by 7% in 2014-2015. This is significantly lower than the 13% increase recorded in 2013-2014.

Grade-A office space continued attracting higher average asking rents compared to Grade-B office space at Ksh. 133 and Ksh. 100/square feet per month respectively. The fractional sales market experienced a surge in 2015, rising by 85%, from 0.6 million square feet to 1.1 million square feet, and accounting for 57% of the total supply in 2015. The total amount of office space sold declined by 18% in 2016.

Opportunity lies in two distinct areas of demand in Nairobi. The first being A grade single-tenanted office buildings in prime locations such as Westlands and Thika Road for large corporations looking to consolidate their dispersed offices into one prime location asset with building naming rights.

### Major Players in Office Real Estate

Most office developments in the country are coming up in Upper hill, Westlands, Kilimani and the Central Business District. The major players in these high-end office developments are insurance companies, micro-finance institutions, retirement benefit schemes, Government funding and private equity. From the chart below, it is clear that the players with the largest stake of 24% and 22% respectively are Insurance Companies and Private Equity from foreign investors.

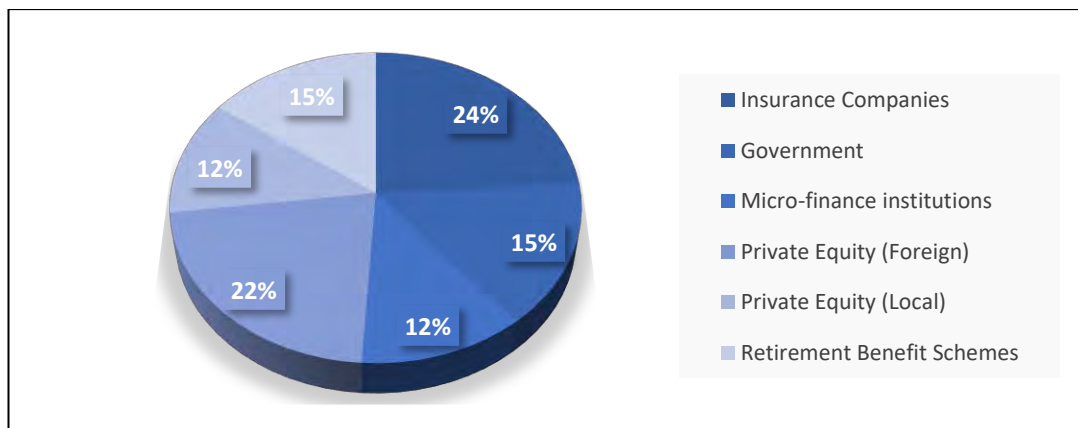


Figure 4-64 Percentage Stake of the Major Players

### Best Practices for Office Space

Best practices in selling commercial real estate including office sector is dependent on the developers and selling agent’s capability. Their credibility, marketing strategies and pool of previous potential clients couple up a high sale possibility.

Serviced offices have come up that cater for short term tenants who do not want the hustle of furnishing offices and getting office equipment. Westlands has seen a rise in serviced offices offered by companies such as Regus, where daily rates range from 7,000 to 15,000 depending on the size of office and services required above the standard complementary services. Full-service offices option gives companies the advantage of entering the market or operating a satellite office without the burden of huge office capital fit-out costs or the need to commit to lengthy five-year lease terms which local legislation dictates.

Overstating prices for office spaces in a bid to recover the capital invested only leads to low occupancy rates and in turn leads to losses. A good example is UAP building that entered the market in 2016 and has only been able to achieve 35% occupancy to date. Their rates are between Ksh. 120 and Ksh. 180 per sqft with a minimum office space capped at 3,000square feet translating to a monthly rent of Ksh. 360,000. The end result of rent leaves potential tenants walking away due to the high rental rates.

Currently, in areas like Karen, the minimum office spaces have come down to as low as 1,000sqft at rates of as low as Ksh. 100 per square foot, resulting to Ksh. 100,000 net of taxes and service charge per month. Nevertheless, in the event that a potential client requires much bigger spaces, the option of taking up bigger spaces is made available. This ensures that no tenant is locked out.

### SWOT Analysis for Office Real Estate

**Table 4-30 SWOT Analysis for Office Real Estate**

<b>STRENGTHS</b>	<ul style="list-style-type: none"> <li>Office real estate increases in value over time.</li> <li>Owner has full rights and can add value through refurbishment.</li> <li>Office real estate can be used to hedge inflation.</li> <li>Preferred collateral by financial institutions</li> </ul>
<b>WEAKNESSES</b>	<ul style="list-style-type: none"> <li>Ownership rights cannot be easily transferred.</li> <li>Office real estate is highly illiquid.</li> <li>Office real estate requires huge capital injections.</li> </ul>
<b>OPPORTUNITIES</b>	<ul style="list-style-type: none"> <li>The demand for office real estate in Nairobi has been high.</li> <li>Office real estate is poised for rapid growth of urban centers and their neighborhoods.</li> <li>Potential to diversify into other sectors such as mixed-use developments.</li> </ul>
<b>THREATS</b>	<ul style="list-style-type: none"> <li>Economic slow-downs may affect demand for office real estate in Nairobi.</li> <li>Primacy of the core CBD that contributes to traffic congestion</li> <li>Proliferation of small scale informal trading</li> <li>Competition from other investment segments such as mixed use.</li> <li>Seasonal demand may affect prices of office real estate in Nairobi.</li> <li>The political atmosphere may affect uptake of office real estate in Nairobi</li> </ul>

### Positioning and Competitive Strategy of Railway City

Office real estate in Kenya is positioned by unique characteristics such as location, floor space, amenities such as lifts and stand by generators, parking availability, good finishes, ergonomically stable developments and excellent management. This is the special specifications that an office property possesses giving it a fair advantage over another office property. Office real estate in Nairobi can be well positioned by answering the question of why one bought some development and if they truly enjoy working, living or owning that piece of office real estate.

Railway City project is strategically located at the heart of Nairobi City and it comes at a time when devolution is at its peak. It is part of the urban renewal program that the Nairobi City County has set apart in order to help with traffic and congestion in the city.

- In the office sector the project is highly favourable because they have the opportunity to come up with buildings that would normally be found in the office nodes such as Upper hill and Westlands to the Nairobi CBD. This change is necessary because most of the buildings surrounding the projects land are dilapidated and worn out.
- More so, the huge tracts of land that the project has will help with the menace of parking that has affected most of the tenants in the vicinity.
- The project will change the office face of the CBD with state-of-the-art office buildings and top-notch services. The benefit of the general location is that high rental rates can be achieved with higher standards of buildings.
- Incorporation of other sectors in a bid to come up with a Mixed-Use Development will set a precedent in Nairobi and other CBDs in the country as the project will act as a benchmark on the success of a small city within a CBD. In addition, offering multiple services such as retail centers, hotels, apartments, and schools will attract great demand as it will serve all the needs of the potential tenants or investors.
- Nairobi CBD offers a huge foot traffic and pedestrian flow from all around the country. The office buildings are at an average occupancy of 85% racking up high rental rates. This goes to show that

Competitive positioning strategy is differentiating the offered kind of office real estate to create value for your users of your market. In Kenya this can be done by market profiling, increased size to accommodate all the needs of a client, neutralizing competitors by taking advantage of location and finishes, and steady growth that creates a brand name associated with great office real estate products.

### Office Segmentation

Segmentation is based on 20-year projections<sup>13</sup> and then based on secondary research and urban planning standards, give recommendations which The Railway City should implement in its planning structures.

Nairobi office market has seen tremendous growth in the last decade with the CAGR peaking at 26.2% by 2016 and year on year growth being above 10%. The office expansion has been supported by a robust economic growth over the period which has constitutently being more than 5% Per Annum. The growth in supply has however resulted in oversupply, as per Cytonn report of March 2018, the total supply by end of 2018 is expected to be above 35 Million sqft. The report also indicates that the oversupply in the market has reached above 5 Million sqft. With the economy projected to grow by about 6%, the Kenyan economy will be in a position to absorb the excess office supply. The Nairobi property development is very robust and it can be safely assumed that more office developments will be done to absorb the growth in demand that will be in tandem with the expected economic growth.

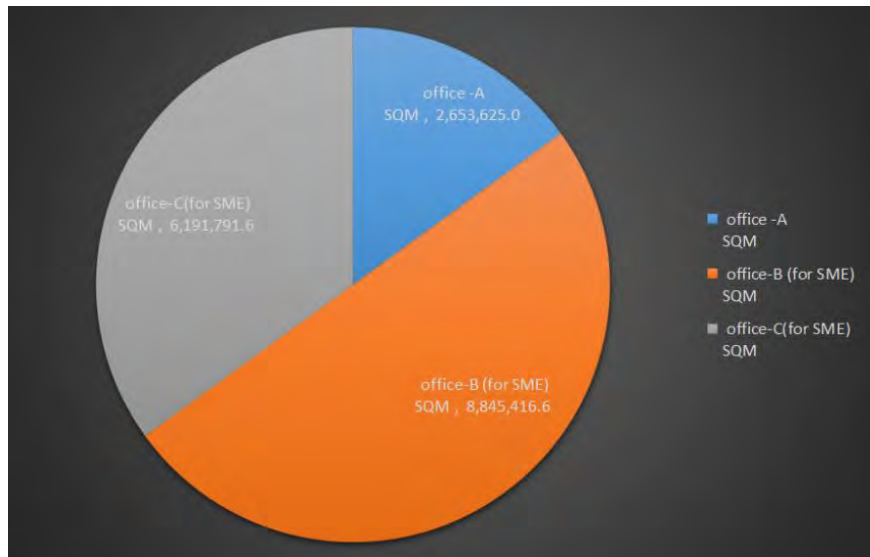
<sup>13</sup> 20 year projection is based on the overall market conditions of Commercial, Office and MICE sector. Especially Housing sector is supposed to be fast growing so in this report 10 years' projection. Indeed, previous 3 sectors are required more time to implement than housing sector, which has been shown in multiple development examples globally.

**Table 4-31 Summary of Nairobi Commercial Office Demand and Supply Trends Over Time**

Summary of Nairobi Commercial Office Demand and Supply Trends Over Time									
Year	2011	2013	2015	2016	2017	2018F	3 Year CAGR (2013-2016)	y/y Δ 2016	y/y Δ 2017
Office Stock (SQFT)	6.7mn	9.7mn	22.9mn	28.9mn	31.8mn	35.5mn	31.4%	26.2%	10.0%
Completions (SQFT)		2.1 mn	7.8 mn	6.5mn	3.5mn	4.3mn	32.6%	(16.7%)	(46.2%)
Vacancy Rates (%)	11.0%	10.0%	11.0%	12.0%	16.8%	16.8%		1.0%	4.8% points
*Demand (SQFT)		1.9mn	6.8mn	5.6mn	1.6mn	3.7mn	31.0%	(17.6%)	(71.4%)
** Supply (SQFT)		2.6mn	8.8mn	8.4mn	6.3mn	9.0mn	34.1%	(4.5%)	(25.0%)
***Oversupply (SQFT)		0.8mn	2.1mn	2.9mn	4.7mn	5.3mn	38.0%	38.1%	62.1%

Source: Cytonn

The historical growth in demand for office space in Nairobi for the past decade as shown above has been above 25% CAGR. This growth happened when the economy was growing on average at 5%. The medium-term growth projection for Kenya is above 5%. While the economic growth rate may be same as the historical, the office supply growth has been astronomical and this has resulted in oversupply of office space bringing about a high vacancy rate. The Plan therefore proposes to use a middle figure of 10% to project office demand over the next 20 years.



**Figure 4-65 Demand and Projection for Different Office Type in 20 years**

### Grade-A office

As the economy grows and becomes more diverse, it will continue attracting businesses that demand high quality offices both Grade-A and in Grade-B category. The Plan therefore expects the share of Grade-A offices to increase to about 15%.

Most corporations that occupy Grade-A offices have steadily moved out of the Nairobi CBD due to the congestion, both human and vehicular. Railway city will change this as it will bring a new lease of life to the CBD. Moreover, the planned infrastructure development such as the overpass that is meant to link Westlands to Likoni Road will go a long way in dealing with the traffic jams that characterize the city. The CBD also retains attractiveness due to the ease of accessibility compared to other office nodes within the capital.

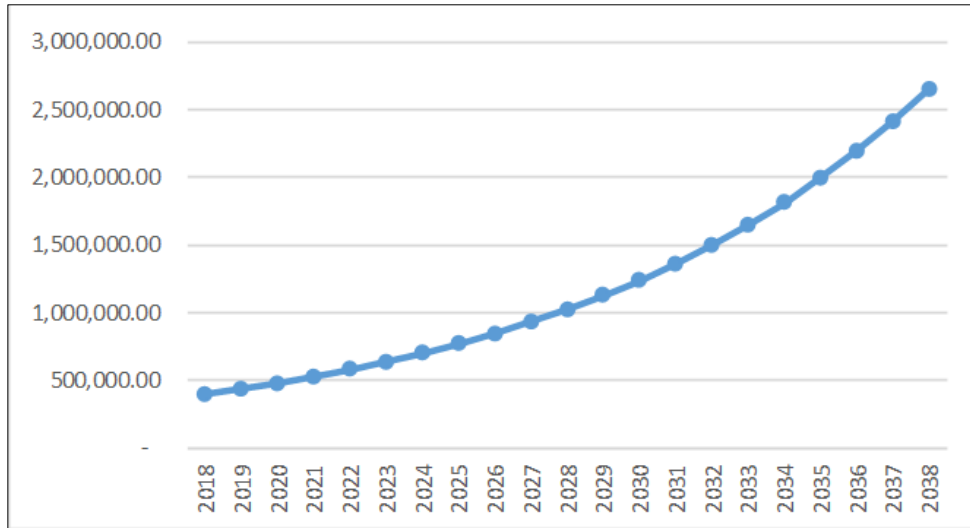


Figure 4-66 Grade-A Office Demand over 20 Years

With this in mind, the report recommends

- Allocation of 10% of all Grade-A office demand in Nairobi to Railway city.

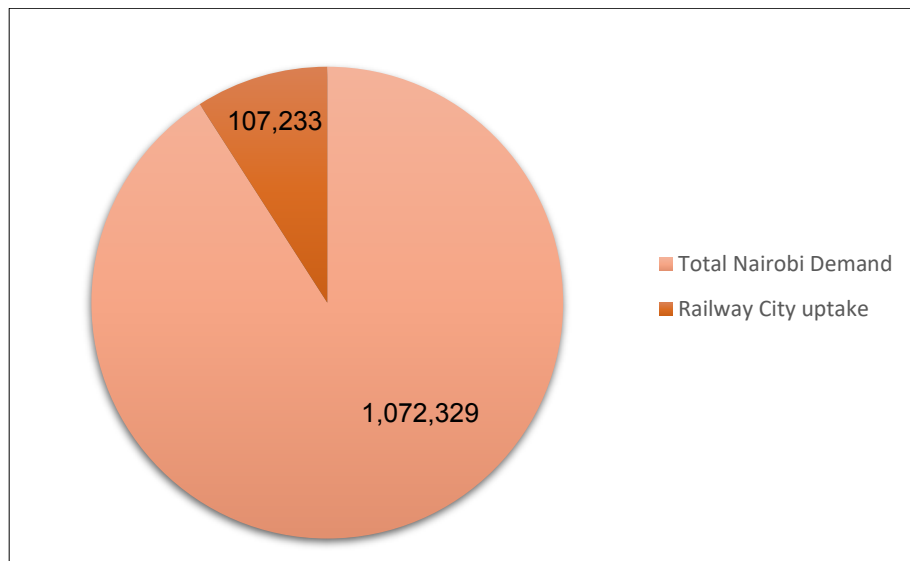
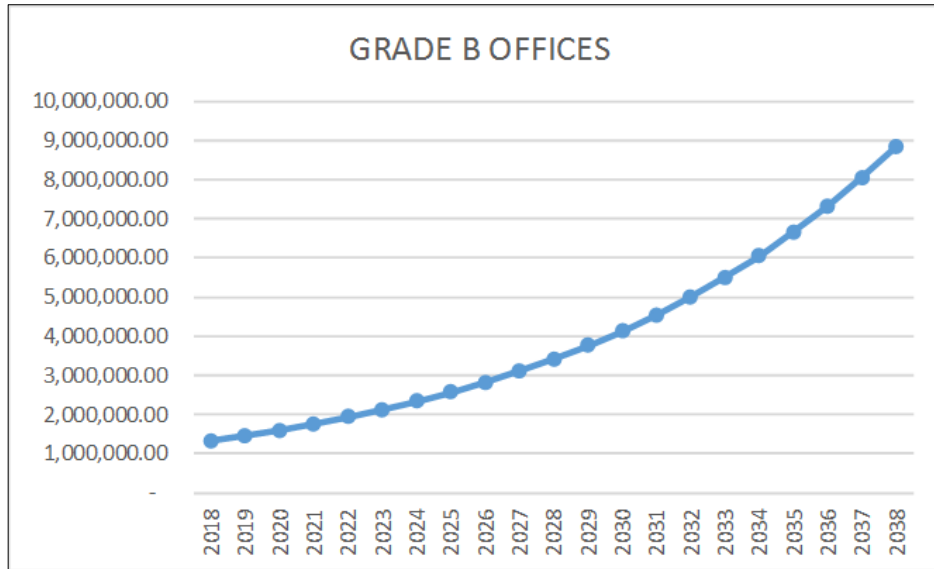


Figure 4-67 The Project Uptake in Nairobi Demand (Grade-A Office)

**Grade-B office**

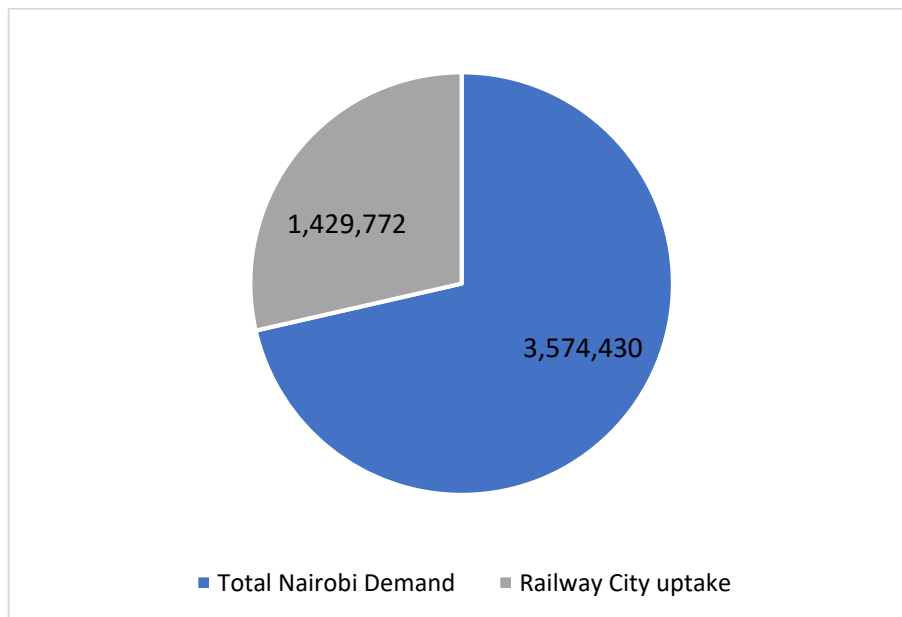
Kenya, being a growing economy has a high number of SMEs and as the economy grows the quality of spaces demanded by the sector will continue to grow thereby increasing demand of Grade-B offices.



**Figure 4-68 Grade-B Office Demand over 20 Years**

Grade-B offices are generally occupied by SMEs. This sector is what is expected to drive the Kenyan economy going forward. Railway City with its central location, ease of accessibility through all form of transport is well poised to get a bigger share of Grade-B offices in Nairobi. The recommendation is:

- 30 % of all Grade-B offices within Nairobi should be allocated to the Railway City.
- The offices should be particularly geared towards serving the SMEs by providing appropriate sizes as demanded by the sector.



**Figure 4-69 The Project Uptake in Nairobi Demand (Grade-B office)**

### 4.8.3 Commercial/Retail Sector

#### Overview

Kenya has been ranked amongst the fastest growing retail markets with a retail penetration rate of 30% to 40%. The demand for retail space has been mainly driven by domestic retailers with little vacancies in older retail accommodation as well as the entry of international brands such as Carrefour into the market. The retail stock was estimated to grow by 53,657 m<sup>2</sup> by the end of 2017. The supply of shopping malls is estimated to be at 362,000m<sup>2</sup> with an annual rental yield of 370 US dollars per square meters. According to JLL vacancy rates in the older retail centers were estimated to be below 10 % which is a good performance indicator.

According to the Vision 2030 medium term plan 2013 – 2017, the retail sector was among the six priority sectors projected to make up the largest part of Kenya's Gross Domestic Product (GDP) and to create approximately 50 percent of total formal employment. A recent report by Oxford Business Group placed Kenya's retail market as the continent's second most developed, trailing behind South Africa, and the fastest growing sector within the continent. In 2016, the sector expanded by 13 percent hitting an all-time high spending of Sh1.8 trillion according to a survey conducted by Proctor and Gamble in February 2017.

Investors have built 770,000 square meters of retail space in the country with more than 250,000 square meters expected to enter the market in 2018. Nairobi accounts for about 73% of the total number of shopping malls in the country, with Two Rivers Mall (67,000m<sup>2</sup>), Garden City (50,000 m<sup>2</sup>), and The Hub (35,000 m<sup>2</sup>) being the largest shopping malls in the city. Overall, the prime shopping centers have recorded average occupancy levels of 90 percent, while the newer, less established centers have achieved occupancies of 75 percent. According to Cytonn Investments, retail space supply distribution in Nairobi and its environs will in the next three years see Kiambu and Limuru Road still have the largest mall space, with a total market share of 16%. This year, 2018, Westlands has been the best performing submarket with high yields of 13.7% followed by Karen with a yield rate of 11.2%.

More so, the retail sector in Kenya has become an attractive investment opportunity with average rental yields of 8.7% country wide and 10.0% in Nairobi driven by the ever-increasing buying power of the middle class who also seek aspirational lifestyles, increasing GDP growth which has averaged at more than 5.1% p.a. over the last five years and increased infrastructural developments opening up new areas for development and increasing ease of movement.

There has been tremendous improvement in the supporting infrastructure which include but is not limited to the recent rise in the popularity and penetration of shopping malls with supermarkets being the anchor tenants in virtually all the malls ; the real estate expansion allowing companies to access customers in areas traditionally perceived to be rural areas; and thirdly the increased investment in Nairobi suburbs like Ruaka, Kitengela, Rongai, Ruai etc. have presented opportunities for the retailers to further consider.

The recent boom in the technology space impacting on areas such as mobile platforms, cashless payment systems and e-commerce have positively impacted on the customer shopping experience. Besides the growth in the traditional onsite retailing sector, technology has fueled online shopping activities with the growth of online retailing websites like OLX, Jumia, Pigiame and Kilimall.

The sector has further been characterized by the recent entry of international players in the Kenyan market who penetrate the market either as sole ventures or joint ventures with already existing local investors. A perfect example is Carrefour which opened its first outlet in May 2016. The company has since opened another outlet at Two Rivers and Thika Road Mall – a clear indication that the market is receptive and promising. Other examples of new entrants include Massmart Holding's Game and Botswana's Choppies (through acquisition of Ukwala Supermarkets), among others.

There are however been mixed feelings on the success of retail centers owed to the lower occupancy rates in the recently developed retail centers. According to the latest office property study by Broll Group (2017), the Kenyan capital is experiencing an upsurge of shopping centers, which has led to relatively high vacancies especially within newly built developments.

Some of the reasons associated with the high vacancy rates (especially in newer developments) include:

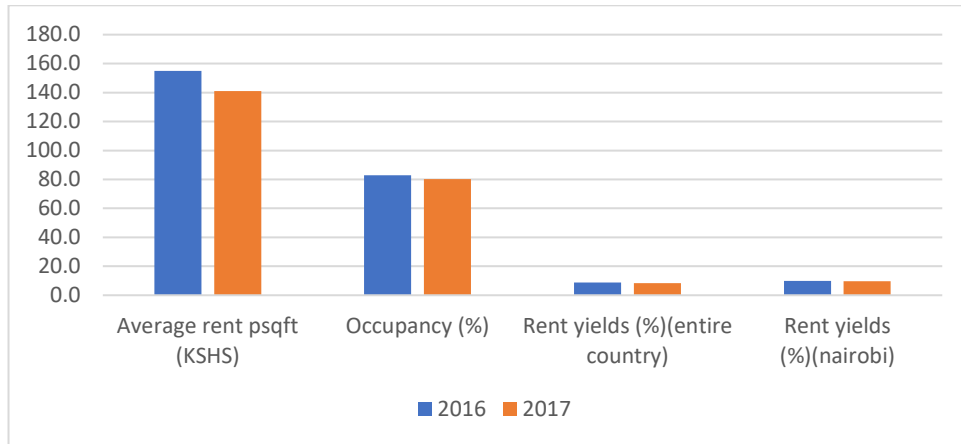
- The fact that the local retail scene is restricted by a narrow tenant base that is unable to support the vacant spaces available in the market.
- Most shopping centers have majority of the same tenants; hence a lack of product differentiation is evident.
- Process of acquiring tenants for newer developments is becoming increasingly difficult evidenced by the delays in opening of some shopping malls due to failure in securing tenants and reasonable occupancy levels.
- This slower uptake of mall space by tenants has resulted in tenants having an upper hand in negotiating for lower rates and for more favourable lease terms. Report by British Asset Managers further solidifies these findings by stating that the oversupply of shopping malls countrywide is expected to make it difficult to win tenants,
- High tenant turnover with some retailers and restaurants being unwilling to commit to a space for as long as 5 years (according to the lease terms) especially in newly completed properties.
- Lack of confidence in the retail sector is also a factor. This has been aggravated by the current turmoil in the retail sector where established brands such as Nakumatt and Uchumi have scaled down on their branch expansion and closed some of their major outlets throughout the country. For instance, Nakumatt has, in late 2017, closed down its outlet at the NextGen Mall on Mombasa Road, in Nairobi, after just 9 months of operation. The retailer is fighting to remain in business on the back of debts owed to suppliers estimated at Ksh. 15 billion.
- Increased competition with new entrants such as Carrefour and Choppies, who are making inroads due to stronger financial muscle, better governance and management systems, lower costs of goods and government incentives. Case in point, Carrefour has taken up the space vacated by Nakumatt in Thika Road Mall, and Choppies is set to be the anchor tenant in the upcoming Kiambu Mall. It will also take up space in Spur Mall, Ruiru.
- Other problems such as: slow payments to suppliers, lack of stock, and consequently, a myriad management issues that require huge amounts of investments and expertise to solve.

### **New Trends**

- Shopping centers are now building to cater for neighborhoods. They are likely to yield better revenue than those designed as destination centers.
- Investors are gradually taking up a county-based approach where they develop retail centers with the intention of tapping into the county-based income as well as the benefits of devolution in Kenya.
- Developers are now offering less space to anchor tenants to mitigate over-reliance on one brand or have other retailers other than supermarkets, such as fast food stores, as anchors provided they can attract the relevant foot fall.

The above challenges have led to a decline in performance of the sector with average rents declining by 9.0percent countrywide from an average of Ksh 154.9 per sqft in 2016 to Ksh 141.0 per sqft in 2017 and occupancy decline of 2.7percent points from 82.9percent to

80.2percent resulting in an 0.4percent points decline in yields from 8.7percent in 2016 to 8.3percent in 2017 for the entire the country and 0.4percent points decline for Nairobi from 10.0percent in 2016 to 9.6percent in 2017.



**Figure 4-70 2016 vs 2017 Rental and Occupancy Status**

Like all other forms of real estate, demand for space in a retail center is derived demand, dependent on its ability to serve the tenant as a retail store. Increased economic activity and increased disposable income among the citizens are factors that are increasing the retail activity in Kenya and consequently, increasing the demand for retail space in malls as well as the high rents achieved compared to other forms of office real estate (office and industrial).

Since the retail industry is supported by the quality of human traffic that visit shopping centers, the retailers rely on consumer demand. Moreover, demand for retail space in Nairobi has grown in the last five years, spurred by a resurgent economy. Property owners have subsequently responded by converting buildings into more shopping centers in order to keep up with the demand. This is evident by the many shopping malls that have come up and been made available to retailers in the CBD such as Star Shopping Mall and Beba (formerly Tusky's Supermarket) which have in turn boosted the Nairobi retail market.

In the CBD, the focus of retail is on smaller retail units that serve the middle income and the working class in the city center or those who transverse through the city interconnecting through the various modes of transport. Evidence of a growing appetite for shopping space in Nairobi is shown by the high take up rates and occupancy levels of almost 98% by the time space is made available for occupation.

On the other hand, the size of retail shops in most of the CBD buildings range from an average of 50 sqft to 300 sqft while the office space average between 500sqft and 1,500 sqft. Therefore, a building with 21,000 sqft in the CBD divided into smaller areas would achieve higher rental income than if it were divided into larger areas.

**Table 4-32 Average and Highest Shopping Mall Rental Rates in Nairobi CBD**

Level	Average Rentals PSF (Ksh)	Highest Rental PSF (Ksh)
Basement	640.00	930.00
Ground Floor	700.00	1600.00
Ground Floor Tables	430.00	620.00
Mezzanine	460.00	620.00
First Floor	340.00	460.00
Second	200.00	360.00
Third	180.00	180.00

## General Characteristics of Retail Spaces Within the CBD

Tenants located at the ground floor tend to pay higher rental rates than those located further into the buildings. More so, these tenants have fast moving goods as compared to the other tenants located on the other floors.

Rental analysis of the spaces shows that rent ranges from Ksh. 691 per square foot on ground floor to a minimum of Ksh. 116 per square foot on second floor referencing downtown Nairobi CBD. Highest goodwill attained is Ksh. 1,200,000 at ground floor level while the lowest payable amount is Ksh. 100,000 on the second-floor shops.

In the uptown market, the average rental prices are Ksh. 652 per square foot, the highest being Ksh. 180,000 for space with an area of 640 square feet at the basement level. The lowest rental rates being charged are as low as Ksh. 15,000 for area space of 32 square feet located on the first floor. Highest goodwill payable is Ksh. 2,500,000 at ground floor level while the lowest payable amount is Ksh. 50,000 on the first floor with a small square footage of 40 square meters.

Majority of the tenant trade in products for women: clothes, shoes, handbags, hair and jewelry. Other businesses in the area also include salons and barber shops, beauty parlors, electronics shops, M-pesa shops, stationery and cyber cafes.

The retail segment is now a tenants' market with landlords currently providing incentives to tenants such as freezing rent escalations, offering longer rent-free periods and increased fit-out contributions so as to attract and retain tenants. The trend of stagnating rents is expected to continue into 2018. Demand remains strong for strategically located shopping centers and their constant focus on improving the customer's experience.

## Upcoming/Ongoing / Completed Projects

Britam has announced plans to build a Ksh. 12 billion mixed-use developments in Kileleshwa that will incorporate a shopping mall (13,500 m<sup>2</sup>), offices, serviced apartments and a hotel. It will aim to cater to the Kileleshwa market that currently doesn't have a similar development.

**Table 4-33 Current Commercial/ Retail Mega Projects in Kenya**

Development	Size (m <sup>2</sup> )	Details
Ciata City Mall	6,000	Kiambu Road
Diamond Plaza II	8,361	Parklands
Village Market Phase II	21,367	Limuru Road - additional space
Westgate	10,000	Westlands - additional space
Signature Mall	20,570	at Mlolongo in Machakos County. It will have the Botswana supermarket chain Choppies as its anchor tenant
Rupa Mall	13,935	Eldoret will have Chandarana as the anchor tenant
KWH Hub	10,766	Nakuru
Southfield Mall	13,935	Embakasi
Waterfront	19,509	Karen
Crystal Rivers	18,766	Athi River

## Best Practices in Commercial Space

### 1) Strategy and Customer retention

Due to the intense competition faced by shopping malls, there is need to adopt different types of strategies so as to increase profits and avoid losses. Shoppers nowadays are looking for more than just fair prices and convenience which are the cornerstones of utilitarian value. Management takes cognizance of the importance of Customer loyalty and retention in the context of a saturated market or slow increase of new customers.

In order to stay ahead of competition management of retail centers should continuously scan the environment aggressively and also speed up implementation of its customer loyalty and retention strategies. The emphasis of customer attraction is on learning customer needs and delivering a true value proposition that catches the eyes of those customers who are seeking solutions of their needs.

Some of the strategies include:

- Cost leadership strategy- offering services in a broad market at the lowest prices as a competitive advantage while maintaining quality of delivery of services.
- Differentiation strategy- It is the ability to perceive quality, through superior product design, technology, customer service, dealer network or other dimensions. Advantage of differentiation is that perceived quality and brand loyalty insulates company from threats from the other competitors.
- Focus strategy- more efficient and effective in attracting new customers. The shopping centers have adopted focus strategy to stay close to its customers and monitor their needs and handle dissatisfied customers appropriately to avoid loss of trust.

## **2) Training Programs**

At first it was Thika highway Garden City that rolled out a program to train tenants on best business practices that would enable them to attract more customers and increase sales. Training is done in relation to customer service, window display, social media which has helped maintain their occupancy rate of 98%. The Hub Karen has also followed suit and is now hosting workshops and seminars for its tenants to improve retail experience for the clients.

## **3) Technology**

Incorporation of technology in the retail centers also help in enhancing their market presence and in turn increase sales. This has been achieved by creation of mobile platforms, cashless payment systems and e-commerce in order to positively impact on the customer shopping experience.

## **Positioning and Competitive Strategy of Railway City**

The Project's location attributes give it an already set advantage. Mostly due to the centrality of the land and huge traffic and pedestrian flow courtesy of the Nairobi CBD.

In Nairobi, most iconic retail centers are located outside the CBD depending on the target market of the individual shopping malls. It will be a new concept within the CBD and will definitely attract consumers due the ease of access.

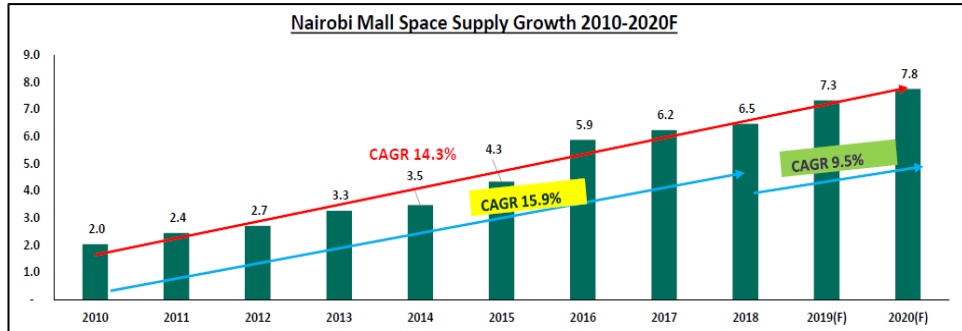
Nairobi Railway City will need to come up with a retail center that will service close to all the needs of the consumers and keep in mind the rates within the CBD. The Plan should be to attract tenants from outside CBD to set up shop within the center and to also give the already existing tenants within the CBD a reason to open up shop in their structures.

Competitive positioning strategy is differentiating what is offered by a retail center to create value for users. This can be done by market profiling, attractive rental rates for potential tenants, a good tenant mix for the center, training for tenants to ensure customer satisfaction and loyalty, neutralizing competitors by taking advantage of location and finishes. The development also needs to factor in the average sizes offered within the CBD so as to suit the tenants within the CBD.

### Commercial Program Segmentation

Segmentation is based on 20-year projections<sup>14</sup> and then based on secondary research and urban planning standards, give recommendations which the Nairobi Railway City should implement in its planning structures.

The Nairobi retail market has seen astronomical growth in the last decade. The past 8 years have seen the CAGR of 16% increasing the retail space supply from 2 Million sqft to 6.5 Million sqft.



**Figure 4-71 Nairobi Mall Space Supply Growth 2010-2020**

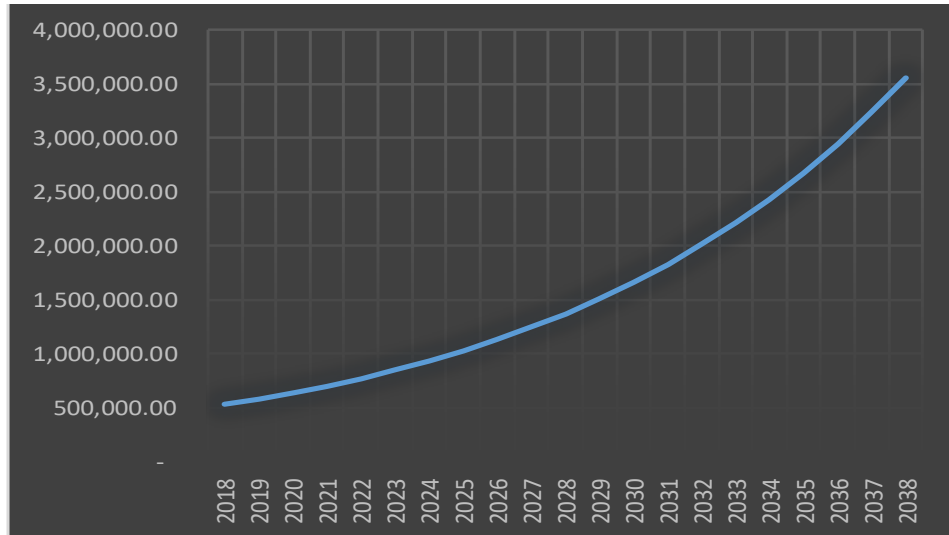
Source: Cytonn

This analysis however looks at retail spaces in malls only. Nairobi has a very vibrant high street shopping culture which has not been captured by any research. The whole of CBD is virtually shopping on ground floor which not only attains 100% occupancy but also attracts other charges known as goodwill. This demonstrates the demand that exists in the high street shopping within the CBD. Other shopping regions with high occupancy in the high street shopping include South B, Westlands, South C & Langata. Eastleigh has a high number of malls that deal mostly with imported clothing. It’s also noteworthy that the malls within Eastleigh are not captured while doing the Nairobi retail mall analysis.

The 2018 Countrywide supply projection was 805,555 m<sup>2</sup> of retail space and this accounted for approximately 268,000 m<sup>2</sup> of high-street shops. From previous data, 73% of this supply projection goes into Nairobi County: 588,055 m<sup>2</sup> (assumed to be 50% of the retail mall spaces). With occupancy of the commercial space standing at 90% of supply, the plan calls this Effective demand; which stands at 529,295 m<sup>2</sup>.

Current World Bank annual growth projections average 6%; this would directly impact supply, thus 20year supply projection would give us modest figures of 1,885,973 m<sup>2</sup> while demand with optimistic business goals and strategies, is projected at 10% annual growth. Thus, the demand for commercial space is seen to reach 3,560,529 m<sup>2</sup>. This shows an over demand of 1,674,555 m<sup>2</sup> and that whatever commercial space that The Railway City can provide will always be taken up. The table below shows a 20-year growth projection for the retail spaces in Nairobi.

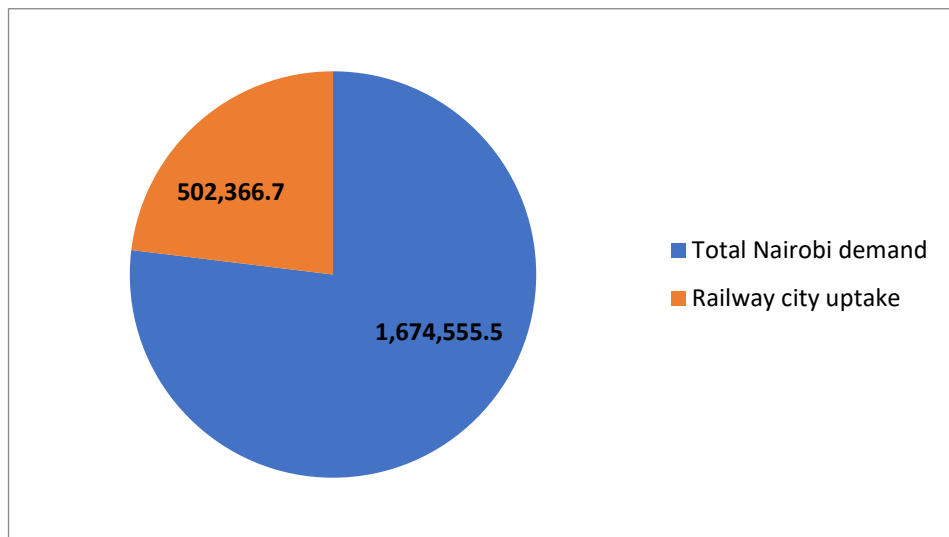
<sup>14</sup> 20 years projection is based on the overall market conditions of Commercial, Office and MICE sector. Especially Housing sector is supposed to be fast growing so in this report 10 years’ projection. Indeed, previous 3 sectors are required more time to implement than housing sector, which has been shown in multiple development examples globally.



**Figure 4-72 Year Retail Demand Projection**

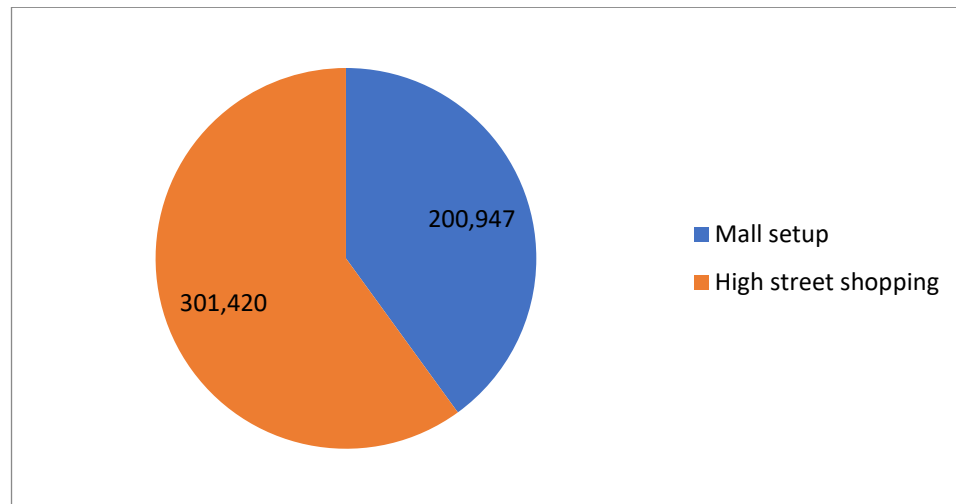
The report therefore recommends the following:

- That Railway City provides at least 30% of its land allocation to the commercial sector: 502,366 m<sup>2</sup>.



**Figure 4-73 The Project Uptake in Nairobi Demand (commercial)**

- That 60% of the above figure, be dedicated to high-street shops as these tend to be frequented more by people who use public transport; a key characteristic of The Railway City.



**Figure 4-74 Segmentation of Retail Use in the Project**

#### 4.8.4 MICE Sector

##### Overview

MICE is an acronym for the Meetings, Incentives, Conventions and Exhibitions tourism segment. This is therefore a business-oriented segment, involving obligatory travel. Various sources report that the MICE market is worth around \$30 billion a year worldwide with hotels accounting for about 60% of this.

Some countries rely heavily on the MICE segment – 30% of Singapore’s tourism revenue is from MICE, and Malaysia is specifically targeting the MICE market, running schemes such as the Meet and Experience campaign. Worldwide, at least 50 million trips are taken each year for MICE purposes. The MICE segment is exhibiting encouraging growth potential, with Russia, India and China likely to drive the global market with South Africa, Kenya and Ghana likely to drive the African market.

Companies tend to choose meeting locations based upon their core business values and relative expensiveness. They do not stray too far from their headquarters. The incentives market is slightly more diverse with firms willing to send employees to more exotic long-haul destinations. An increasing recognition that motivational programs are important for staff retention means that the incentives market will increase in the coming years. Whilst the MICE market is expected to continue to exhibit moderate growth, it is dependent upon the prevailing economic circumstances. A confident market will lead to more meetings and incentives whilst a nervous market is liable to have the opposite effect.

MICE is a service industry combining trade, transportation, finance, and travel has been active in some countries for the last five decades. MICE industry is characterized by “Three Highs”, that is, high growth potential, high added-values, and highly beneficial innovations; the “Three Larges” namely: large output, large opportunities for employment, and large industry associations; and the “Three Advantages”, advantage over other industries in human resources, technological know-how, and the efficient utilization of assets.

The conceptual framework of MICE industries is made up economic issues in that the MICE sector brings several contributions to the tourism sector and the destination, government support in that governments support the MICE industry because of its economic benefits, infrastructure, transport and access in that the setting up of infrastructure required for MICE need to be well-planned and executed so that positive attributes can benefit the destination and lastly marketing and image in that the MICE industry should market itself in such a way

as to meet customer demand and supplier needs thus ensuring a match between corporate and marketing capabilities.

The MICE industry is composed of Meetings, Incentives, Conventions and Exhibitions. Meetings can be held for commercial or non-commercial reasons but is mostly generated by the corporate sector as its high yielding, with millions of meetings held all over the world on a daily basis. Incentive travel is a universal management instrument that uses an outstanding travel experience to encourage and/or recognize participants for improved levels of performance in support of the organizational goals.

Conventions are participatory meetings that are designed mainly for the purpose of discussion, finding and sharing information, solving problems and consultation. Conventions are usually limited in time and have specific objectives. Exhibitions bring suppliers of goods and services together with buyers, usually in a particular industry sector. Exhibitions are also known as expositions, because they are intended to bring together different suppliers in an environment where they can display and promote their products or services to the attendees on the show floor.

The MICE industry has grown over the past decades. It is not only known as a service industry but also as one of the fastest growing sectors of the tourism industry. The industry is multi-sector and integrates services and products from varied sectors, i.e. Travel management; Hospitality; Transportation, ICT, Recreation/entertainment; and has linkages to advertising. Due to its cross-sector nature, MICE generate economic benefits across sectors. Today, the industry is one of the fastest growing segments within the travel and tourism industry generates millions in revenues for cities, countries, as well as the stakeholders making it happen.

Destinations for MICE tourists are influenced by safety and security with the most popular destinations in 2017 being New York, Singapore, Vienna, Paris, Berlin and the Indian Ocean for incentives. Kenya is currently rated as the second most preferred conference and business tourism destination in Africa after South Africa according to a report by International Congress and Convention Association (ICCA) 2017. This performance is attributed to the country's desire to provide high service levels and provision of conferencing services of international standards to delegates across the globe. City conferencing remains Kenya most popular form of conventions due the more business-oriented nature of cities and the large variety of facilities available and Nairobi is the main destination of conferencing in the country.

The promotion of MICE is part of a broader strategy to diversify the country's tourism offering; and has seen the development & launch of the National MICE strategic Plan 2011-2015, developed by the National MICE Committee & Secretariat. MICE is part of Kenya's vision 2030 goals which is being flagged by the Ministry of tourism, the ministry of foreign affairs and international trade and the ministry of East African Affairs.

To further boost the segment, in September 2016 Najib Balala, Cabinet Secretary for Tourism, announced the formation of a special task force to establish a Kenya Convention Bureau, which would promote the country's MICE segment. Currently, this is under the purview of the Kenyatta International Convention Center (KICC) and the Kenya Tourism Board (KTB).

### **Demand and Supply**

The Kenya National Bureau of Statistics in its economic survey report, 2017 notes that the MICE sector is on a major growth path globally and there is no doubt that the country is already enjoying these benefits hence enhancing its brand equity. The number of international conferences and delegates rose by 4.1 and 41.9 percent, respectively in 2016. Similarly, local conferences and delegates increased by 17.4 percent and 14.5 percent respectively in 2016. The overall conference percentage occupancy rose from 11.1 percent in 2015 to 11.6 percent in 2016. For international conferences, the number of hotel bed-nights occupancy rose by 9.7

percent from 5,878.6 thousand in 2015 to 6,448.5 thousand in 2016. Local conferences held increased by 17.4 percent from 3,199 in 2015 to 3,755 in 2016.

JLL 2017 notes that Nairobi is firmly positioned as the preferred regional headquarter location in East Africa hence driving demand for business travelers. The supply of hotels in the country is estimated to be at 55 sizeable hotels with an annual yield of Ksh. 14,100 on an average room this amounted to a 1.8percent decline in occupancy rate in 2016. Conference fees per person in these hotels also range between KShs. 3,000 to KShs 5,000.

The Kenya National Bureau of Statistics recorded that the number of International visitors increased by 10.9% from 288,905 in 2016 between January and May to 320,588 in 2017 in the same duration. The growth in this sector has been reflected by increased construction and refurbishment in the sector amidst stiff competition. Approximately 4,074 rooms are estimated to be constructed between the years 2017 to 2020.

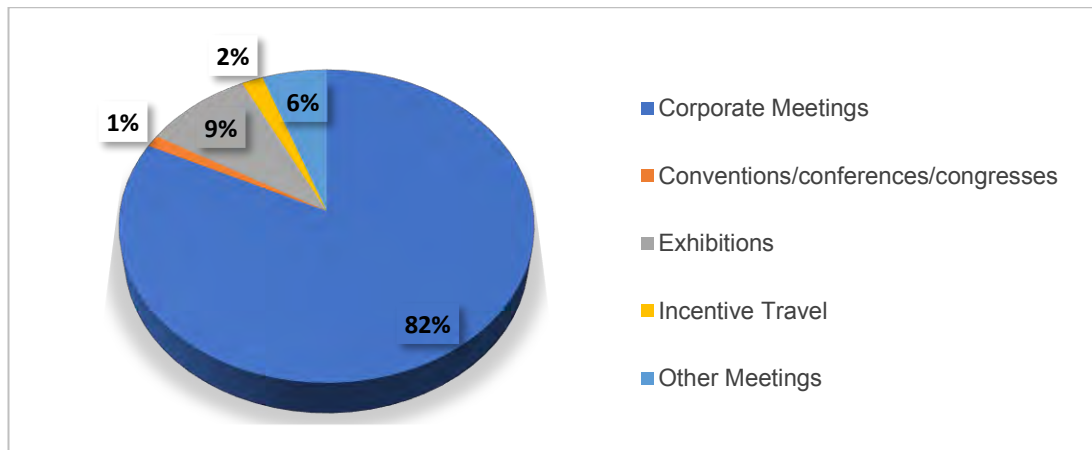
In 2018, international arrivals are projected for 16% and this allows the stakeholders to become more optimistic after concerted efforts by the government to increase security, marketing and reduce operational costs for them. According to Kenya National Bureau of Statistics (KNBS), there was a 12.1% growth in the first quarter of 2016 versus a contraction for the same period in 2015. WTTC predicts that by 2027, the numbers of international tourists could reach 2.3M visitors generating approximately KES 343.5Bn.<sup>15</sup>

The meeting component of the MICE industry has had a boom in the last two years in Kenya with the hosting of the UNCTAD conference in July 2016. Corporate meeting participants in 2016 represented 82% of the total number of MICE travelers in Kenya with 66,200 meetings and 7,187,000 attendees as shown below:

**Table 4-34 MICE Industry outlook in 2016**

MICE Type	Number of Meetings	Number of Attendees	%
Corporate Meetings	66,200	7,187,000	82.0
Conventions/conferences/congresses	9,800	104,000	1.2
Exhibitions	700	800,000	9.2
Incentive Travel	6,000	154,000	1.8
Other Meetings	8,100	479,000	5.5
Totals	90,800	8,724,000	100.0

<sup>15</sup><https://oxfordbusinessgroup.com/overview/back-track-after-period-decline-tourism-sees-its-fortunes-rise>



**Figure 4-75 Percentage Distribution of MICE**

The meeting segment of the MICE industry has some emerging trends:

- Roles of organizing meeting travels have shifted from in-house planning to destination management companies through an outsourcing platform.
- Many meetings are combined with incentive travels hence Kenya becomes a preferred destination because of the Indian Ocean, the good quality and availability of conference and meeting rooms, good internet connections and internet speeds, good security, ease of travel and immigration protocols as well as a high general hospitality treatment and rating. This makes the demand for Nairobi as a meeting destination high.
- Video conferencing is slowly taking up the roles of conference and meeting rooms. Video conferencing offers an alternative to travelling motivated by cost reductions and risk minimization. For MICE therefore to succeed beyond the proceeds of technology, there has to be a synergetic approach to meetings whereby travel incentives form part of the meetings through benchmarking, team building and vacation treatments for staff and MICE travellers.

Kenya has recorded steady growth in the Meetings, Conference, and Incentives industry, per a recent report by the Kenya Tourism Board (KTB). In 2016 alone, the MICE industry accounted for 13% of total international tourism arrivals; mostly consisting of business travelers. In 2015, the sector welcomed 117,630 tourists, recording a remarkable 14% increase on 2014 and marking a total contribution of 15.6%, of the total international arrivals for the year. Conference tourism generated 14% of total tourist arrivals to the country in 2016.

According to the World Travel and Tourism Council (WTTC) leisure spending – contributed to by inbound tourists but driven by domestic tourists – generated 62.5% of direct travel and tourism GDP in 2014, down from its 2013 figure of 65.4%. Business spending, however, is growing. In 2014 it generated 37.5% of direct GDP, up from 34.6% in 2013. In 2015 this segment is anticipated to increase by a further 5.4%, to reach KSh150.9bn (\$1.7bn). The WTTC forecasts an annual growth rate of 5.3% for the sector until 2025, reaching KSh252bn (\$2.8bn). Leisure spending, on the other hand, is expected to grow by just 2.8% in 2015, totaling KSh245.3bn (\$2.7bn) by the end of the year. Forecasts project growth of 5% each year until 2025, reaching KSh400.6bn (\$4.4bn)

In 2015, conference tourism grew to 15.6% from 12% of total number of international arrivals in 2014, with further growth experienced in 2017.

The tourism sector recorded a double-digit rise in earnings in 2017 to record just under Ksh. 120 billion in revenue receipts, denoting a 20.3% growth in revenue compared to 2016 when the tourism sector earned Ksh.99.69 billion.

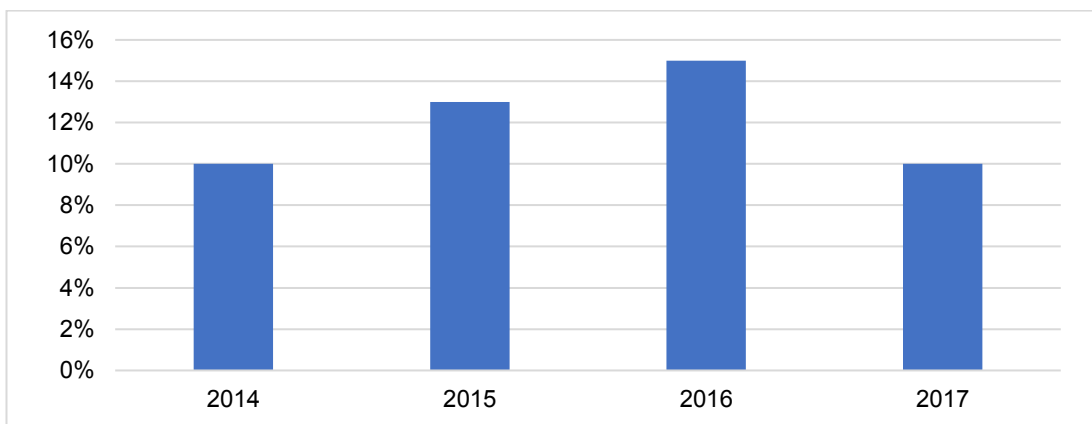
The strong growth in tourism receipts was underpinned by a 9.8% growth in total international arrivals into Kenya by air, sea, and cross-border in 2017 to 1,474,671 arrivals compared to 1,342,899 arrivals in 2016.

Indicators of demand for MICE are mainly linked to performance of the tourism sector and the growth of conferences held in Kenya, specifically in Kenya.

Conference tourism is the largest and fastest growing segment of the modern tourism sector in Kenya. Often in conference tourism, the traveler’s expenses are paid by their organizations, leaving them with substantial disposable incomes to spend. Creating demand for conferencing facilities mostly can be driven by Nairobi’s stature as a regional hub.

Under the Teketeke initiative, Kenya Tourism Board collaborated with key African airlines that drive traffic within Africa and managed to invite 150 key travel agents to Nairobi from 20-23 March 2017 for business to business sessions with the local trade. International hotel chains such as Radisson Blu, Kempinski are example of the recent developments whose contribution will not only be felt in terms of bed capacity but also on conferencing services

The effective demand for MICE type tourism in Kenya, case for Nairobi and Mombasa is higher than the consequent supply. Kenya being a regional leader in hospitality, business and tourism has affected a high demand for MICE related services over the last decade with the demand trends growing with over 10% annually lest for 2017 which is a special case due to the prolonged electioneering period and political uncertainty in the country. In addition, it is expected that there will be at least 47 upcoming conferences in Kenya between 2018 and 2019 pushing the demand for MICE facilities higher.



**Figure 4-76 MICE Demand Rates (2014-2017)**

Source: Market Analysis 2017

In Nairobi alone, annual demand rate is expected to increase by between 11.0percent and 19.0percent y/y to average at between Ksh139,300 and Ksh 150,000. Average room occupancy is expected to increase by 4.0percent points to average at 53% resulting in an increase in revenue per annual return by between 20.6 and 29.9% y/y to average at between Ksh. 73,800 and Ksh. 79,500.

The effective supply for MICE type tourism in terms of facilities and services is inadequate to cater for the high demand especially on the international perspective.

The Kenyatta International Conference Center, United Nations office in Nairobi, Gigiri, Safari Park Hotel in Nairobi and the White sands hotel and Sun sand hotel in Mombasa have been

and still are the strong forces behind development of conference tourism, coming out as the main host venues for most of the international events or conferences coming to Kenya. In the recent past, a host of other hotels and institutions of higher learning in the country have been also instrumental in hosting meetings and events. The rates for conference halls like KICC differ with the occasion, number of people and the client origin e.g. government, corporate, local or international but rates are estimated at Ksh. 30,000 per hour on average.

Hotel linked conference rooms are relatively expensive and are determined by the number of people, class of conference room, additions such as video conferencing, sound systems and ushering services estimated to be around Ksh. 100,000 per hour. The high demand for MICE related services in Kenya particularly Nairobi has also been affected greatly by the expansion and automation of Jomo Kenyatta International Airport which is a gateway to many Mice travelers into the country.

2016 was the peak of MICE activities in the country with Nairobi hosting the UNCTAD conference that posted a host of over 600,000 visitors, visiting the country for MICE related activities in just 3 months. Due to the saturation of 4 and 5-star markets, developers are now focusing on the budget and serviced apartment segments as viable new opportunities.

### Main Players (Developers & Tenants)

MICE related services in Kenya are top class but have really been inter-twined with the hospitality industry. Most MICE services offered through 5 star rated hotels and international standards conferences with major players being private investors and the government.

**Table 4-35 MICE Main Players**

PROJECT	MICE TYPE	PLAYER
KICC	Conventions & Exhibitions	Government
Kasarani	Conventions	Government
Safari Park Hotel and Casino	Meetings and Conferences	Private
Radisson Blu	Meetings and Conferences	Private
Golden Tulip Hotel	Meetings and Conferences	Private
Hotel Intercon	Meetings and Conferences	Private
Eka Hotel	Meetings and Conferences	Private
Windsor Golf Hotel and Spa	Meetings and Conferences	Private
Sankara Hotel	Meetings and Conferences	Private
Pride Inn Hotel	Meetings and Conferences	Private
Best Western Premier	Meetings and Conferences	Private
Kenya School of Monetary Studies	Meetings and Conferences	Government
Sarova White sands	Meetings and Conferences	Private

## Upcoming Projects

The government is planning to construct the largest convention center in Africa. The ministry of tourism says the project covering 82-acre piece of land will cost an estimated \$561million and will be named the Bomas International Conference and Exhibitions Center. It will be located next to the Bomas of Kenya and will have presidential pavilions, five luxury hotels, a conference center with a 10,000-delegate capacity, 15,000 exhibition spaces, coffee shops and other social amenities.

## Best Practice in MICE

### 1) Technological Advancements

In economic uncertain times, Information Communication Technology (ICT) has been used to support the MICE industry in saving time and costs. Innovation has made stake holders in the MICE industry to understand the need to provide ICT as well as communicating with their clients through new media channels in order to stay connected.

Young innovators with good projects for implementations are getting employed in the MICE industry to ensure a smooth implementation of the projects. Innovation has led to creation of more jobs in the MICE industry. For proper adoption and implementation of innovation, the companies have created jobs like Consulting ICT professionals, information communication analysts and new media assistants. The creation of professional online profiles in social networks and on company homepages has become a must for companies working in the MICE industry.

### 2) Value Addition to Destinations in the Country

This is achieved through various things such as (technically) good equipped meeting rooms with possibilities for video –conferences among others. When such equipment is put in a comfortable clear design, it creates a tailor-made brain food for meetings and this makes a difference between one destination place and another. Innovation has made meetings related industries to pamper the meetings participants to activate their full human resource by improving their infrastructures and operational management.

### 3) Client Retention

Innovation has changed the way people choose destination places. Today, people are going to places where innovation is made possible and people will follow and visit these sites. Travelers are even choosing their destination upon recommendation of friends and relatives therefore a destination place that has invested in customer satisfaction and relations, is likely to retain and attract new clients mainly through enhanced customer referrals and thus creating positive improvements.

Contacts and platforms for negotiations in regard to price, organization and operations are key determinants of the consumers' choice of venue/ MICE destination, and healthy and strong relationships enhance the service provider's competitive edge. Moreover, customers are the lifeblood of any business and so, due attention should be directed to them. These proprietors in the MICE industry should also work closely with the intermediaries operating in the same industry to enhance and ensure efficiency and effectiveness in satisfactory delivery of services to the consumers.

### 4) Provision of Quality Services

Despite presence of price dynamism strategies, consumers want value for their money and will source from service providers that offer reasonable or least prices without compromising quality. To further enhance their competitiveness, service providers in this industry must endeavor to 'provide more for less'. They must devise strategies that will economically enable them to offer phenomenon services; that exceed their consumers' expectations, at reasonable prices understanding to detail, their target markets before presenting the 'products' to the market or even before planning for further investments in the industry. This is mainly because consumer tastes and preferences are dynamic and informed by both internal and external

factors. As such it is mandatory that these service providers endeavor to design and package 'products' that not only meet the unique needs, tastes and preferences of these consumers but also exceed their expectations. Moreover, these consumers want to buy more than the 'product' itself to include convenience and economy; in regard to saving time, money and efforts/energies and service providers therefore, must also incorporate this aspect of 'product' design.

### 5) Adoption of New Technology

MICE industries are investing a lot on technology and the results are already evident. The most important meetings destinations are also the leaders in investing part of their GDP into technology. Innovation has led players in the MICE industry to invest heavily in technology to ensure that they concentrate on the future market drivers in their destination which promote client satisfaction.

## SWOT Analysis & Positioning of MICE

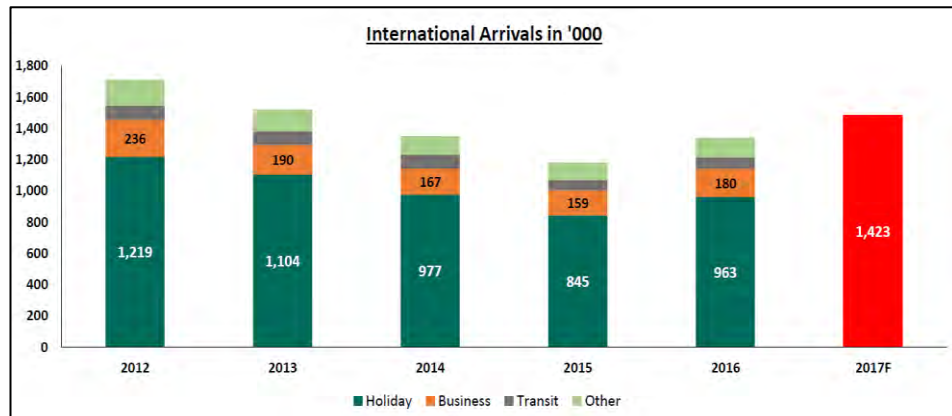
**Table 4-36 MICE SWOT Analysis**

<b>STRENGTHS</b>	<ul style="list-style-type: none"> <li>• Exotic destinations for leisure activities within the country.</li> <li>• Location is preferred as Nairobi acts as a Regional Hub.</li> <li>• Good infrastructural setup and support services e.g. roads and airports.</li> <li>• Base for a large number of global organizations.</li> <li>• Current government is pro-business.</li> </ul>
<b>WEAKNESSES</b>	<ul style="list-style-type: none"> <li>• Relatively high investment/ capital outlay costs compared to other sectors of the market.</li> <li>• Small urbanized sector viable for MICE related activities</li> </ul>
<b>OPPORTUNITIES</b>	<ul style="list-style-type: none"> <li>• Kenya Convention Bureau set up to aid the MICE industry.</li> <li>• Increased budget by government for the tourism sector.</li> <li>• Preference by emerging stars of world economy such as China.</li> <li>• Strong dives and initiatives taken by government such as hosting global United Nations events.</li> <li>• Central location as regional head in trade and commerce in Africa hence strong preference</li> </ul>
<b>THREATS</b>	<ul style="list-style-type: none"> <li>• Global economic recession reduces MICE activities.</li> <li>• Virtual meetings through tele-conferencing are replacing real time meetings.</li> <li>• Increased competition from other countries e.g. China and Singapore.</li> </ul>

## MICE Program Segmentation

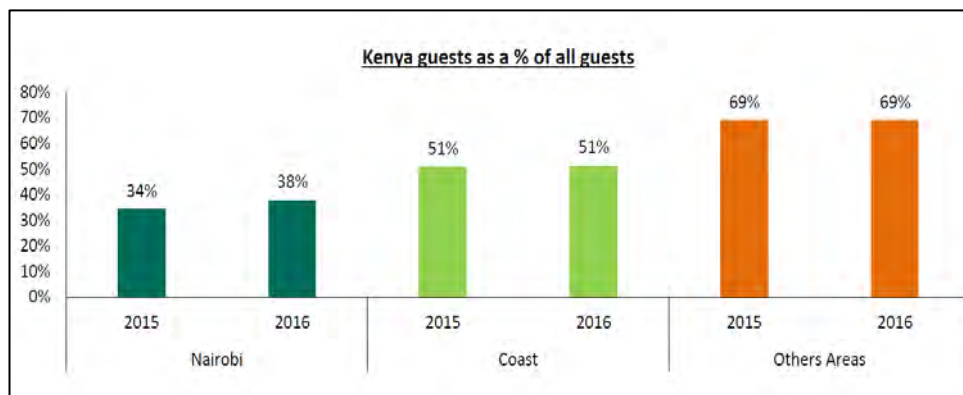
### 1) Hotel

The past decade has seen quite a substantial growth in the hotel industry in Nairobi with both international hotels and local brands. International arrivals at both JKIA and MIA continue to increase and this means that hotel room demands are also growing. KNBS survey of 2016 found that the percentage of Kenyan guests in Nairobi hotels is approximately 40%. This figure therefore demonstrates that hotel growth in Nairobi is tied to both the international arrivals and also the Kenyan population growth. The international arrivals to Kenya grew by more than 20% in 2017 (KNBS) and is expected to grow at higher rate in 2018.



**Figure 4-77 International Arrivals in 2017**

Source: KNBS



**Figure 4-78 Nairobi Uptake of Kenya Guest**

Source: KNBS

As of Dec 2017 , Nairobi had 4,675 rooms in the 3-Star to 5-Star segment. There is lack of data on the budget hotels which are the majority in Nairobi.

Nairobi has approximately 33 top-rated hotels (3,4 and 5-star) and 4,675 rooms

Name of Establishment	Location	Rating	No of Rooms
Tribe	Kiambu/Limuru Rd	5 star	137.0
Hemingways	Karen	5 star	45.0
JusitD2 Nairobi	Westlands	5 star	101.0
Fairmont The Norfolk Hotel Nairobi	CBD	5 star	170.0
Hilton Nairobi	CBD	5 star	287.0
InterContinental Nairobi	CBD	5 star	326.0
Radisson Blu Nairobi	Upperhill	5 star	271.0
Sankara Nairobi	Westlands	5 star	156.0
Sarova The Stanley Hotel	CBD	5 star	217.0
Serena Nairobi Hotel	Kilimani	5 star	183.0
Villa Rosa Kempinski Nairobi	Westlands	5 star	200.0
Windsor Golf Hotel & Country Club	Kiambu/Limuru Rd	5 star	130.0
Fairview	Kilimani	4 star	127.0
House of Waine	Karen	4 star	11.0
Sarova Panafric	Kilimani	4 star	162.0
The Boma	Mombasa Road	4 star	148.0
Weston Hotel	Lang'ata Road	4 star	120.0
Crowne Plaza Nairobi	Upperhill	4 star	206.0
Four Points by Sheraton Nairobi Hurlingham	Kilimani	4 star	96.0
Ole Sereni	Mombasa Road	4 star	134.0
Royal Tulip Canaan Nairobi	Kilimani	4 star	94.0
Southern Sun Mayfair Nairobi	Westlands	4 star	171.0
The Lazizi Premiere	Mombasa Road	4 star	144.0
Clarion Hotel	CBD	3 star	62.0
Marble Arch	CBD	3 star	40.0
Panari	Mombasa Road	3 star	136.0
Sarova Portico the Zehneria	Westlands	3 star	56.0
Nqong Hills Hotel	Kilimani	3 star	110.0
Best Western Plus Meridian Hotel	CBD	3 star	128.0
Golden Tulip Westlands Nairobi	Westlands	3 star	94.0
Hotel Royal Orchid Azure Nairobi	Westlands	3 star	165.0
Park Inn by Radisson Nairobi Westlands	Westlands	3 star	140.0
Sarovar Portico The Heron	Kilimani	3 star	108.0
<b>Total</b>			<b>4,675.0</b>

Figure 4-79 Current Number of Hotel Rooms in Nairobi

Source: Cytonn

Demand projections for Nairobi hotels use a hybrid of international arrivals figure and also the Kenyan GDP growth rate. The GDP accounts for 40% as that is the share of occupancy by Kenyans with international arrivals growth rate making the 60%.

Occupancy in 3 to 5-Star stands on average at 60%. The Plan therefore uses this figure to project the latent demand and project the same over a 20-year period.

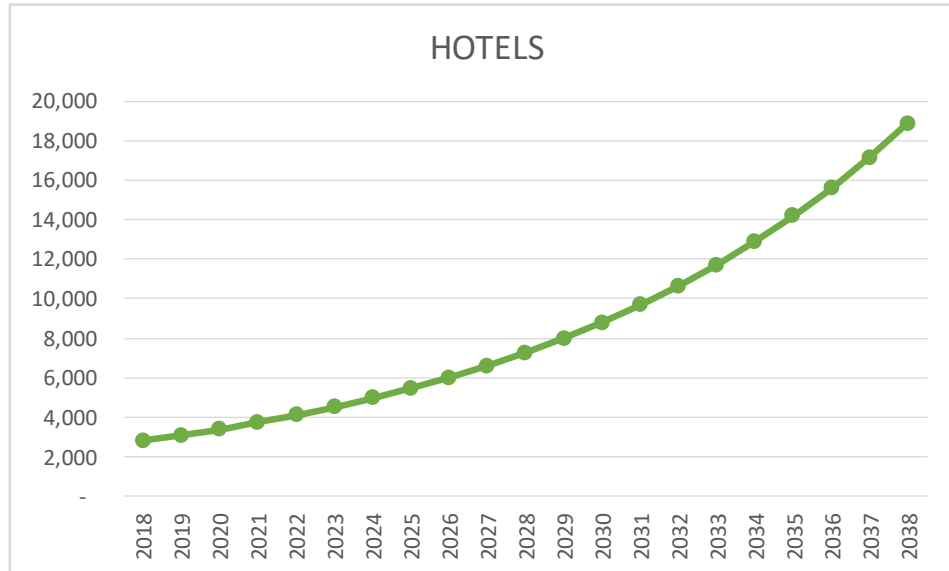


Figure 4-80 Hotel Accommodation Demand Over 20-years

Railway city due to its location will take a higher percentage of the budget and 3\* hotel category for the Nairobi demand. The take out for the 4-Star and 5-Star will decrease due to the location and demand for travelers who stay in this kind of establishments.

It is recommended:

- Railway City provides 15% of the demand projection of hotel rooms (whether through hotels or serviced apartments): 3,203 rooms.

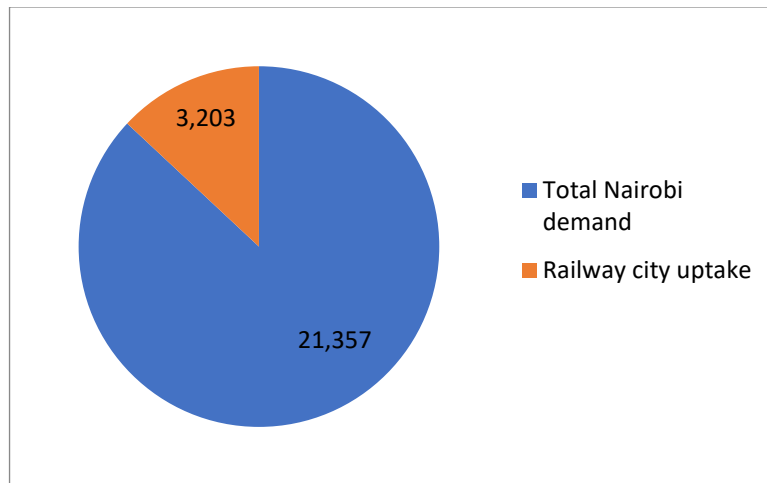


Figure 4-81 The Project Uptake in Nairobi Demand (Hotel)

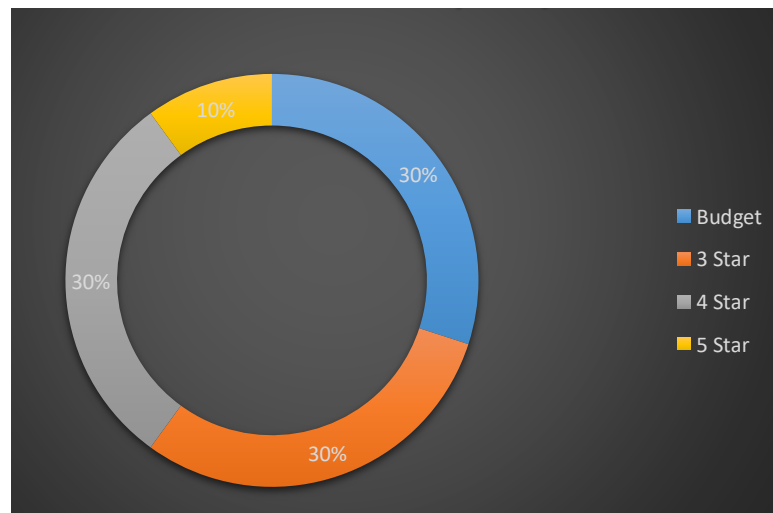


Figure 4-82 Hotel/ MICE Allocation in the Project

## 2) MICE

As there was lack of data on the sizes of the meeting and convention center in Nairobi, the Plan aggregated the existing spaces in the 3 to 5-Star hotel category in addition to the stand-alone meeting places such as KICC as shown in the table below.

Table 4-37 Main Convention Facility Outlook in Nairobi

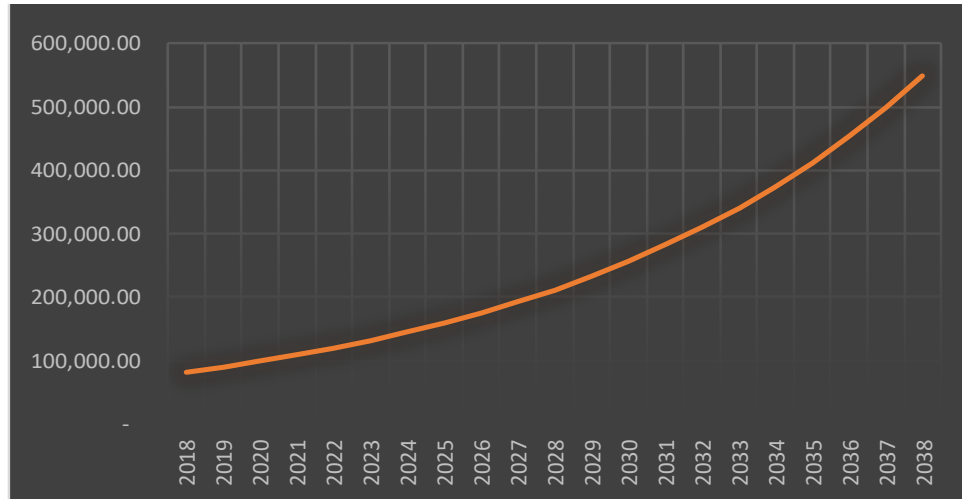
Conference Centers / Hotels - Nairobi		
	Name	Total Conference Space (SQM)
1	Four Points by Sheraton	215.28
2	Laico Regency Hotel	944.0
3	Panari Hotel Nairobi	2,252.0
4	Sankara Nairobi	250.0
5	Villa Rosa Kempinski Nairobi	390.6

<b>Conference Centers / Hotels - Nairobi</b>		
	<b>Name</b>	<b>Total Conference Space (SQM)</b>
6	Safari Park Hotel & Casino	4,000.0
7	Crowne Plaza Nairobi	806.28
8	Double Tree by Hilton (Hurlingham)	370.37
9	Intercontinental Hotel	1,407.0
10	Sarova Panafric Hotel Nairobi	764.0
11	Sarova Stanley	594.0
12	Movenpick Hotel & Residences	3,488.0
13	Hilton Hotel Nairobi	1,481.48
14	Radison Blu Nairobi	1,419.0
15	Utalii Hotel	63.0
16	Royal Orchid Azure Hotel	200.0
17	KICC	10,000.0
18	Kenya Comfort Hotel Suites	400.0
19	Hotel la Mada	828.0
20	Tara Suites Hotel Nairobi (gigiri)	120.0
21	Crowne Plaza Nairobi	2,576.39
22	Boma Inn Nairobi	4,500.0
23	dusitD2 Nairobi	200.0
24	Hilton Garden Inn (Jkia)	370.37
25	Silver Springs Hotel Nairobi	452.34
26	Ole Sereni Hotel	600.0
27	Jacaranda Hotel	637.0
28	Swiss International Lenana Mount	366.0
29	Fairmont The Norfolk	785.0
30	Southern Sun Mayfair	600.0
31	Bomas of Kenya	2,390.0
	<b>Total Area of Meeting spaces - Nairobi</b>	<b>43,470.11</b>

Source: Cvent (<http://www.cvent.com/rfp/nairobi-kenya-event-venues.aspx>)

Understanding the Nairobi CBD and meeting its demands, there is a very robust demand for meetings where people have small functions, e.g. funeral arrangements, wedding planning Chama meetings etc. the demand for this type of meeting is quite substantial despite the lack of data. Anecdotal evidence shows high level of occupancy in the church halls and meetings rooms, town center restaurants where all these meetings happen. In addition, a number of establishments have been established purposely for such meetings. These exist in Norwich Union towers, Tumaini house amongst others. These demonstrate the high demand that exists for budget meeting venues that have not been captured by any research. The estimation gives these types of meetings to be at least double that of 3-5\* category.

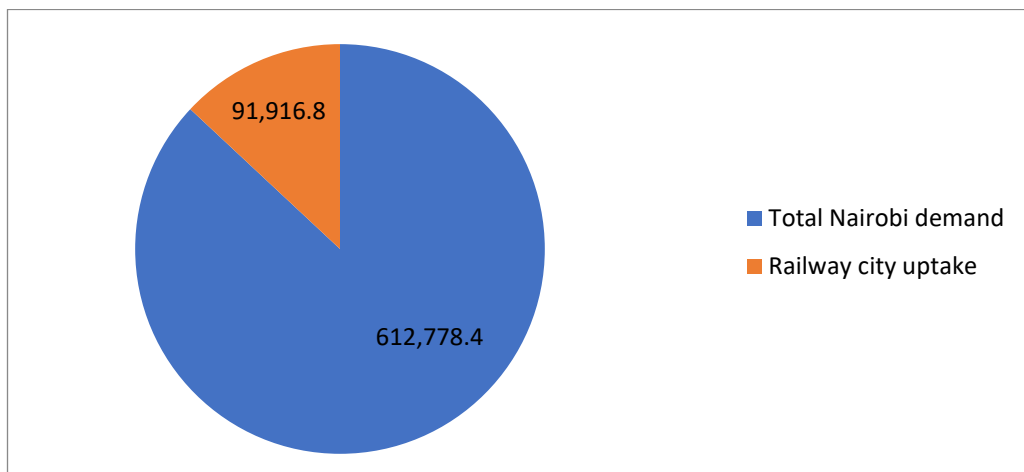
In 20-year demand projection the Plan has used 10% which is a combination of 16% growth of tourist arrivals to account for the tourist-oriented meetings and 6 % GDP growth



**Figure 4-83 MICE Demand Projection in 20 years**

It is therefore recommended,

- Railway City provides 15% of the demand projection of MICE facilities: 91,917 m<sup>2</sup>.
- In addition to targeting a few of the formal meetings in 4- and 5-Star settings, Railway City should plan to absorb not less than 50% of the budget and 3-Star MICE requirements.



**Figure 4-84 The Project Uptake in Nairobi Demand (MICE)**

#### 4.8.5 Housing Sector

##### Definition of Terms<sup>16</sup>

- **Affordable Housing:** Housing that is adequate and costs not more than 30% of the household income per month to rent or acquire. This is based on the fact that the annual real average earnings per person, as per Economic Survey 2018, Kenya National Bureau of Statistics (KNBS), stood at Ksh 369,004 over the period from 2016 to 2017. This translates to a monthly income of about Ksh 30,750 per person in Nairobi. Noting also that the minimum wage as provided by Statistical Abstract 2017, (KNBS) averages at Ksh. 12,000 per month. Based on market trends and information, affordable (low income) fetches a maximum of Ksh. 2,000,000 while Affordable (middle income) ranges between Ksh. 3,000,000 to Ksh. 10,000,000 depending on the income levels.
- **Social Housing:** means adequate housing targeting low income segments of the population comprising a combination of subsidised rental housing including slum upgrading, funded by public resources or grants and managed by a public agency, non-governmental organisation or community-based organization.
- **Urban Middle-Cost Housing:** regarded as housing accommodation comprising a minimum of three habitable rooms, kitchen, bathroom and toilet, covering a minimum gross floor area of 60 square meters for each household.
- **Urban Low-Cost Housing:** regarded as housing comprising a minimum of two habitable rooms, cooking area and sanitary facilities, covering a minimum gross floor area of 40 square meters for each household.

#### Residential: General Demand and Supply

The National Government through the Ministry of Land, Housing and Urban Development and the Nairobi City County has both embarked on a major urban renewal project for the city of Nairobi by providing housing to bridge to cope with the ever-rising housing shortage. This is being done through Public Private Partnership within areas hitherto developed with low and mid density housing and that already too old and dilapidated. The Ministry of Housing, Infrastructure, Transport and Urban Development has already developed the Civil Servants Housing Project in Ngara and has started developing Shauri Moyo, Park Road and Starehe Projects. The Nairobi City County also aims to see redevelopment of old housing estates within the city of Nairobi. The urban renewal project initially targets to develop approximately 14, 000 housing units, in 7 housing estate sites under the ownership of the Nairobi City County; these estates are Old Ngara, New Ngara, Bachelors/Jevanje, Pangani, Ngong Road, Suna and Uhuru Estates.

The major aims of the urban renewal project are to address existing housing shortages in the city of Nairobi, provide modern and affordable housing units, ensure optimal use of urban land, enhance aesthetic appeal of the urban area and ensure accountability and maximum revenue collection by the Nairobi City County.

The private sector has played a massive role in the development of the residential real estate sector both in Nairobi, its immediate outskirts and Kenya as whole. It is largely responsible for the growth witnessed in the mid and upper segments of the market geographically positioned towards the Northern and Western side of Nairobi. The zoning within a particular area eventually determines the sub-market that emerges. Most of the high-income earners reside to the North and Western nodes of the city, in the low-density areas such as Gigiri, Runda,

<sup>16</sup> This definition is referred to this report only. It may not be matching the AHS (Affordable Housing Scheme) in BIG 4 agenda.

Kitisuru, Muthaiga etc. As one heads to the South/East, densification of the city rises with property prices per unit becoming more affordable.

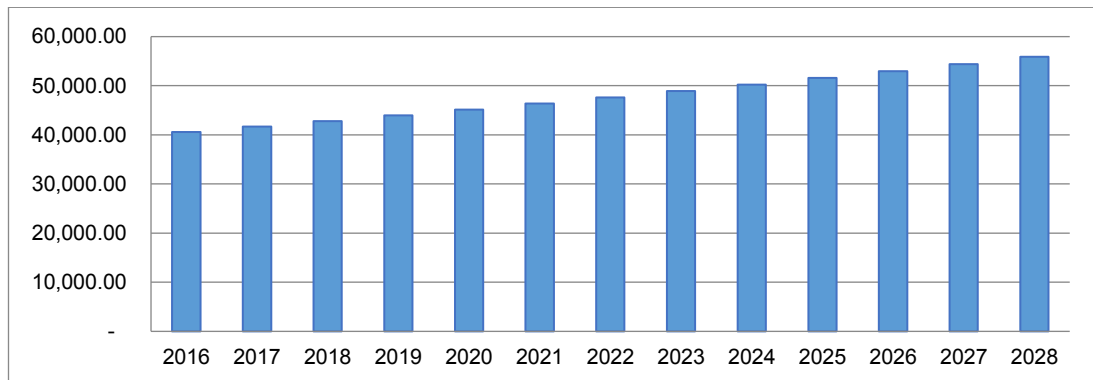
Increased demand for residential property has influenced the direction of supply, with regard to volume of property in the market, types of property and the geographic distribution of residential property development. This response is governed by need, affordability, infrastructure, government policies, laws and regulations.

Increased demand has led to rezoning of certain parts of the city such as Kilimani and Kileleshwa in Nairobi, to allow for increased density, further escalating the property prices within the city residential estates. The high land values have greatly influenced the prices of residential.

### Housing Need in Nairobi County

According to the Basic Report Based on 2015/16 Kenya Integrated Household Budget Survey, Kenya National Bureau of Statistics (KNBS), 2015/2016 the estimated population of Nairobi City is 4,463,000 people. Nationally the average household size was estimated at 4.0 members. However, Nairobi City had a total household population of 1,503,000, resulting to a smaller average household size of 3.0 members.

Housing need refers to the number of houses required, given growth in households, itself derived from household size and population growth. Fundamentally housing need is a number, derived from population and household size projections, that makes no allowance for affordability. It is the premise therefore that the total housing need in Nairobi City is ideally equal to the number of households that stood at 1,503,000 in 2016 and increases annually at a rate proportional to the population growth of 2.7%.



**Figure 4-85 Projected Housing Needs 2016-2028 Nairobi**

Source: Projections from KNBS, 2016

### Housing Demand and Supply in Nairobi County

**Housing demand** refers to the willingness and ability to purchase or rent a house. According to the KNBS report there are two categories of household housing tenures namely;

- Owner occupier – houses that have been purchased, constructed, inherited, gift or bartered by the household living in them.
- Leases/ Rentals – houses owned by national government, county government, parastatal, company or individuals and leased out to the households

The survey found that 86.4% (1.36 million) of the households in Nairobi lived in rented dwellings, 8.1% (128,405) lived in their own houses and 4.9% neither pay rent nor own the houses but live in them as squatters or with knowledge of the owners. The status of balance

of 0.6% of the households is not stated. It is an opinion therefore that the total housing demand in Nairobi comprises of both owner occupiers and tenants. Using 2018 as reference year, with the KNBS data adjusted at a population growth of 2.7% the housing demand and supply in Nairobi is met as follows.

**Table 4-38 Housing Demand and Supply in Nairobi (by Type)**

No. of Rooms	% Distribution	No. of Housing Units	Owner Occupier	Leased House
1	69.50%	1,101,754	89,242	951,916
2	13.40%	212,425	17,206	183,535
3	9.80%	155,355	12,584	134,227
4	4.30%	68,166	5,521	58,895
5	1.20%	19,023	1,541	16,436
6	1.10%	17,438	1,412	15,066
7	0.70%	11,097	899	9,588
Total	100.00%	1,585,258	128,406	1,369,663

Source: Projections from KNBS, 2016

The table above shows that a majority of the households in Nairobi are housed; however, there is inadequate quality and affordable housing stock with basic amenities. The National Housing Policy states that the shortage in housing is manifested in overcrowding, proliferation of slum and informal settlements especially in peri-urban areas.

In terms of housing supply 5.8% live in bungalows, 46.3% in flats/apartments and 36.9% live in *Ladhies* (*This is a one-row structure with two or more living rooms, usually with external doors each*). This clearly shows that there is preference in high-rise residential dwellings.

**Housing affordability** is pegged to individual or household income levels, which in turn affect the overall housing demand. The section that follows discusses the income levels of households in Kenya and Nairobi.

### Estimation of Income Levels

According to a report by the Institute of Economic Affairs (IEA) in 2015 “The Middle Class in Formal Sector in Kenya” the following are the categories of income levels

**Table 4-39 Income Levels by Category**

No.	Category	Income per Month (Ksh)
1	Low income	0-75,000
2	Middle Income	75,000-102,000
3	High Income	103,000 and above

Source: IEA, 2015

The IEA study shows that the middle class is highly concentrated in the large cities such as Nairobi (30.5%) and Mombasa (11.1%). Therefore, in Nairobi where the population is about 4 million there are 1.2 million people in the middle-income category.

In addition, the Economic Survey 2018, KNBS estimates that in total, there were 16.9 million jobs in 2017. The nominal annual average earnings in the modern sector per person increased from Ksh 645,035.2 in 2016 to Ksh 684,097.0 in 2017. Inflation as measured by Consumer Price Index increased from 6.3 percent recorded in 2016 to 8.0 percent in 2017. However, annual real average earnings per person decreased from Ksh 379,968.9 to Ksh 369,004.3 over the same period. This translates to a monthly income of about Ksh 30,750. Therefore, in family where both the father and mother works, the monthly household income is Ksh 61,500. This loosely shows that majority of households fall under the low-income bracket.

The following are some of the residential market segments that have been brought about by the various income classes:

### 1) High End Market

High End residential also referred to as luxury/ Prime property generally refers to the most desirable and expensive property in a location or the top-five percentile of each market by value. High end residential market is further differentiated by three main features:

By high quality: both in the choice of construction materials as well as the interior finishes of the property such as professional-quality kitchen appliances and customized closets. In addition, hotel-like amenities such as concierge services, a top-of-the-line fitness center and spa center are often staples of a luxury building.

By price: given that prime properties demand higher rents or fetch higher sale prices. In return the yields are equally depending on macro- economic factors. In terms of market sales rates per square foot, One General Mathenge has achieved one of the highest rates for high-rise apartments, averaging at a rate of Ksh. 17,000 per square foot. Entry of projects such as Le Mac Towers in Westlands, have already raised the rates even higher to approximately Ksh. 24,000 per square foot.

By location: luxury properties that target high net worth individuals are located within affluent areas such as Runda, Muthaiga, Gigiri, Karen, Hurlingham, Kileleshwa, Kitisuru, Riverside and Brookside among others. The most sought-after features by buyers of luxury properties often include land size and internal areas, quality finishes, views and outlook, privacy, and location. Typical buyer in this market segment looks for exclusivity, high quality finishes and spectacular views and locations. High end varies depending on the target market. For instance, it may be defined by being in a gated community or as part of an association that gives you access to an exclusive country club within the neighborhood.

In Nairobi, luxury home prices start from Sh80 million while the rent starts from Sh250,000 for apartments and Sh300,000 for townhouses and standalone units. Standard high-end apartment prices start at Sh.20 million.

According to Knight Frank Report of 2017, prime residential rents in Nairobi have declined over the review period despite reducing at a slower rate of -2.75% compared to -4.36% over the first half of 2016. The decline arguably can be attributed to an oversupply which has given tenants more options and leverage to negotiate with landlords. Corporate budget cuts by multinationals have also impacted on the high-end residential market segment as the niche heavily targets and relies on the expatriate tenants. Prime residential prices have decreased by 0.9% over the first half of 2017 compared to an increase of 1.3% over the same period in 2016. The prevailing market conditions, coupled with the already high capital values of prime residential homes, have resulted in low transaction volumes in the said market.

Residential housing in this category attracts Members of Parliament, Senior civil servants, UN staff, Chief Executives of public and private institutions, international and local businessmen and women, consultants, Kenyans in the Diaspora, and other highly paid staff in banks, insurance companies, communication companies, and other international companies. These are persons with monthly income of at least KShs 500,000.00. Such persons can apply and secure mortgages of up to 20 Million assuming they net KShs 350,000.00. The table below shows a summary of the sizes and sale prices of high-rise apartment units from one to four bedrooms located within the precinct of Westlands, which is an upmarket area.

**Table 4-40 Average Sizes and Prices of Apartment in Westlands**

No. of Bedrooms	Average Sizes (sqm)	Average Price (Ksh)
One bedroom	120	15,000,000
Two bedrooms	134	22,000,000
Three Bedrooms	217	32,000,000
Four Bedrooms	351	50,000,000



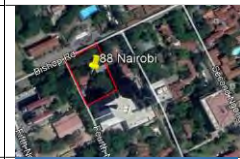





Le Mac	Montave	88 Nairobi	Sherwood Apartments
			
			
<b>Development Type:</b> Mixed-use Development <b>Location:</b> Church Road, Westlands <b>Plot size:</b> 0.5Ha <b>No of floors:</b> 24 <b>No. of units:</b> 192 <b>Unit Type:</b> 1,2 and 3 bedroom apartments	<b>Development Type:</b> Mixed-use Development <b>Location:</b> Lower Hill Road, Upperhill <b>Plot size:</b> 1.431 Ha <b>No of floors:</b> 22 <b>No. of units:</b> 209 <b>Unit Type:</b> 1,2 and 3 bedroom apartments and penthouses	<b>Development Type:</b> Serviced Apartments <b>Location:</b> Bishops Road, Upperhill <b>Plot size:</b> 0.81 Ha <b>No of floors:</b> 44 <b>No. of units:</b> 288 <b>Unit Type:</b> 1,2 bedrooms and penthouses	<b>Development Type:</b> Pure Residential <b>Location:</b> Riara Road <b>Plot size:</b> 0.5 Ha <b>No of floors:</b> 14 <b>No. of units:</b> 72 <b>Unit Type:</b> 3 bedrooms and duplex penthouses

Figure 4-86 High-End Housing Example

2) Standard (Pure) Apartment

Some of the sampled projects in Kileleshwa, Kilimani, Upper Hill, Lavington, Parklands, that have 12 floors and above are shown in the table below. It also shows the sizes and the selling price points.

Table 4-41 Current Standard Apartment Outlook

	Development	Location	No of floors	No of units	No of bed rooms	Plinth Area (sqm)	Plinth Area (sqft)	Price (Ksh)	Price per sqft (Ksh)
1	Kileleshwa Towers	Tebere Crescent, Kileleshwa	14	28	3	200	2,152	29,000,000	13,476
2	Purple Haze	Kilimani	14	102	2	137	1,474	20,500,000	13,907
					2	140	1,506		13,609
					2	169	1,818		11,273
					3	169	1,818	24,800,000	13,638
					3	175	1,883		13,170
					3	209	2,249		11,028
				12	3 pent house	416	4,476	60,000,000	13,404
					4 duplex	470	5,057	70,000,000	13,842
				4 duplex	492	5,294		13,223	
3	Everest Court	Githunguri Road, Kileleshwa	12	40	3	270	2,905	30,000,000	10,326
				4	5	476	5,122	60,000,000	11,715
4	Sherwood Apartments	Riara Gardens, Riara Road	14	45	3	212	2,281	18,000,000	7,891
				27	3	217	2,335	20,000,000	8,566
				4	355	3,820	35,000,000	9,163	
5	Valley Arcade Towers	Argwins Kodhek	12	72	3	205	2,206	30,000,000	13,601
6	Park Central	Mombasa Road	25	254	1	55	592		
					2	84	904		

	Development	Location	No of floors	No of units	No of bed rooms	Plinth Area (sqm)	Plinth Area (sqft)	Price (Ksh)	Price per sqft (Ksh)
					3	119	1,280		
7	88 Nairobi	Bishops Road	44	288	Studio			8,000,000	
					1		-	11,000,000	
					2			35,000,000	
8	Aura	1st Parklands Avenue		58	3	215	2,313	26,000,000	11,239
					4	250	2,690	31,000,000	11,524
9	Muthaiga Heights	Parklands 6th Avenue	14	33	3 type A	162	1,743	30,000,000	17,211
					3 type B	210	2,260	40,000,000	17,702
					3 type C	228	2,453	45,000,000	18,343

### 3) Serviced & Furnished Apartment

Furnished & Serviced Apartments have been available in Nairobi since the early 1980s. As hotel occupancies in Nairobi soared in the 2000s, hotel rooms during peak travel periods became increasingly unavailable thus boosting the demand for alternative accommodation. With a growing economy and the opportunities thereof, an increase in foreign business travelers has been witnessed

The demand for Furnished & Serviced Apartments in the Nairobi area can generally be defined as strong. This is going by the uptake rates observed in the area as shall be subsequently explained.

The pricing of the units is packaged to daily, weekly or monthly stays and is highly determined by the services and amenities available as well accessibility and connectivity to the main airport, government offices, retail centers, schools, hospitals etc.

A hospitality expert could be engaged to help in ascertaining a right mix for expected returns vis-à-vis any associated expenses and costs that are envisaged should the client proceed to go on with the option of Furnished & Serviced Apartment option.

The following table shows some of the main serviced and furnished apartments within the general Westlands area.

**Table 4-42 Serviced and Furnished Apartments in Westlands**

	Apartment	Location	No. of bedrooms	Daily Rates	Monthly Rate
1	Sandalwood Apartments	Brookside Gardens	1		85,000
			3 + DSQ		190,000
2	Oasis Suites	Lower Kabete Road	1	10,000	200,000
			2	12,000	150,000
3	Fenesi Gardens	Lower Kabete Road	1	10,000	160,000
			2	15,000	180,000
4	Cascades	School Lane	3		220,000
5	Jamesborough Residences	Brookside Gardens	2	14,000	220,000
6	Cerenata	Brookside Gardens	1	11,600	160,000
			2	14,000	180,000
			Penthouse		220,000
7	Bid apartments	Karuna Lane	Studio	7,000	110,000
			1	8,000	120,000
8	Borderpoint	Lower Kabete Road	3	14,000	190,000
			3		160,000
9	Riverside Pearl		Studio	10,000	130,000
			One bedroom	10,000	160,000
			Two bedroom	15,000	200,000
			Three bedroom	20,000	250,000
10	White pearl		One bedroom		160,000

**4) Vertical Mixed Use**

There is an emerging trend for the development of high end vertical mixed-use development concept in Nairobi, comprising of residential apartments, office and retail space as well as hospitality. This is informed by diversifying rental revenues within the context of highest and best use. This concept is already common in developed countries as well as other African countries like Dar Es Salaam, Tanzania and Johannesburg, South Africa. The following table shows some of the ongoing vertical mixed-use developments in Nairobi.

**Table 4-43 Vertical Mixed-Use Development in Nairobi**

	Development	Location	No of floors
1	Pinnacle Tower (Jabavu Village)	Upper hill	42
2	Montave	Upper Hill	22
3	Le Mac	Westlands	24
4	Avic	Westlands	23
			25
			28
			29

**5) Middle End Market**

Demand for housing in urban areas in Kenya is estimated at 200,000 units per year with demand in urban areas outstripping supply leading to high incidences of poor housing and proliferation of slums and informal settlements. Urban home ownership in Kenya is estimated at only 8.1% which is low by international standards. The statistics is made worse by the shortage of affordable housing for low income groups. There is need for deliberate efforts to improve access to housing by implementing housing finance initiatives particularly development of end financing, installation of housing infrastructure, slum upgrading and prevention, urban re-development/renewal, dissemination of appropriate building materials and technologies and putting in place suitable legal framework.

The broad objective of the proposed project is to increase the supply of housing in the country to meet the demand-supply gap especially for lower- and middle-income urban dwellers.

Assumptions for Middle – Cost Housing

- Ratios of one bedroom to two bedrooms and three-bedroom units per project will be 30:60:10 respectively
- The sizes of the one bedroom, two bedrooms and three bedrooms will be 30 m<sup>2</sup>, 50 m<sup>2</sup> and 65 m<sup>2</sup> respectively

**6) Low End Market (Affordable Housing)**

According to the National Housing Policy, the Kenyan housing sector is characterized by inadequate affordable and decent housing, a low-level of urban home ownership (16%) and extensive and inappropriate dwelling units including slums and squatter settlements. It is estimated that out of a total of 200,000 housing units required annually in urban areas, only an estimated 50,000 are constructed. The shortage of housing for low-income households is particularly acute in urban areas, with an estimated 20% of all houses supplied catering for this group. This is attributed to under-investment in low and middle-cost housing by both the public and private sectors, (Vision 2030: population, urbanization and housing sector Medium term plan 2008-2012).

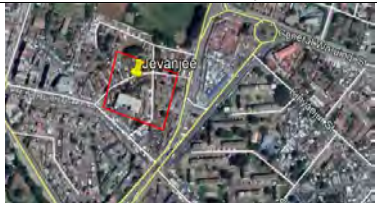


Currently the biggest supplier of the low-end market is the National and the County governments through the Kensup and urban renewal projects as mentioned elsewhere in this

report. According to the MoHTI&UD the broader low-end market is generally categorized as shown in the table below targeted to the income groups as shown.

**Table 4-44 Categories of Affordable Housing**

No	Category	Income Group	Supply Proposition
1	Social Housing	0 - 14,999	21%
2	Low Cost Housing	15,000-49,999	72%
3	Medium Cost Housing	50,000-100,000	2%

Source: MoTIH&UD

Bachelors/Jevanjee	New Ngara	Pangani
		
<p><b>Development Type:</b> Urban Renewal <b>Location:</b> Quarry Road <b>Plot size:</b> 8.8 acres <b>No of floors:</b> 24 <b>No. of units:</b> 1,470 <b>Unit Type:</b> 1, 2 and 3 bedroom apartments</p>	<p><b>Development Type:</b> Urban Renewal <b>Location:</b> along Ring Road Ngara south of the Old Ngara Estate <b>Plot size:</b> 4.12 acres <b>No of floors:</b> 24 <b>No. of units:</b> 1,050 <b>Unit Type:</b> 1, 2 and 3 bedroom apartments</p>	<p><b>Development Type:</b> Urban Renewal <b>Location:</b> bounded by Juja Road to the South, to the East are Ring Road Ngara and Muranga Road to the Northwest. <b>Plot size:</b> 5.2 acres <b>No of floors:</b> 24 <b>No. of units:</b> 1,050 <b>Unit Type:</b> 1,2 and 3 bedrooms</p>

**Figure 4-87: Affordable Housing Examples**

### 7) Social Housing

As previously mentioned, the Kibera Kenya Slum Upgrading program (Kensup) project is a good example of social housing. Kensup was as a result of a collaboration between the Government of Kenya, UN-HABITAT and other stakeholders, which was initiated in 2004. The objective was to improve lives and livelihoods of people working and living in slums through various initiatives and interventions. The project led to relocation of 1,200 households from Soweto East to a decanting site in Lang'ata and the construction of 822 housing units in Soweto and 245 market stalls.

**Table 4-45 Approved Prices by the Cabinet for Kibera Redevelopment Houses**

No	No. of Units	Type of Housing Unit	Plinth Area (SM)	Valuation by Chief Value (Ksh.)	Approved Community - Subsidized Price by Cabinet (Ksh.)
1	108	Type 1-(bedsitter)	14.25	1,500,000	600,000
2	570	Type 2 (two roomed unit-One Bedroom)	28	2,500,000	1,000,000
3	144	Type 3 (three roomed unit- Two Bedroom)	47.0	3,500,000	1,350,000
4	245	Market stalls		362,000	326,328

Source: MoTIH&UD

**Table 4-46 Social Housing Supply for Kibera**

No	Region and County	Land area	Acres	Housing units	Remarks
1	Nairobi	Kibera Slum Upgrading project	8.6	3,072	Designs and drawings ready awaiting tendering, no financial allocation

Source: MoTIH&UD

### Ongoing/ Upcoming Residential Projects

There is no single project within a radius of 10 kilometers from the subject property of similar magnitude by private developers. However, the ongoing Nairobi Urban Renewal Projects by both the National and County governments combined presents the main competition. The table below shows the project pipeline;

**Table 4-47 NCCG Urban Renewal Projects**

Nairobi City County Urban Renewal						
Estate	Land (Acres)	Units	No. of Units Per Acre	No. of Floors	Cost Billions (Ksh)	Developer
Jevanje/Bachelors	8.8	1,470	167	24	9.1	Jabavu Village Ltd
Pangani	5.2	1,050	202	24	7	Sovereign Group Ltd
New Ngara	4.12	1,050	255	24	9	Kcb Group
Old Ngara	3.28	840	256	24	7	Kiewa Group Ltd
Suna Road	5.2	1,050	202	12	3.5	Directline Assurance Ltd
Ngong Road	15	2,520	168	12	24.2	Lordship Africa
Uhuru	7.5	1,050	140	15	3.7	Stanlib Kenya Ltd
<b>Total</b>	<b>49.1</b>	<b>9,030</b>			<b>63.5</b>	

Source: NCCG

**Table 4-48 MoTIH&UD Urban Renewal Projects**

MoTIH&UD Nairobi Urban Renewal				
Estate	Land (Acres)	Units	No. of Units Per Acre	Remarks
Desai Road	16	676	42	Developed
Shauri Moyo	11	2,000	182	Decanting
Park Road	9	1,800	200	Site Cleared
Starehe	22.3	6,400	287	Proposal
Sub Total	58.3	10,876		
<b>Total</b>	<b>107.4</b>	<b>19,906</b>		

Source: MoTIH&UD

This list does not include the Kenya Slum Upgrading projects currently being undertaken in Kibera Slum Upgrading project.

### Positioning and Competitive Strategy of Railway City

The foregoing review of the status of supply and demand in the general Nairobi residential market gives a good case for the planned Railways City development.

#### 1) Estimation of Demand of Housing for Railway City

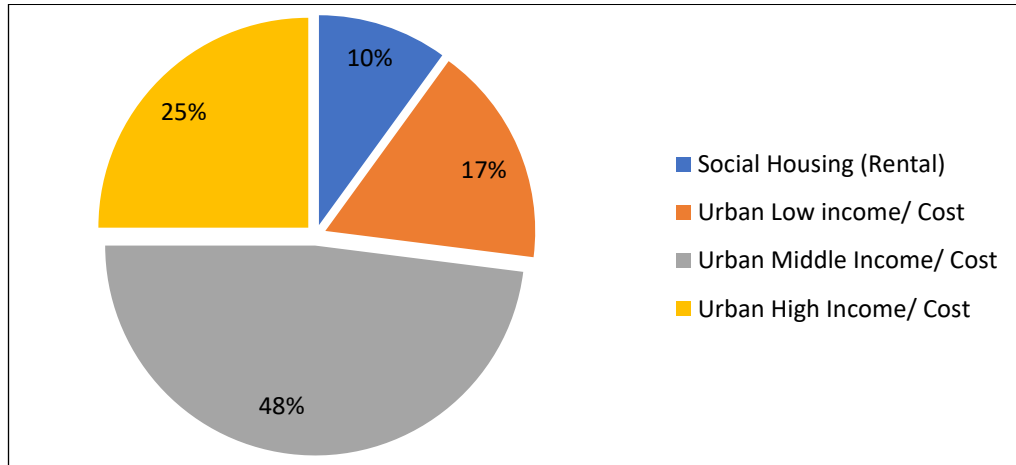
From the foregoing analysis the Plan has attempted to estimate the level of housing demand in Nairobi over a ten-year period considering that the proposed Railway City is a long-term project. The Plan has forecasted the number of housing units required.

**Table 4-49 Estimation of Housing Demand in Nairobi and the Project Housing Supply**

Step 1	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Number of Households in Nairobi	1,585,258	1,628,060	1,672,017	1,717,162	1,763,525	1,811,140	1,860,041	1,910,262	1,961,839	2,014,809	2,069,209
Step 1											
1a. Demand from Existing Households - Rent Overburdened	40%	651,224	668,807	686,865	705,410	724,456	744,016	764,105	784,736	805,924	827,683
2b. Demand from Existing Households - Substandard Housing	30%	488,418	501,605	515,149	529,058	543,342	558,012	573,079	588,552	604,443	620,763
3c. Demand from Existing Households - Dislocations	10%	162,806	167,202	171,716	176,353	181,114	186,004	191,026	196,184	201,481	206,921
Combined Demand from Existing Households		1,302,448	1,337,614	1,373,729	1,410,820	1,448,912	1,488,033	1,528,210	1,569,471	1,611,847	1,655,367
Total Demand		1,302,448	1,337,614	1,373,729	1,410,820	1,448,912	1,488,033	1,528,210	1,569,471	1,611,847	1,655,367
Step 2											
Depression of Demand - Preferences	30%	390,734	401,284	412,119	423,246	434,674	446,410	458,463	470,841	483,554	496,610
Depression of Demand - Income Restrictions	40%	520,979	535,046	549,492	564,328	579,565	595,213	611,284	627,789	644,739	662,147
Additions to Supply (Competition)	15%	195,367	200,642	206,059	211,623	217,337	223,205	229,231	235,421	241,777	248,305
Total Deductions from Latent Demand		1,107,081	1,136,972	1,167,670	1,199,197	1,231,575	1,264,828	1,298,978	1,334,051	1,370,070	1,407,062
Net Realizable Demand Pool		195,367	200,642	206,059	211,623	217,337	223,205	229,231	235,421	241,777	248,305
Step 3											
Capture Rate Pro-Rata (Supply)	5%	9,768	10,032	10,303	10,581	10,867	11,160	11,462	11,771	12,089	12,415
	10%	19,537	20,064	20,606	21,162	21,734	22,320	22,923	23,542	24,178	24,831

Source: ProLand Realtors Ltd, the Consultant

From the above table, 5% of Nairobi’s demand can be absorbed as 12,415 housing units in The Railway City. Based on that, considering the planning volume of 10,460, it can be accommodated in the Nairobi Railway City. Considering the income levels of households in Nairobi it is proposed that The Railway City development should be pro-affordable housing to cater for both low- and middle-income classes. The social housing category should be subsidized by national and/or county government, which means that the cost of constructing them will be financed together with other social and public programs. On that basis, the graph below shows the proposed segmentation of the housing units to cater for the estimated demand for the project.



**Figure 4-88 Proposed Segmentation of the Housing Units**

**Table 4-50 Proposed Segmentation of Housing in the Project**

	Category	Proportion (%)	No. of Housing Units
Affordable Housing	Social Housing (Rental)	10%	1,046
	Urban Low income/ Cost	17%	1,778
	Urban Middle Income/ Cost	48%	5,021
High end Housing	Urban High Income/ Cost	25%	2,615
	Total	100%	10,460

In this regard the saleable housing units should cater for a minimum of 9,180 households excluding social rental housing.

**2) Summary of Positioning and Competitive Strategy of Railway City**

The package must offer a variety of a combination of urban life and natural environment which is one of the dominant selling points of the location. A proposed retail component offers potential buyers the benefit of a nearby shopping district that is pedestrian friendly away from the congestion synonymous with areas around the CBD. The on-going developments should be viewed as complementing and sited recent redevelopments could eventually lead to Nairobi CBD revitalization as a recreational, investment, and living destination. In contrast to buyers in elsewhere in Nairobi, buyers of the project site will have relatively easy access to other areas in Nairobi since they will be at the heart of the railway central station.

The Proposed Railway City is part of the greater proposed Urban Renewal projects in the Nairobi metropolitan region. The vision for the development should be to transform the Nairobi CBD area into an ultra-modern urban center with facilities competing with more developed cities of the World. The impact of the residential segment on the greater Railway City Project can be summarized as follows;

- A population of about 9180 units providing a ready market pool to the commercial with an additional 1,820 social housing units.
- Sales revenues from the residential units will go a long way to support project cash flows to implement other uses such as commercial, which may take time to offload
- Completes the live, work, play concept of mixed-use development
- The provision of affordable (social, low cost and medium cost housing) will meet the housing needs of the middle and low-income earners who have been neglected in the supply of housing
- It will add to the status of the proposed Railways City as a national, regional and international iconic landmark similar to other railway cities around the world.

## **Housing Real Estate Strategy**

### **1) Development Strategy**

From the final land use plan, the pure residential component has been allocated about 10% of the total available land translating to around 25ha. However, the actual planning concept has two distinctive features of the current Railway city as the future CBD. One is the promotion of mixed-use approach, with 35% of residents residing in the pure residential area, with the rest spread throughout The Railway City. In particular, high end housing is located in MICE core area which is outside the residential area. In order to achieve the highest and best use considering the high value of land within the CBD, the residential component will adopt high densification. Unfortunately, due to the air path from the Moi Airbase, the building heights shall be adjusted from the minimum of 8 floors high density developments.

### **2) Sale Strategy**

In the residential sale strategy has the following options;

- Outright cash sales
- Tenant Purchase Schemes (TPS) Basis
- Subsidized mortgage from National/ County Government, KR etc.
- Bank Mortgages
- Through co-operatives
- Employer-Assisted Housing
- Rental housing
- Affordability/Subsidy

In order for the proposed houses to be affordable, the government must fully absorb the cost of infrastructure (physical, social and environmental). Government should subsidize the cost of social and physical infrastructure.

High-End and Middle Cost housing to be sold at market rate to finance social housing i.e. Cross financing (cross subsidy) high end users to finance low end users.

#### 4.8.6 Alignment of Real Estate Volume with Planning Volume

##### Commercial, MICE

- Planning for commercial volume is based on the integrated number of commercial plus MICE (Hotel and Convention). The planning volume is 799,338m<sup>2</sup>.
- From market scenarios above, retail only volume is 502,366 m<sup>2</sup>.
- The planning volume minus market volume of commercial is 296,972m<sup>2</sup> within which the MICE volume can be included.
- The suggested planning volume of MICE is 88,680m<sup>2</sup>, hence it can be projected to the market volume of 91,916m<sup>2</sup>
- The remaining planning volume is 208,292 m<sup>2</sup>. Therefore, hotel room quantities can be estimated as follows;

208,292 m <sup>2</sup> X 0.6 = 124,975 m <sup>2</sup> .	*Note: 1. 0.6 means around 60% of floor area can be dedicated by net room area. 2. 40 m <sup>2</sup> means average size of one room.
124,975 m <sup>2</sup> / 40 m <sup>2</sup> = 3,124 rooms.	

- From above, total hotel room number achieved is 3,124 rooms, which can be projected to match the market volume of 3,203 rooms

##### Office

The Planning volume shows total office area of 1,921,874m<sup>2</sup> as salable office area<sup>17</sup>.

However, the market volume projection of office is 1,394,027m<sup>2</sup>, Hence the planning volumes can be matched with market volume.

The table below shows the segmented program where to locate The Railway City.

**Table 4-51 Segmented Commercial, Office and MICE Location in the Planning Area**

Program	Segmentation	Market Volume(m <sup>2</sup> )	Suggested Location
Commercial	Mall	265,679	Center core, MICE core, East core
	High street	512,755	Street commercial and all commercial accommodated areas
Office	Grade-A	504,852	International office, MICE core
	Grade-B	1,417,022	Government Office, TUK, R&D, High-tech industry and other office accommodated areas
MICE	Hotel	3,203 Rooms	MICE Core, Center core, Street commercial
	Convention	91,917	MICE core, Center core

##### Housing

The volume suggested is 5% i.e. 12,415 units based on the market 10-year horizon projection and the urban planning volume is 11,100 units. The above segmented housing volume could be accommodated in each zone in The Railway City as shown below. (refer to **Chapter 5. Urban design: Development Guideline**)

<sup>17</sup> MICE core (177,288m<sup>2</sup>), Center core (195,620m<sup>2</sup>), East core (43,885m<sup>2</sup>), Government office (360,228m<sup>2</sup>), Kenya Railways Corporation Zone (153,650m<sup>2</sup>), New Central Station (59,136m<sup>2</sup>), Station front commercial (287,420m<sup>2</sup>), Street commercial (110,340m<sup>2</sup>), International office (327,564m<sup>2</sup>), Housing (71,575m<sup>2</sup>), Hi-tech Industrial (135,168m<sup>2</sup>)

**Table 4-52 Segmented Housing and Location in the Planning Area**

Program	Category	Proportion (%)	No. of Housing Units	Location in The Railway City (planning volume)	Alignment with Planning
Affordable Housing	Social Housing (Rental)	10%	1,110	Housing zone (1,110)	Ok
	Urban Low Income/ Cost	17%	1,887	Housing zone (3,280) Street commercial (1,200) Center core (645) East core (512) High tech industry (199) Station front commercial (1,333) Government office (45)	Distributed in various zones
	Urban Middle Income/ Cost	48%	5,328		
High-end Housing	Urban High Income/ Cost	25%	2,775	MICE core (2,086) Center core (689)	Ok
Total		100%	11,100		

#### 4.9 SWOT Analysis

Every land development project calls for a viable and concrete strategy, which could be tested by SWOT analysis. Based on the data in sections 2.3 to 2.6 above i.e. review of related projects, field investigations, real estate analysis, technical analysis of railway, transportation and legal and institutional assessment, the SWOT analysis was concluded as follows;

##### Strengths

- Location: Prime land location in an urban center area
- Physical environment: Generally flat topography
- Cultural aspects: Strong location identity with a historical meaning
- Majority of land owned by a public institution – 81% by Kenya Railway
- High demand of affordable housing

##### Opportunities

- Multiple running projects in the surrounding area- e.g., Eastlands, Commuter rail masterplan, urban renewal plan (NCCG)
- Several initiatives for improving the CBD's transportation conditions - e.g. banning Matatus from accessing the CBD .
- Political goodwill as one of Nairobi's major projects- strategic positioning in NIUPLAN
- Real estate: New promising MICE function – e.g, continuous increase of tourist arrival
- In case of lowering track, smooth linkage between separated area by railway

##### Weaknesses

- Negative spatial image due to the proximity to the old area
- Current poorly managed transportation conditions
- Insufficient infrastructure for future use
- General characteristics of informal developments especially in eastern area
- Real estate: Over supply market of retail sector

### **Threats**

- Possibility of resistance towards resettlement plans
- Moi Airbase flight path presents a constraint on the building height
- Land compensation cost for private land
- Potential confusion of institutional framework if PPP is adopted.

### **SO-W strategy<sup>18</sup>**

- Marketing prime location value for overcoming the negative and old image
- Synergy with other related transportation project to overcome traffic congestion
- Overcoming negative commercial sector- oversupply- by meeting the housing demand for reciprocal compensation

### **SO-T strategy<sup>19</sup>**

- Making feasible financial scenario to overcome the threats of land compensation
- Multiple stakeholder approach to overcome resistance from the current residents
- Initial investment by public bodies will cover for any PPP delays.

---

<sup>18</sup> Strategy for overcoming Weakness by utilizing Strength and Weakness

<sup>19</sup> Strategy for overcoming Threat by utilizing Strength and Weakness

Figure 4-89 SWOT Analysis of the Project

	Strength	Opportunity
	<ul style="list-style-type: none"> <li>• Prime Land Location</li> <li>• Favorable Physical environment (flat topography)</li> <li>• Location Identity (Strong Cultural aspects)</li> <li>• Public Land development</li> <li>• High demand of affordable housing</li> </ul>	<ul style="list-style-type: none"> <li>• Affiliated projects in surrounding areas</li> <li>• Initiatives for improvement of CBD transportation condition</li> <li>• One of major projects indicated in NIUPLAN -&gt; Political advantage</li> <li>• Real Estate development and tourist attraction</li> <li>• Smooth linkage of railway</li> </ul>
	<ul style="list-style-type: none"> <li>• Marketing prime location value for overcoming the negative and old image</li> <li>• Synergy with other related transportation project to overcome traffic congestion</li> <li>• Overcoming negative commercial sector-oversupply- by meeting the housing demand for reciprocal compensation</li> </ul>	
	<ul style="list-style-type: none"> <li>• Making feasible financial scenario to overcome the threats of land compensation</li> <li>• Multiple stakeholder approach to overcome resistance from the current residents</li> <li>• Railway lowering benefit will overcome the constraints of Viaduct project</li> <li>• Initial investment by public bodies will cover for any PPP delays.</li> </ul>	
<p><b>Weakness</b></p> <ul style="list-style-type: none"> <li>• Negative image due to its close proximity to the old area</li> <li>• Poorly managed transportation conditions</li> <li>• Insufficient infrastructure for future use</li> <li>• Informal developments in eastern area</li> <li>• Real estate over supply market in retail</li> </ul>	<p><b>Threat</b></p> <ul style="list-style-type: none"> <li>• Possibility of resistance towards resettlement</li> <li>• Building height limitation due to airbase flight path</li> <li>• Land compensation cost for private land</li> <li>• Conflict of interest with Viaduct project</li> <li>• Potential confusion of institutional framework if PPP is adopted</li> </ul>	



# Chapter 5. THE LAND USE PLAN

The Plan was achieved through immense research and discussion including several key stakeholder engagement processes. General approach that generated the final plan is illustrated as below.

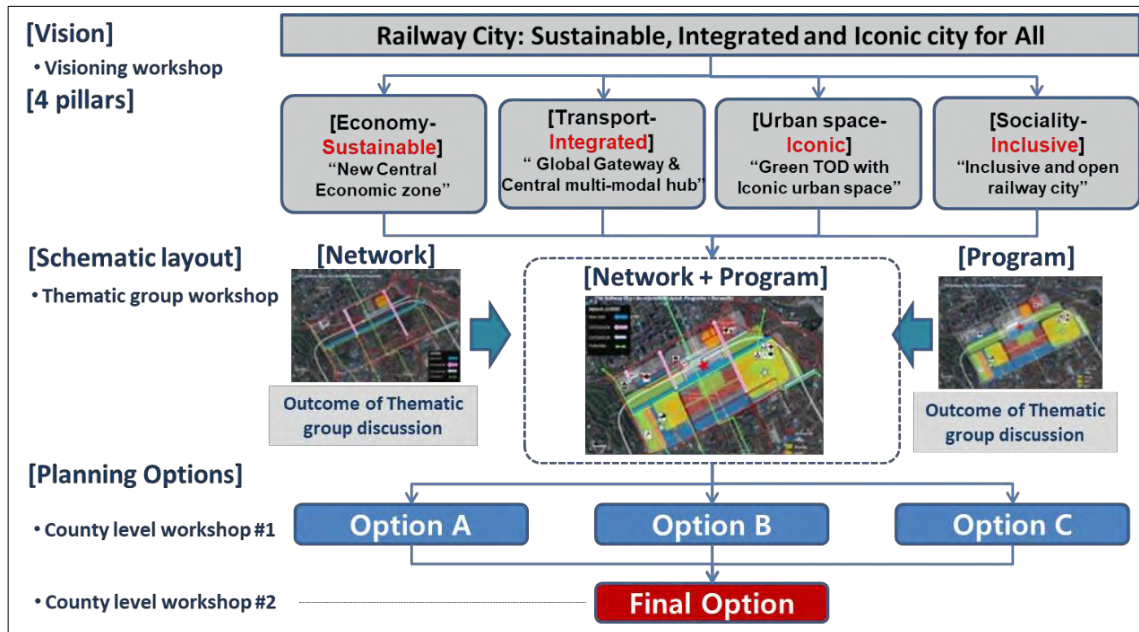


Figure 5-1 Progress Towards the Final Plan

Several key workshops were a real venue for discussing the ideas, sharing information and selecting the final option. From the Visioning workshop of "Sustainable, Integrated and Iconic city for All" to planning scenario with the Thematic group workshop, and 3 option sharing for 1<sup>st</sup> County level workshop then finally 2<sup>nd</sup> County level workshop conclude the final option setting.

This chapter illustrates all procedures to reach the Plan. Those are listed as below.

- Competitive alignment: Strategic positioning
- Competitive Strategy
- Vision
- Concept for the Greater CBD
- Planning Scenarios
- Spatial Framework
- Landuse plan

## 5.1 Competitive Alignment: Strategic Positioning

### 5.1.1 Nairobi as East African Gateway

The three main global entrance cities to the eastern African continent are Nairobi, Cairo and Cape Town. Nairobi takes the position of “entry gate” of the Eastern and Central Africa region.

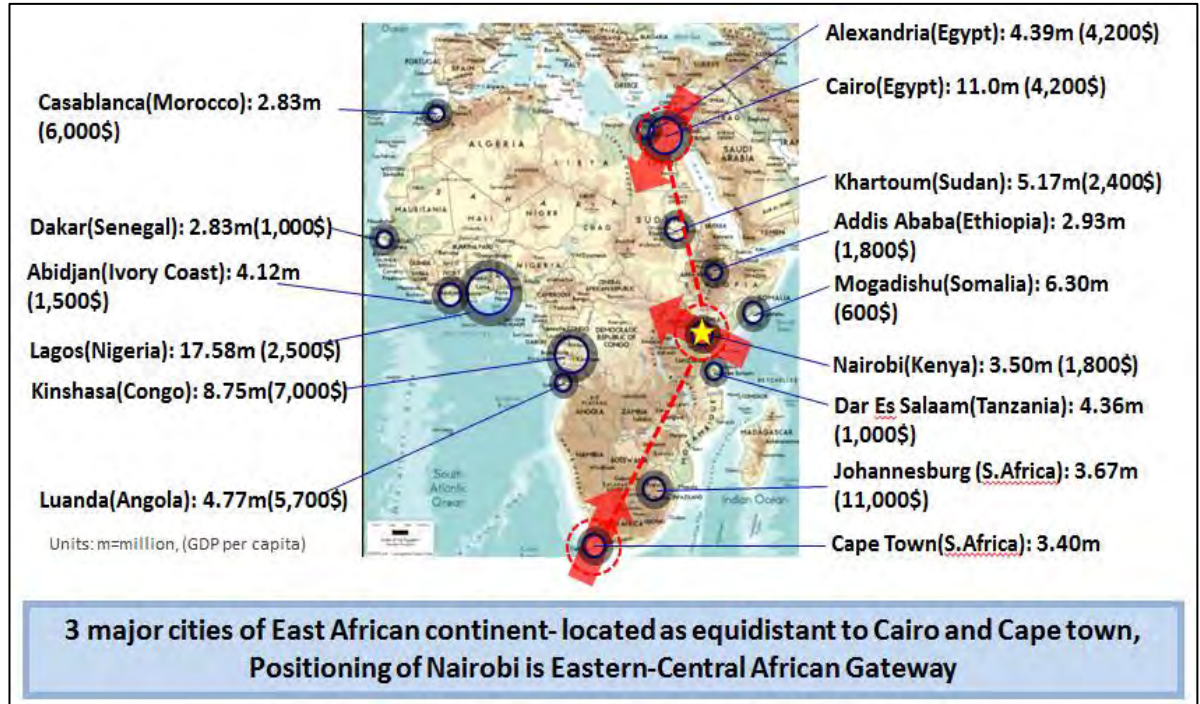
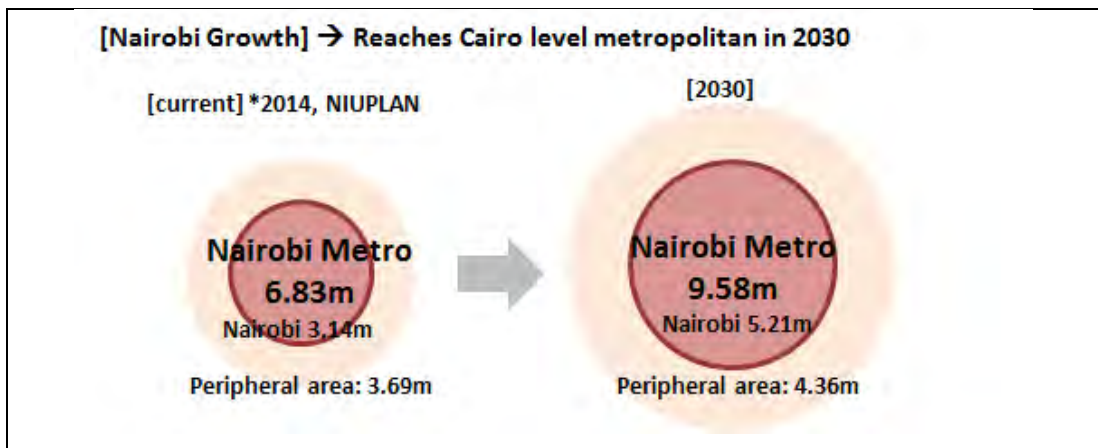


Figure 5-2 Nairobi as Eastern African Gateway

### 5.1.2 Nairobi in World Cities

In NIUPLAN, the population of NMR is estimated to reach 9.6million in 2030, reaching Cairo’s level of metropolitan scale. Nairobi is Kenya’s capital city with a 14.2% of the total population and its national GRDP portion at 24.4%. In comparison with other World cities, Nairobi is ranked 68th of 84 world cities in A.T. Kerney Global city index. Competing cities in Africa are Cairo (49th), Johannesburg (59th) and Cape town (71st). Lagos (74th), Casablanca (78th) and Addis Ababa (80th).



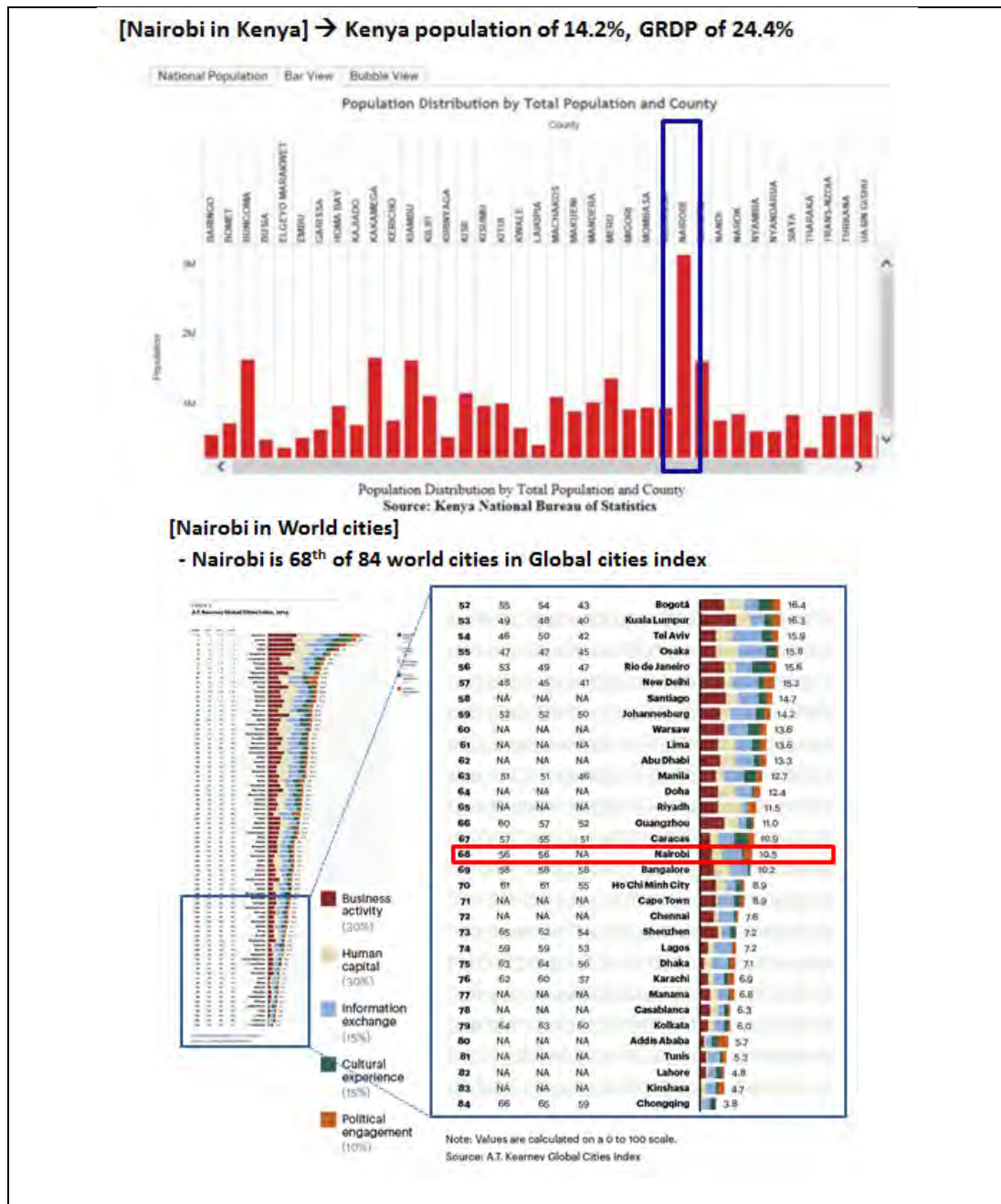


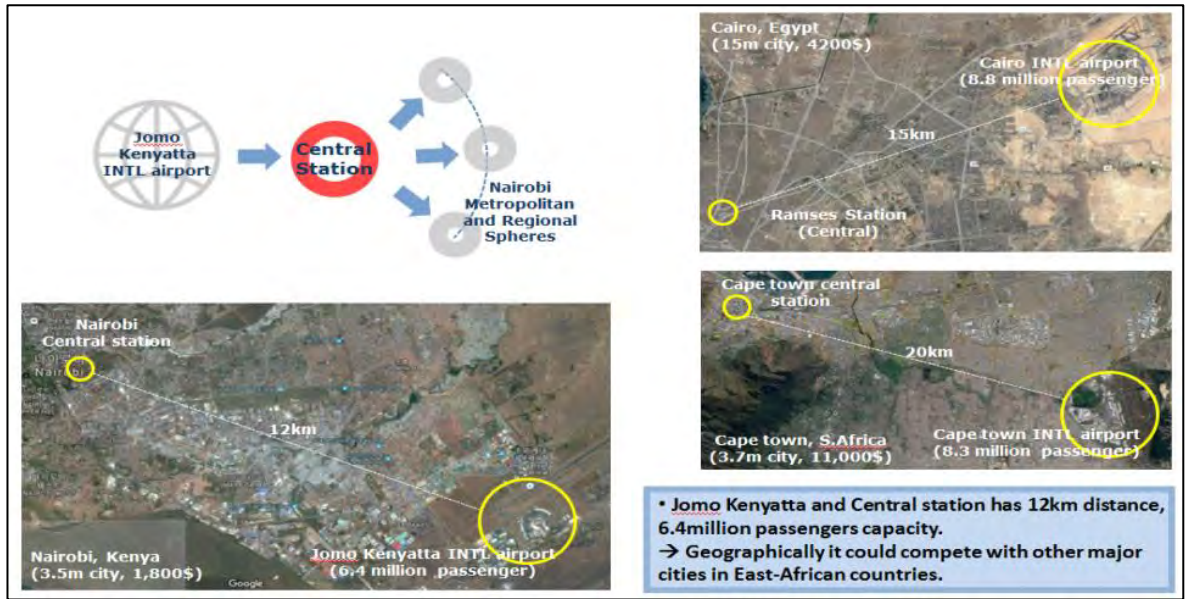
Figure 5-3 Nairobi in World Cities

Source: Kenya National Bureau of Statistics, A.T Kearney Global Cities Index (2015).

### 5.1.3 Central Station as an “Inland Global Gateway”

The International Airport is a vital transport and economic “entry gate from the globe”. The route from the international airport to CBD (Central station) is a vital route for the economy, as along this route, various types of industries have been located. They include light and high tech manufacturing, which are deemed as “airport-based industries.” Seamless connection from the airport to the CBD is necessary to ensure economic prosperity for the future. Thus, the central station is another important inland “global gateway” for economic prosperity.

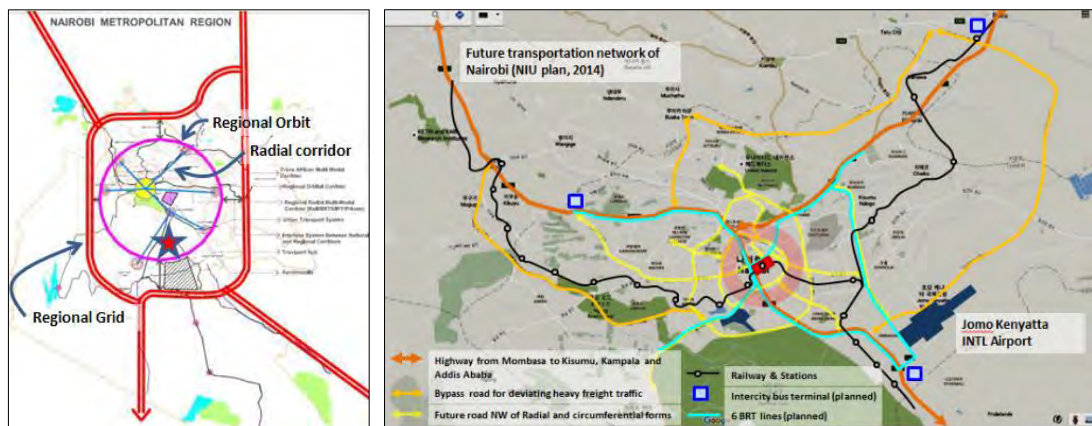
The distance from the airport to the Nairobi Central Station is shorter than other competitive African cities like Cairo and Cape Town. However, the frequent traffic delays caused by the public transport system needs to be addressed.



**Figure 5-4 Central Station as Global Gateway**

In the future plan of Nairobi, the Central station is regional and intra urban gateway. In the MRTS plan, there are 3 magnificent frameworks for Nairobi metropolitan transportation; these are Regional Grid, Regional Orbit, and Radial corridor. The Regional Grid is proposed as a deviation route for freight and Intercity and Internal transit passenger. The Regional Corridor intends to enhance the circulation and movement among subcenters and serve as a deviation route in case of internal congestion in Nairobi. The Radial corridor aims for the direct connection of the CBD to other subcenters. The central point of the Radial corridor is located at the Central station.

The Nairobi South Station SGR railway station took over the burden of intercity passengers and freights from June 2017.



**Figure 5-5 Central Station as Inner-City Gateway**

Source: MRTS plan (2012), NIU plan (2014)

### 5.1.4 Central Station as an Origin of Nairobi

In 1898, a railway engineer designed the town layout of Nairobi from the Central station, as the middle stopover station in Eastern African railway. Since the Central station and railway line were fixed, spatial division of Nairobi has occurred. To the north, the CBD is located whereas the Industrial area begins at southern area from NCS where the workshop/maintenance for the railway is located. The Eastern part NCS has been occupied by middle and low-income housing. The Western area from railway is characterised by low-mid density housing and administration buildings. These spatial divisions from the central station have produced a specific place image to the people.

### 5.1.5 Making CBD Stronger Through Linkage

In NIUPLAN, Nairobi has been divided into three areas, Central, East and West areas. The Central area is the Metropolitan area of urban activity core in Nairobi. The East is the Metropolitan growth area and includes the industrial area, JKIA and NSS as new economic catalysts for future development. The Western metropolitan area is an area of high environmental value and includes Gigiri and lower spring valley areas characterized by low density for high income residential area. This spatial division makes Nairobi a “patched and fragmented Metropolis”. This project aims to make actual linkage between the Metropolitan area and the growth area, through North and South linkage. It also intends to make practical connection between Eastlands and Upper hill by East and West linkage. It will make the CBD bigger and stronger as well as harmonize the social image of “patched metropolis”, Nairobi.



Figure 5-6 Making CBD Stronger by Linkage

### Examples of Best Practice: The Netherlands: Amsterdam Zuidas

Amsterdam Zuidas (literally ‘Southern Axis’) is a major development zone in Amsterdam. The district lies alongside a major national motorway, while the international station is in the heart of the district making Amsterdam Airport Schiphol to be within a few minutes’ reach by train. The combination of international commerce, a modern urban residential district and attractive public amenities of the highest quality creates a diverse and dynamic atmosphere in this new, sustainable city center. The total development area is 150ha (370acre).

### Program Diversity

Amsterdam Zuidas comprises various programs. Near the Zuidas station, the World trade center and multiple global branch offices like ABN Amro, Akzo Nobel, ING house, Accenture are located forming a new business center of Amsterdam. The mixed land use that includes other anchor programs like Rai convention center, Medical centrum and Vrije University are included in the project area making Zuidas a vibrant and active urban center. A rich environmental quality is enhanced by multiple public parks, with sports facilities. A housing area surrounds the project site making it a 24 hours’ city.

## Linkage

Zuidas has a grand plan linking the areas separated by the railway. Lowering the railway and making tunnel structure as “DOK” ensures the continuity of urban fabric between North and South. It creates a pedestrian friendly environment and direct access to the station. The Grand Pedestrian Mall concept creates a charming and attractive commercial street with sufficient public spaces.



Figure 5-7 Example of Amsterdam Zuidas, Netherlands

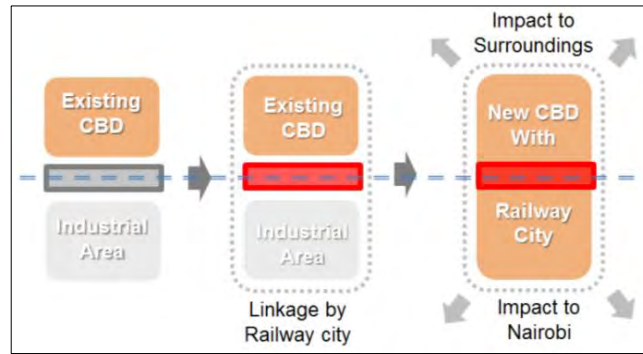
## 5.2 Competitive Strategy

Visioning is a tool for communication in which everybody could shares their dream based on a common goal. The Railway City project is an iconic project in Nairobi as well as nationally. It is suggest that the first cut ideas for sharing and discussing in future. Through multi party workshops, a consensus has been reached on the overall goal and picture.

The project is a development project aimed at amalgamating both public and private interests, domestically and internationally. The potential and strength of the site location and project contents is emphasised in visioning activities. This is the “driving force” for the project to be able to compete with other major development projects not only in Nairobi but also with other the projects in African cities such as Cairo and Johannesburg. In this regard, it is proposed that the competitive alignment focus on positioning of the project in a global and East African perspective with best examples. Competitive Strategy is prepared for value positioning and program division.

### 5.2.1 Nairobi Railway City as a “Linkage City”

The Railway station and the railway indicate a certain urban edge or “road end zone.” The “Linkage Concept” is highly considered in the concept framework. Firstly, the existing CBD and the industrial area could be linked by Railway city. It could provide impact to the surroundings as well as to the entire Nairobi.

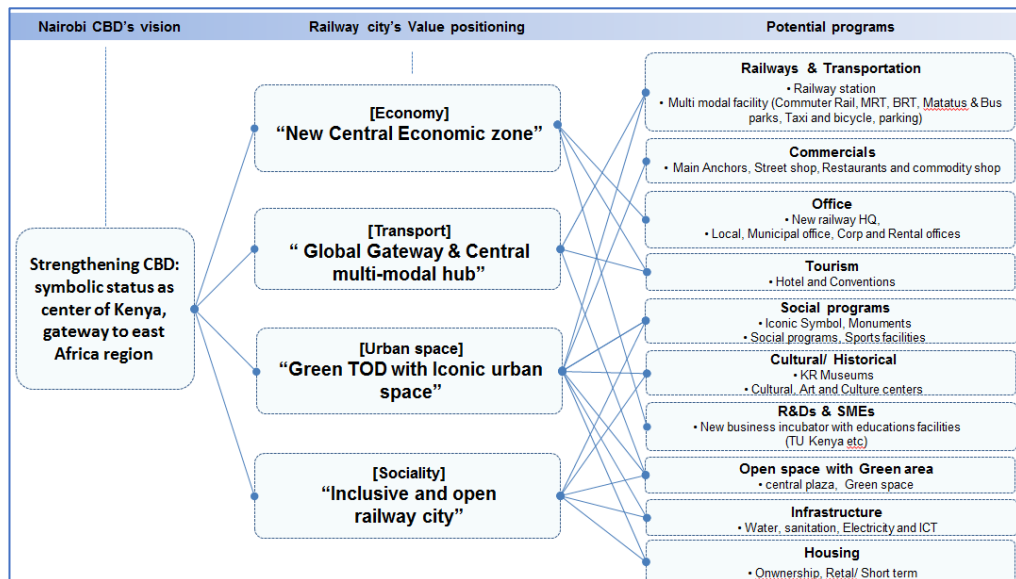


**Figure 5-8 Railway City as “Linkage City”**

The Linkage concept could be reflected into the spatial concept as well as in other various aspects. In regards to economic linkage there will be a new production space will link wheremulti modal linkage will be achieved. By this linkage concept of the Railway City, seamless continuity of separated areas and increased accesibility into the project site will be achieved.

### 5.2.2 Value positioning and programs

ToR addresses 13 groups of candidate programs of the project<sup>20</sup>. To comply with the CBD’s vision in NIUPLAN, it is suggested that a value positioning of each candidate programs. Proposed values are devided as 4 sectors, Economic, Transport, Urban space and Sociality, which is directly corresponded with NIUPLAN CBD’s vision<sup>21</sup>. Below are suggestions of targeted values and programs of the Plan.



**Figure 5-9 Value Positioning and Programs**

<sup>20</sup>Those are Train station, Intermodal Station facilities, Retail, Public institutions, Offices, Housing, Social references (iconic symbols, monuments etc.), Social institutions, Convention center, Hotels, Economic/ productive facilities, Green infrastructure.

<sup>21</sup>NIUPLAN addresses the Vision of CBD has four pillars. “Economy”, “Transport”, “Urban space” and “Environment”. (pp6-35 NIUPLAN II) To align this concept, the Consultant seeks to merge “Urban space” and “Environment” as “Urban space” and add new pillar as “Sociality”. It intends for linking diverse social footprint in neighboring area of Railway city.

### Economy: New Central Economic Zone

The Railway City could provide an affluent new working place for the 1<sup>st</sup> tier companies in Nairobi, Kenya but also East Africa’s major global companies. The new central station will act as iconic landmark for the 1<sup>st</sup> phase of development. R&Ds and SMEs are also prominent programs to be included in Railway city. The adjacent Technical University Kenya and/or the National industrial training authority have great potential to be positioned as future knowledge hubs. The Tourism industry could be expanded by developing a new five star grade hotel with a multi-use convention center. The figure below shows Amsterdam Zuidas station area development.



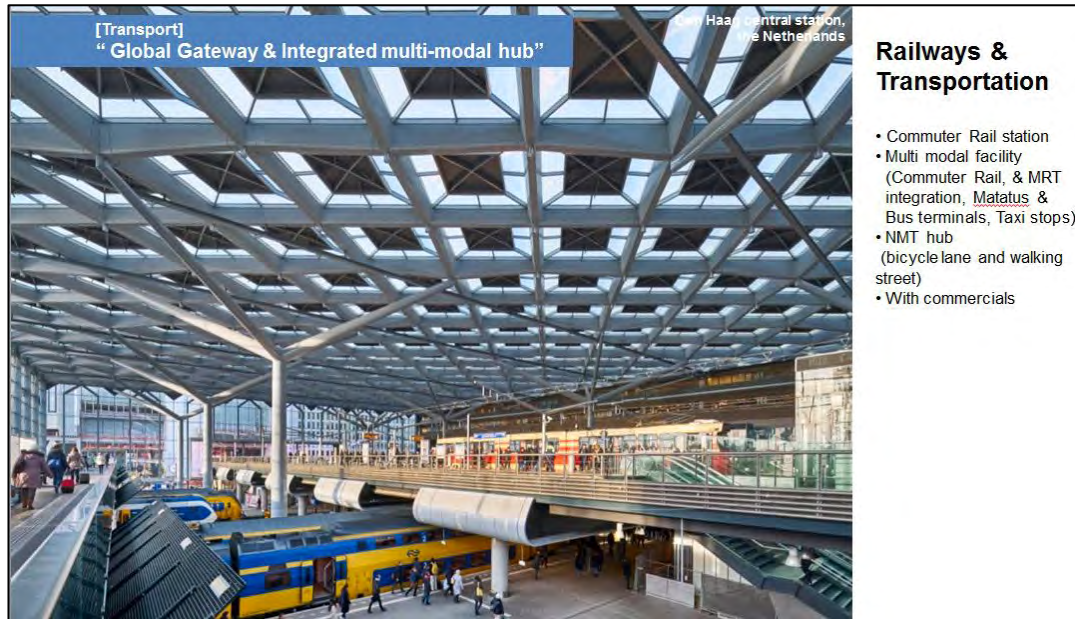
Figure 5-10 Example: Amsterdam Zuidas

Source: Google images

### Transport: Global Gateway & Integrated Multi-Modal Hub

The central station area should promote seamless inter-modal connection for convenient usage. According to the SGR plan, from Nairobi South Station (herein after NSS), international arrivals from JKIA could access the NCS by commuter train. Direct transferring to any BRT lines, inter city bus terminal, or local taxi service will be realized through short and “walkable” distances.

NMT such as cycling or walking should be emphasized through physical urban planning. By implementing a concrete and sound multi modal platform, the project could function as a new central modal hub in CBD area. The figure below illustrates Den Haag central station in the Netherlands as multi modal platform structure. It illustrates how passengers have convenience of transfer from one mode to within one structure.



**Figure 5-11 Example: Den Haag Central Station**

Source: Google images

### Urban Space: Green TOD with Iconic Urban Space

TOD concept is the basic planning scheme for a sustainable urban development of the project. Around the station, high density mixed use urban programs, e.g. working, commercial and housing, will be realized. Green space with pedestrian networks will be intertwined with the TOD plan structure. ILUT analysis has been launched with an aim to develop 34 commuter rail stations in surrounding areas with high population density for the purpose of reducing the daily traffic volume communiting to the Nairobi central area. A similar planning methodology could be utilized in The Railway City project but it needs to be treated in a more sophisticated manner due to the diverse characteristics of the CBD and conditions of the neighboring area.

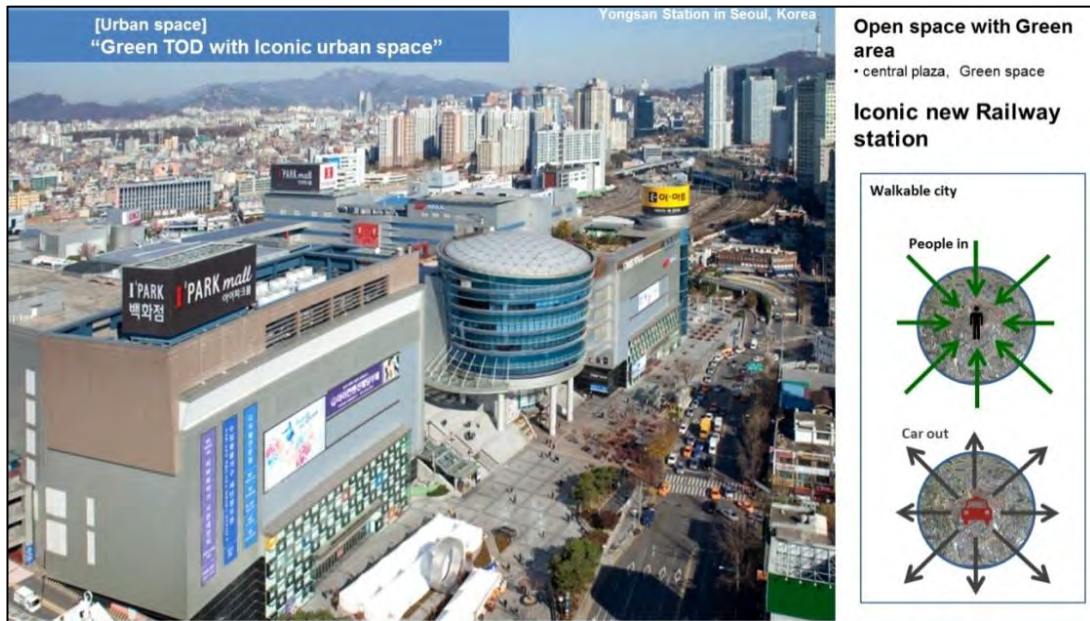
The currnet urban landscape of CBD, has some remarkable architecture such as the KICC (Kenya International Conferenct Center), which plays a crucial role as the “visible face” for the Kenyan national identity<sup>22</sup>. The building is a big component in the unique urban landscape of Nairobi CBD. However, in terms of urban planning perspective, the spatial division of north CBD and south industrial area can be attributed to the railway facilities. The Pedestrian way has been blocked and traffic flow between north and south is hindered. Consequently, the railway station and the railway itself represents a certain “urban edge”, which splits the entire urban fabric in Nairobi.

Therefore The Railway City project should improve connection or linkage of both sides in an iconic waynot only for the architecture scale but also from the urban planning point of view.

Yongsan station in Seoul, Korea is a worthwhile example for the TOD and the iconic redevelopment of the station area. Old yongsan station had represented a symbol of decayed urban landscape in central Seoul. The rehabilitation plan of station and the surrounding area was prepared and implemented. Firstly, the new staion building with a massive shopping mall was realized as the base of the business structure with investments from Korean Rail with

<sup>22</sup>“The buildings were constructed following the country’s independence and established the major public institutions of the young nation, such as ministries, an international conference center, the university, and the main hospital, among others.” Sourced from “Nairobi Kenya: Migration shaping the city, Lars Muller publishers, 2014.

and private developers in PPP model. The large numbers of new buildings such as hotels and high-rise apartments changed the existing urban landscape and place image.



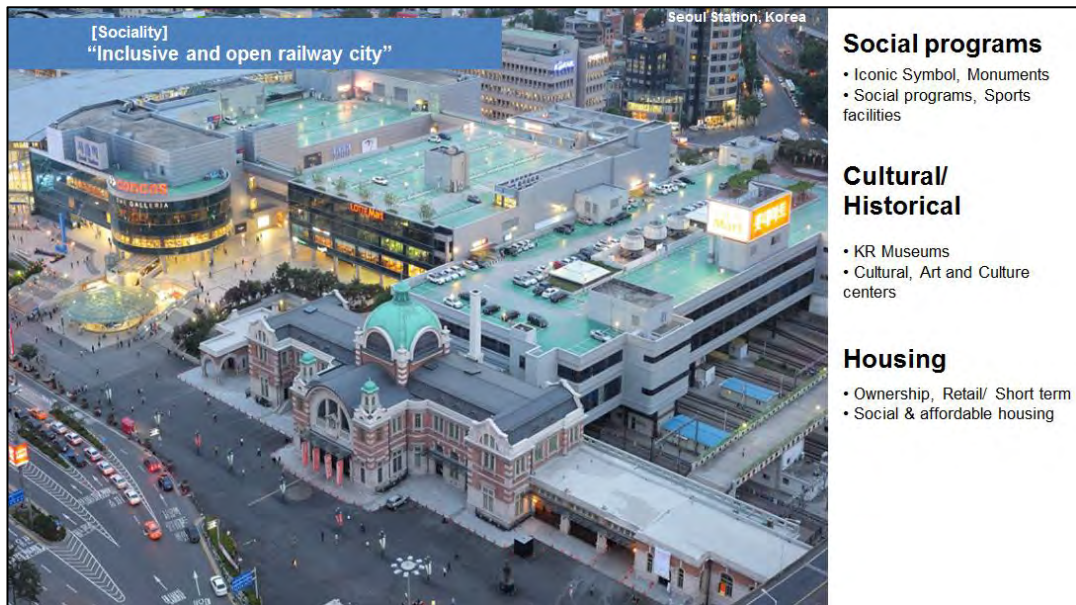
**Figure 5-12 Example: Yongsan Station, Seoul**

Source: Google images

### **Sociality -Inclusive and Open Railway City**

The Railway City “linkage” goal should go beyond the physical meaning. The project site is adjacent to areas of different social classes. The CBD normally accommodates businessmen or bureaucrats in offices and government buildings. In the south, industrial workers and street vendors occupy the land. The Railway pension scheme area is a low-income residential area. The Eastern side of railway city borders the market area, which is crowded with dealers, brokers and a floating population of market users. The project should provide the “open structure” for reinforcing public accessibility and permeability.

Physical structures like open spaces and public parks could be suggested to create this permeability. In addition, various urban programs such as affordable housing for low-mid income people or students – for the closely located - Technical University of Kenya -, cultural programs for Nairobi citizens like KR museum, Art center, etc. could be developed to create an inclusive railway city. Fortunately, the existing KR museum is rich in historical resources, though they are poorly maintained. A small artist lounge and workshop area is currently located here. These cultural and historical resources could be rehabilitated by the project, reinforcing the social aspects of the project. The Seoul station exemplifies historical usage of an old railway station building. The former Seoul railway station was closed in 2004 as a result of the new station building hosting the new express railway system. Thereafter, in the name of “Cultural Seoul 284”, the old station building reopened in 2011 as a cultural complex to present a wide range of cultural resources accessible to the citizen. The main cultural programs are exhibition, performance and education.



**Figure 5-13 Example: Seoul Station**

Source: Google images

### 5.2.3 Program Division

The project is a real estate development project. It requires sophisticated investment planning to ensure feasible economic scenarios for the project owner. It is suggested that proposed programs to be divided as saleable, investment and semi-investment program. Saleable programs are housing, commercial and office buildings which can bring returns through sale or lease contracts with the private investors. Investment programs are any infrastructure utilities, transportation, and urban parks which shall require public investment by NCCG or GoK. Any social programs or cultural/ historical program like museum, cultural center, educational program needs a designated operator, and these could be other “catalysts” of development. It is suggested that they be referred to as “Semi-investment program.”

The implementation of the above 3 programs could be managed by the project owner(KR) to ensure financial stability. Initial investment in public programs will create benefits for the private developer, then the saleable program implementation could happen thereafter providing actual financial return to the project owner. The semi-investment program operator may request for a particular piece of land from the project owner, serving as an incentive that would ensure success of the development.

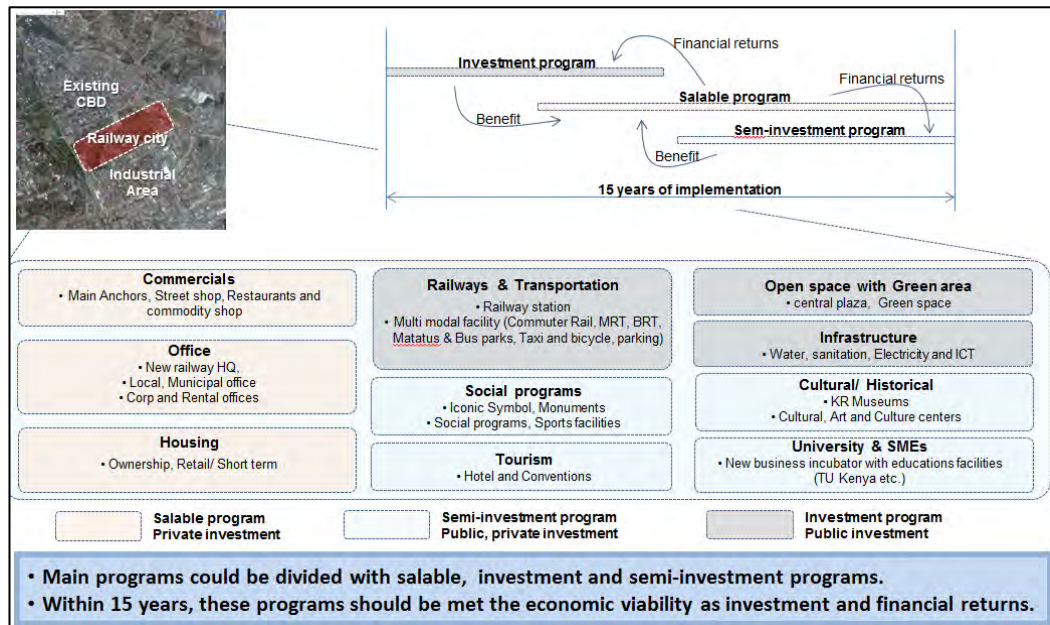


Figure 5-14 Program Division in the Plan

### 5.3 Vision

By separate session of two visioning workshops (19<sup>th</sup> and 20<sup>th</sup> Feb 2018), Visioning process was taken by following processes.

- Capturing expectations
- Value promoting
- Proposing value statement
- Value merge
- Final statement setting : Nairobi Railway City as “Sustainable, Integrated and Iconic city for All”

#### 5.3.1 Capturing Expectations

Each group discussions shared their initial expectations. The summaries are as follows:

- Economy
  - Safety and Security
  - Look beyond the next 50 years
  - Able to generate financing for project programs
  - Reflect Nairobi and Kenya with Iconic world class standards
  - Promote feeling of openness and friendliness –Kenya factor
  - Global, Gateway city
- Social
  - Accessible City physically, socially and financially accessible

- Inter-generational equity and safety
- Security of tenure-cross generational,
- Prevention of informal systems of ownership and access to land
  
- Urban design
  - World class iconic multi modal city
  - Green/Clean energy city,
  - Healthy living environment
  - Efficient use of water resources
  - TOD with iconic design
  - Preservation of Heritage
  
- Transportation
  - Integrated, quality, affordable, and socially responsive amenities and services for all
  - Wide, safe and interconnected NMT, walkways and cycle way linked to economic activities
  - Multi-Modal, Safe and clean and punctual transport system
  - linkages to major city arteries
  
- Governance
  - Public Participation and engagement
  - Simple system of governance capable of dealing with expected complexities

### 5.3.2 Value Promoting

Nine main values were promoted from the group discussions to plenary discussions. Those values are:

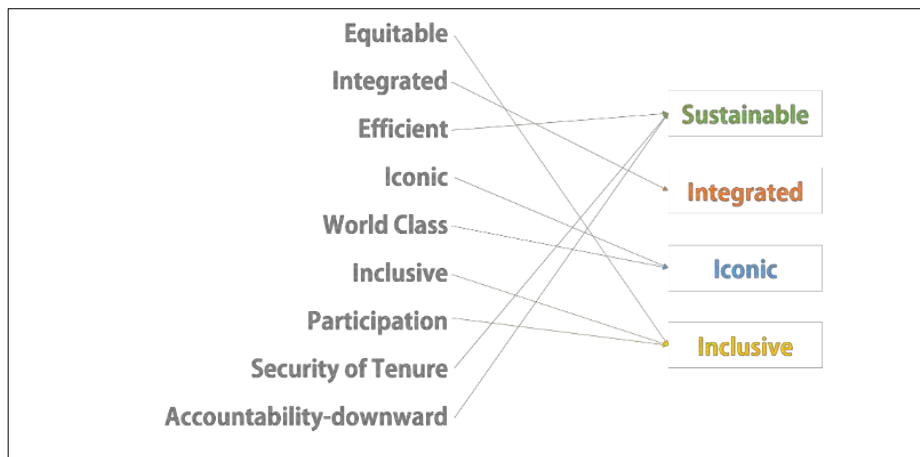
- Equitable
- Integrated
- Efficient
- Iconic
- World Class
- Inclusive
- Participation
- Security of Tenure
- Accountability

### 5.3.3 Proposed Vision Statement

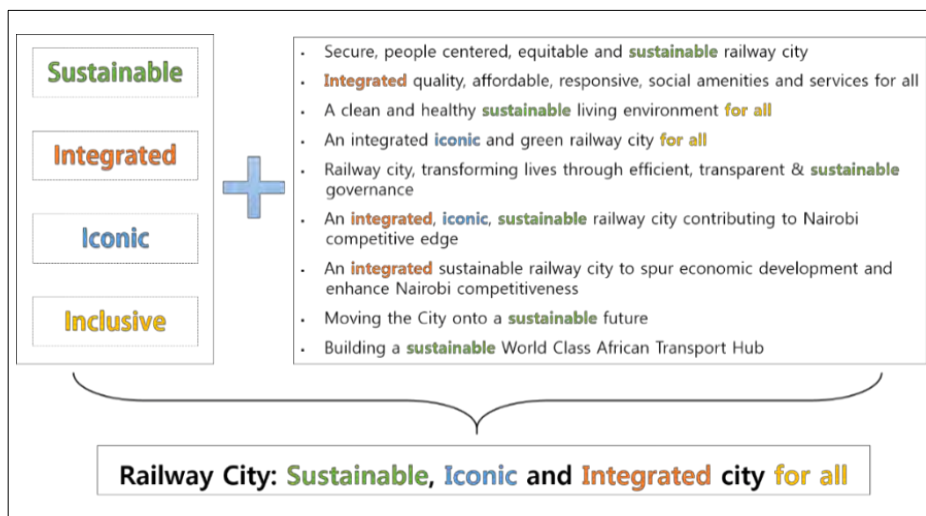
Nine vision statements were to be further discussed in the plenary discussion. These were:

- Secure, people-centred, equitable and sustainable railway city
- Integrated quality affordable, responsive, social amenities and services for all
- A clean and healthy sustainable living environment for all
- An integrated iconic and green railway city for all.
- Railway city, transforming lives through efficient, transparent & sustainable governance
- An integrated iconic sustainable railway city contributing to Nairobi
- Competitive edge
- An integrated sustainable railway city to spur economic development and enhance Nairobi competitiveness
- Moving the city onto a sustainable future
- Building a sustainable world class African transport hub

### 5.3.4 Value Merge

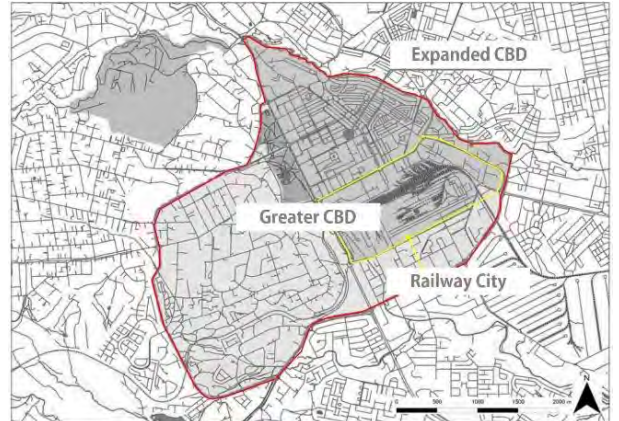


### 5.3.5 Final Statement Setting



## 5.4 Concepts for the Greater CBD

This sub-chapter expresses the strategical positioning of the Railway City in terms of the Greater CBD perspective. It could be functioned as territorial framework for the next urban planning. The Railway City is located at the center of the Greater CBD of the future Nairobi as indicated in the NIUPLAN. In order to strengthen the CBD function, the surrounding area of CBD including Upper hill and areas along Lusaka Road should be consolidated into the existing CBD to make a greater and stronger CBD under the comprehensive approach. The figure below shows that the Railway City will be located in the middle of the Greater CBD.



**Figure 5-15 Railway City in the Greater CBD**

Source: NIUPLAN part II

The Railway City can contribute to the future Nairobi Greater CBD through 3 linkages, namely, Green linkage, Urban function linkage and Missing connection linkage.

### 5.4.1 Linkage of Green

The eco-green structure will aim at using new green spaces to connect the Ngong River to the Nairobi River area. The urban development axis will be kept on the urban characteristics of the surrounding area in developing a close ranged perspective as well as the long-ranged Nairobi's urban development axis.



**Figure 5-16 Linkage of Green in the Greater CBD**

### 5.4.2 Linkage of Urban Function

The urban development axis around the Railway City will be positioned after analyzing the surrounding area in the context of wider Nairobi’s urban development axis. The project site is located in a central position of Nairobi within a heterogeneous landscape among the existing CBD, commercial center, industrial area and green spaces. The neighboring areas around The Railway City could be classified into clusters, such as “New CBD Cluster” with existing CBD and Upper hill, “Urban Service Cluster” with existing urban center, “New Industrial Cluster” with the industrial areas.

The development axes can be as follows;

- North axis for the “New Economic Axis”,
- South axis for the “New Industrial Axis” towards JKIA which could be positioned as a new industrial area along the route towards the international airport.
- To the east and west of the project site, residential areas exist. Therefore, the Railway City possesses the opportunity of providing new residential houses. It can be named “New Life –Cultural Axis”, which is parallel to the eco-green structure in the project site as above mentioned.

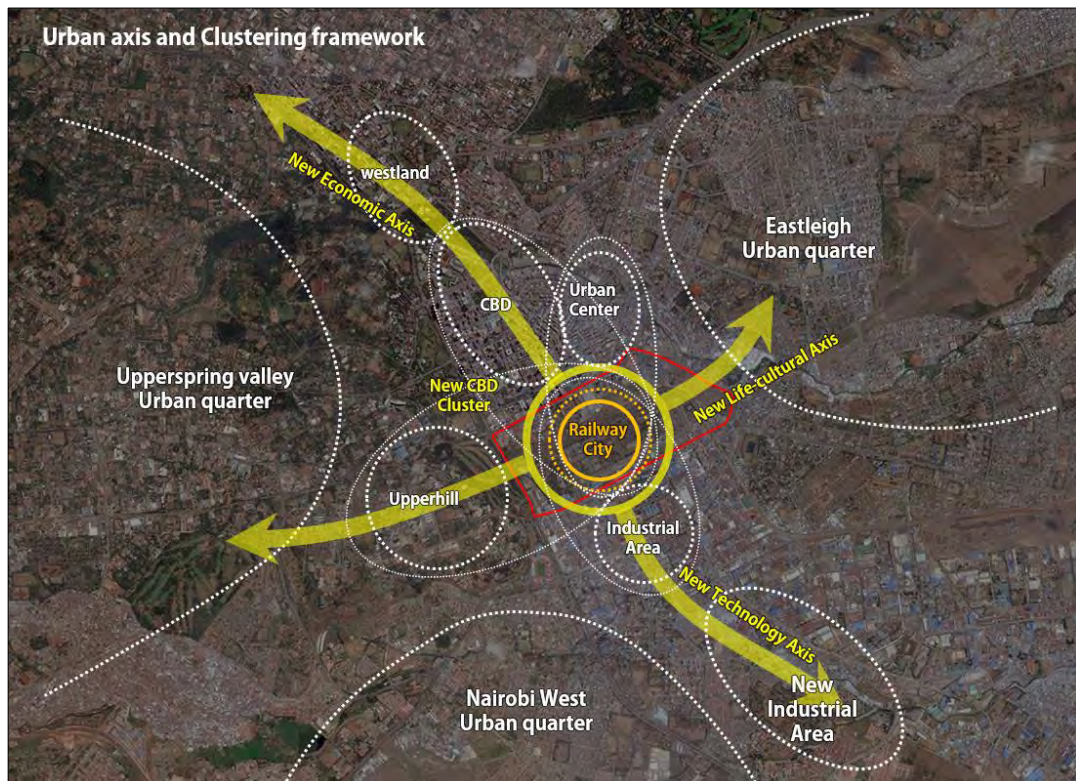


Figure 5-17 Linkage of Urban Function in the Greater CBD

### 5.4.3 Linkage of Missing Connection: Road Network

The transportation network will be considered while planning the road network, which will link the spatial structure of the northern CBD to the southern industrial area. Some priority roads in The Railway City will be chosen and suggested as main arterial roads in relation to projects like the Green Mall.

In particular, two main arterial roads in the Railway City could connect the missing links between the separated areas around the railway area. Enterprise road could be extended to the north at an arterial level resulting in reduced traffic volume on Uhuru Highway. Commercial road could also link Langata road with Jogoo Road which are the major east-west arterial roads in the Nairobi Metropolitan area resulting in a reduction in the traffic volume on Haile Selassie Avenue.

The MRT networks are also related to other transportation projects like Loop Line by JICA, so any spatial alignment of the network of MRT will be treated spatially. BRT lines #1, 2, 3 and 6 are supposed to pass along the Railway City boundary. These could be integrated with roads and pedestrian ways in the future plans.



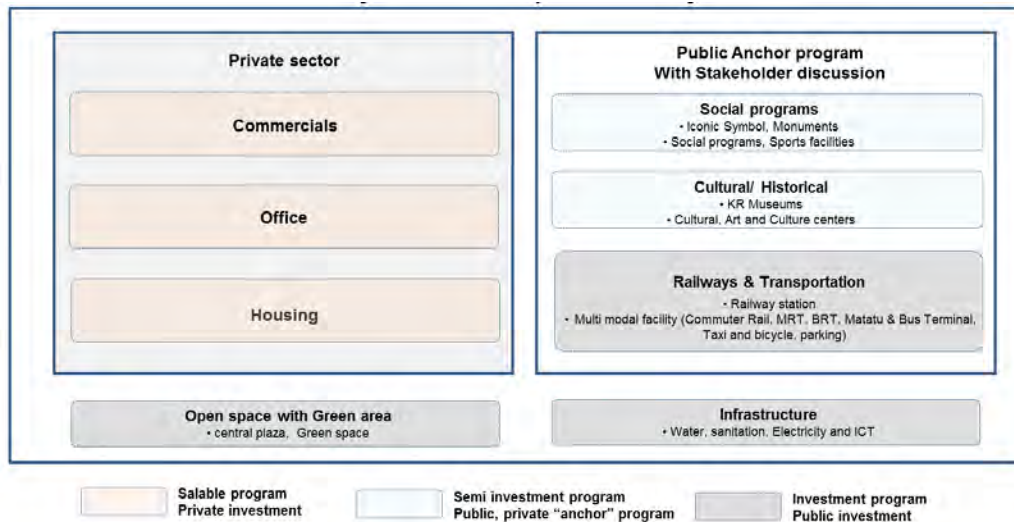
Figure 5-18 Linkage of Missing Connection in the Greater CBD

## 5.5 Planning Scenarios

### 5.5.1 Planning Indicator

The planning indicator aims to grasp the tentative results of the urban program quantity. It indicates the amount of total space required for each program such as housing, office, etc. Primarily, urban planning guidelines and other examples are considered. To verify the process, outcomes from the private sector real estate analysis was applied.

Broadly, the project has three different programs. One program involves saleable properties, i.e., commercial, office and housing, which can be purchased by the private sector. The second one is the public investment program, e.g., carriage and pedestrian ways, green open spaces and other essential infrastructures. Subsequently, there is the semi-investment programs which functions as public anchors, i.e., social amenities, cultural programs and railways transportation facilities. These programs could be achieved through land segmentation.



**Figure 5-19 Segmentation of the Various programs in the Plan**

The Plan should ensure that the development provides enough profit for the investors while securing the maximum amount of saleable land. However, securing appropriate amount of land for public purpose green areas and infrastructure is also highly critical in achieving a quality urban environment. It is therefore important to strike a balance between the benefits of the public and the private investors.

Tentatively, the public sector is allocated 50%, which is composed of 15% of carriage way with sidewalks, 7% for the railway (10ha-8 tracks width 100m in platform area), 15% for the green areas, 3% for utilities, and 10% for any public anchor programs. The ratio of the roads and green areas are allocated from urban planning guidelines and best practices of master planning of similar railway station area development projects. Provisions of these facilities will be included in the non-saleable public sector program that comprises 88ha of the entire site area of 176ha.

The private sector is broadly divided into 2 programs, one is for commercial- including retail, office, industrial and mixed-use- and the other is housing. For quality living environment, a certain extent of independent housing block should be prepared, however a mixed-use development is highly recommended within the site.

Regarding the housing population, an affordable density for urban vitality, 170 people/ha is geared into the site as gross density. Thereby, tentative number is 30,000 persons. 8.5% of the site, 15ha is allocated by a pure residential district with net density as 800 people/ha. Accordingly, 12,000 persons is accommodated in the single use housing area.

To achieve the urban liveliness in the new CBD as planning area, diverse mixed-use ratio is applied in the Plan by allocating three programs as housing, office and commercial one. By behavior patterns of each program, housing ensures the night time security and liveliness and in daytime office program does.

### 5.5.2 Schematic Layout as Layering Approach

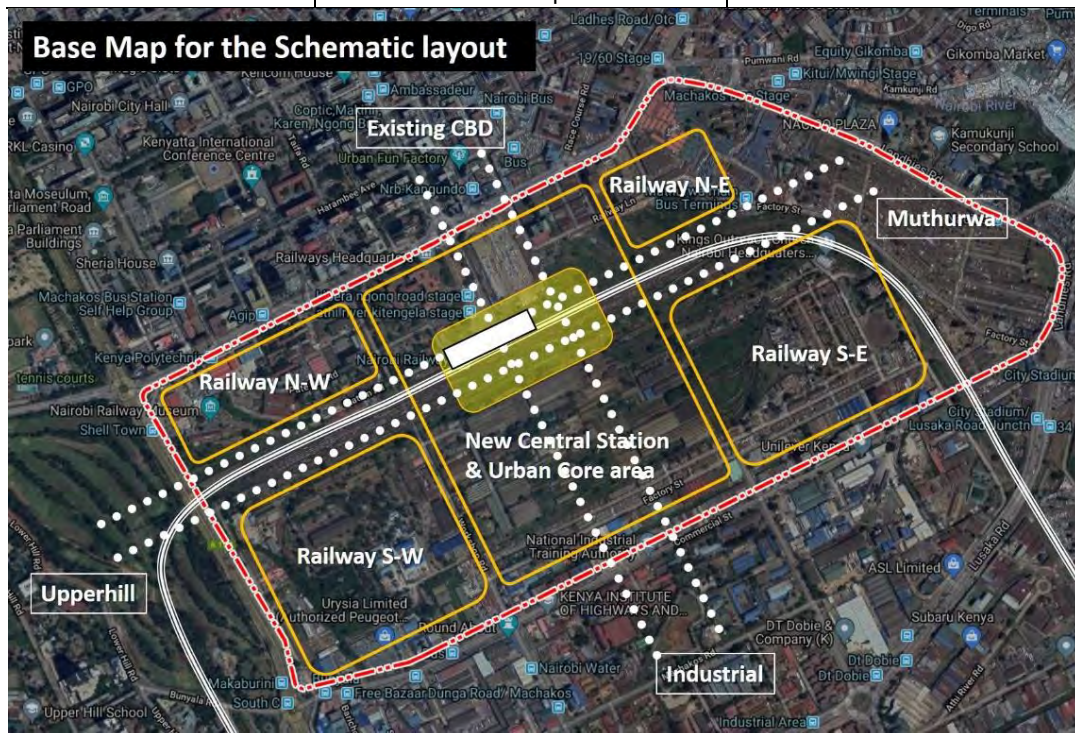
Schematic layout is conducted by layering approach of program and network layers. Program layer indicates a certain spatial distribution of a program segmented by private program like commercial, office, MICE, and housing and public program like social facilities. Network layer is composed of road, NMT and green network.<sup>23</sup>

#### Base Map of Schematic Layout

Before the layering approach, the Base map for the schematic layout is indicated in the figure below. The site is classified into 5 zones, which could be differentiated by the railway track. The zones are 1) New Central station and Urban core area, 2) Railway North-West, 3) Railway North East, 4) Railway South-West, and Railway South-East. Every zone has different urban atmospheres, urban functions and surroundings, so that it was easily understandable to the workshop participants.

**Table 5-1 Brief Zone Division in the Schematic Layout**

Zone	Present Condition	Surroundings
New Central station and urban core area	Old railway station and marshalling yard	Moi and Tom Boya Ave. Existing CBD, industrial area
Railway North-West	Nairobi Railway Museum and abandoned tracks	TUK and Government press, etc.
Railway North East	Wakulima Market, old coffee mill buildings	Muthurwa, Eastern CBD
Railway South-West	Ngong River, area, marshalling yard, Car shop	Golf course, southern industrial plot
Railway South-East	Marshalling yard, Southern industrial plot	Muthurwa Market, Eastlands



**Figure 5-20 Base Map for the Schematic Layout**

<sup>23</sup> This Schematic layout is the output of Thematic workshop on 9 March 2018.

## Program Layer: Commercial, Office, MICE and Housing

This layer discusses private programs. These are commercial, office, MICE and Housing sector. Spatial placement of each program is tentatively done in reference to the real estate analysis.

### 1) Retail as Commercial

The commercial sector is key for the vitality of project. Retails, shopping centers and Dining areas such as restaurants provide an “urban magnet” in the area. Well meshed commercial networks and attractive commercial anchors are necessary to overcome the challenges of current real estate conditions such as oversupply. As the center of TOD, the commercial zone is essentially located along the station area.

- Commercial areas are functioned as the urban center, mixed with other functions on the ground floor and in other parts of the building
- Railway front area (Wakulima, etc.) needs to be rehabilitated.
- A street mall could be a vibrant urban commercial street with the continuity of existing CBD.



**Figure 5-21 Commercial Program in the Schematic Layout**

### 2) Office

Office areas are an important part of the spatial planning as they will provide revenue for the project. According to the real estate analysis, Grade-A office spaces will be in demand in the future market conditions. Currently, mixed use office developments are preferred in the market. According to the workshop results and analysis, the following directions were shared;

- Areas near Upper hill are appropriate for future office development
- South industrial area could be developed as future SME, and R&D function.
- Near TUK another expansion of office space is possible.
- New Kenya railway headquarter office is expected on the site.

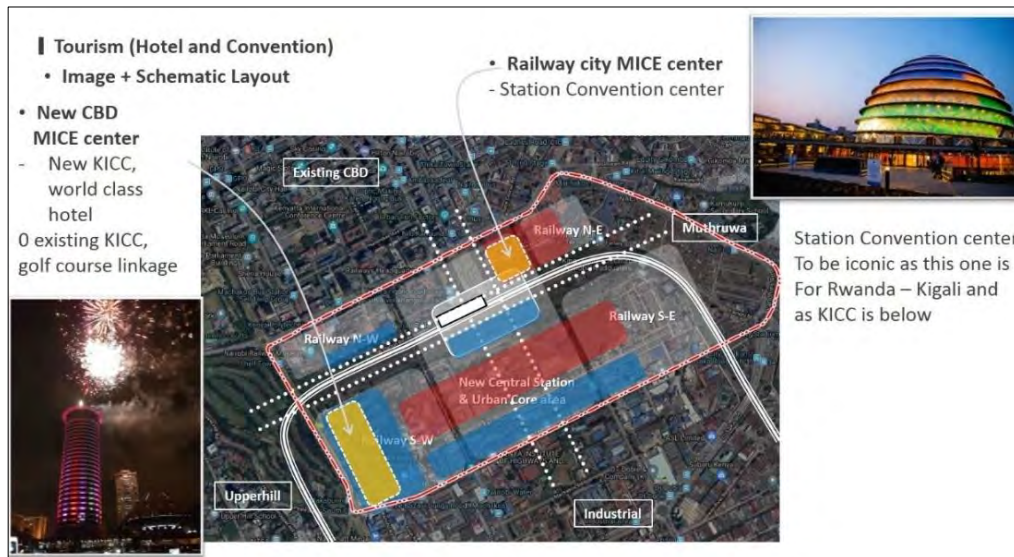


**Figure 5-22 Office Program in the Schematic Layout**

**3) MICE**

In a direct linkage with the JKIA through a dedicated transport system, it is highly expected that the tourism industry will prosper<sup>24</sup>. The project site will function as the first urban gateway to the center of Nairobi. In regards to the future prosperity of tourism, the real estate analysis and workshop comments locate the MICE as follows;

- Near the office area next to Uhuru highway; global MICE venue can be positioned.
- Near the Railway station; suitable area for meeting and convention.
- Placing MICE in the Eastern side also could be considered.



**Figure 5-23 MICE Program in the Schematic Layout**

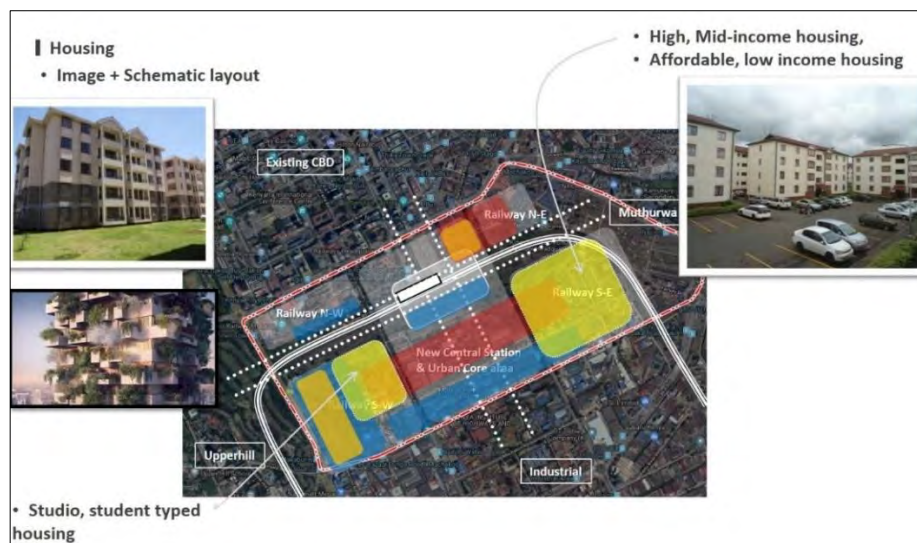
<sup>24</sup>KR has already launched the shuttle service between NSS and NCS. In addition, Airport City project (NaMSIP) is underway to investigate direct connection from JKIA and NSS by rail.

#### 4) Housing

Housing could be segmented into 3 categories, from High end, Mid and affordable/social housing. The Eastern area is relatively more appropriate for housing rather than the West, due to the distance from the main road (Uhuru Highway) and future land value estimation- land value is relatively higher in the central and western area because of the proximity to the Station and main road. Another important aspect of housing is that it can provide night time activity to ensure 24-hour urban environment. In this regard, the western side also needs to provide a certain amount of housing.

Based on the workshop comments and analysis results, the Eastern and Western areas should have different approaches.

- Eastern: Housing types for all social classes could be accommodated. An International school would be a good attraction for the expatriates.
- Western: High end housing with student/ temporary residence with proximity to the TUK



**Figure 5-24 Housing Program in the Schematic Layout**

#### Program Layer: Social Programs

Social programs shall play an essential function in the project, in order to balance the needs of private investment and public welfare. Inclusiveness is the core value for this program. The considered facilities are health care (with vulnerable care), education, sports, and culture programs.

##### 1) Health Care

Main hospitals are mainly located in the western part of the CBD as compared to the eastern part. There are three health facilities within the project area. These are:

- Ngairi,
- Clinix, and
- Bliss health care.

Most of the low-income population in the Eastlands area are referred to the Kenyatta National Hospital that is miles away and overcrowded. Ngairi health care center could therefore be upgraded to a level 5 hospital. This could be done through private partnership with GoK so that patients can be referred to it. TUK is interested in teaming up with Nairobi metro and NCCG. It can also work as a facility for "Medical Tourism" and to cater for high-end clients.

In addition, the thematic group workshop highlighted the nature of challenges and problems faced in Eastlands area, indicating that the hospital should have a rehabilitation center for drug and substance abuse and alcoholism victims. In addition, the hospital should have a small private and confidential Gender Based Violence rescue center.

The location of the hospital is proposed to be in the Eastern area.

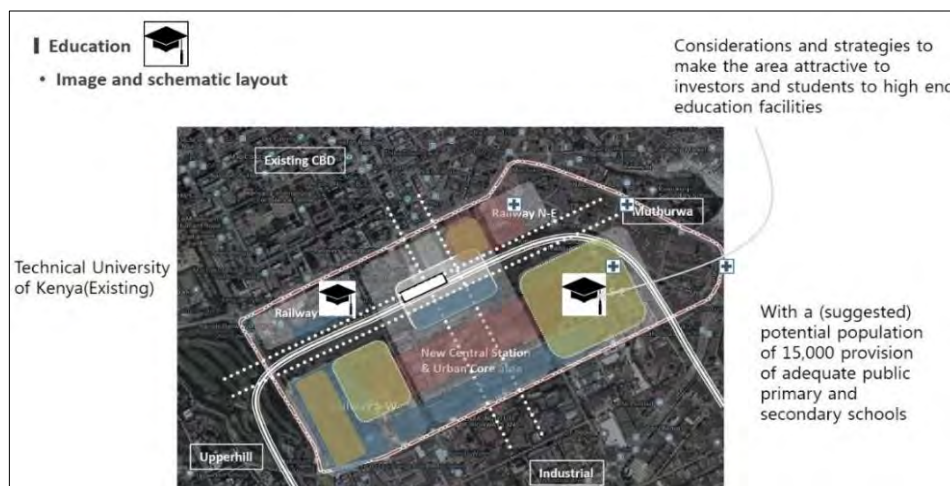


**Figure 5-25 Health Care Program in the Schematic Layout**

## 2) Education

Education facilities are very important function of residential and even expat settlements. Facilities such as an international school can be positioned as a strong anchor for the development. Planning population for the residence is estimated at 27,047 peoples hence the mandatory demand for a school also shall be fulfilled.

In the Thematic group workshop, it was projected that there would be a big need for primary level education facilities in consideration of the anticipated increase in residential areas on the site. The Plan shall integrate the needs of the TUK which could be accommodated in the commercial development. Location of the school on the Eastern area is recommended due to the proximity to the residential area.



**Figure 5-26 Education Program in the Schematic Layout**

### 3) Sports

Sports facilities for accommodating both outdoor and indoor sports type are important. The eastern part is well suited for sports to serve the residential area. Location in the western part could complement the existing golf course as a sport area for the MICE functions.

During the thematic group workshop, possibility of linking Nyayo and the city stadiums was well received, as it would provide a good opportunity for diverse urban activities. Playgrounds near residential areas will be easily accessible for the users. The public spaces will be designed to be multi-use to allow diverse sports and recreation activities.

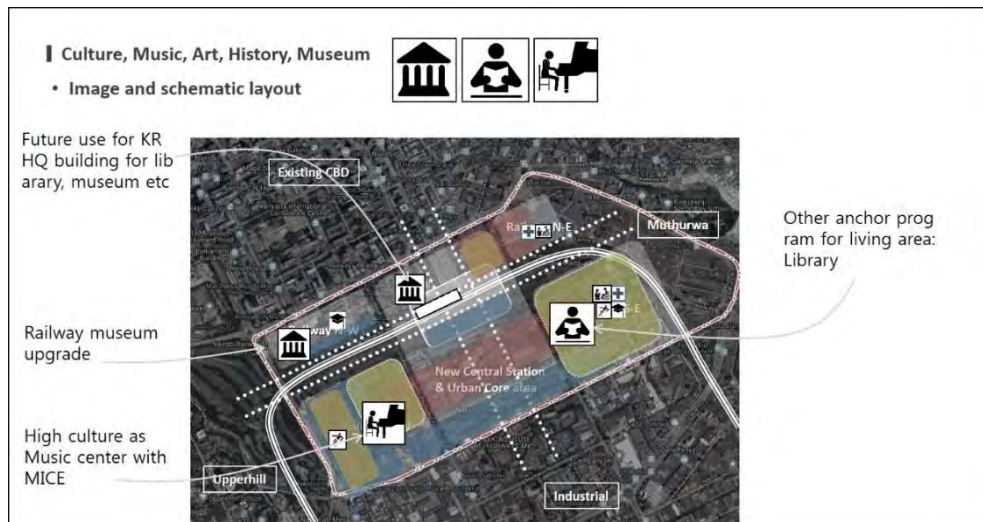


**Figure 5-27 Sports Program in the Schematic Layout**

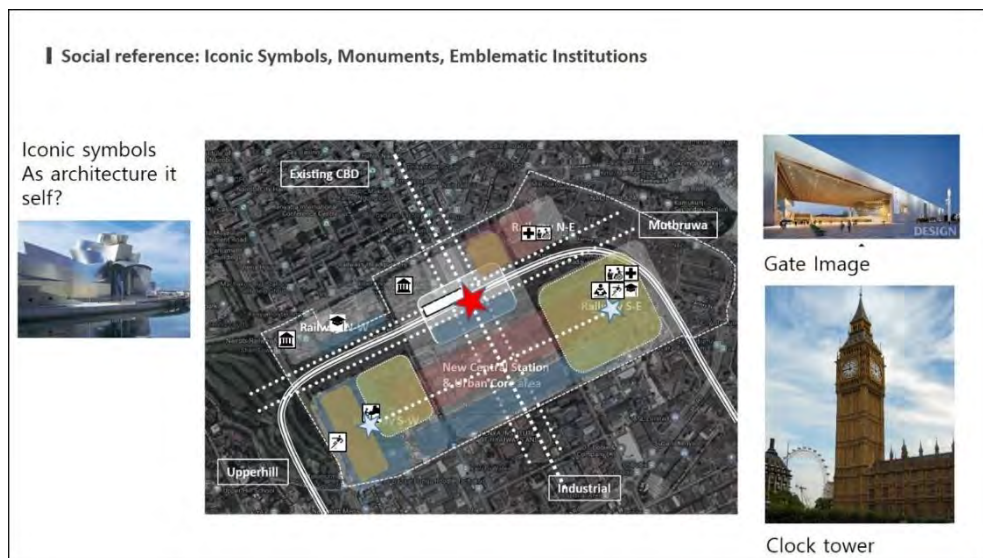
### 4) Culture, Music, Art, History, Museum

The first consideration is how to utilize the existing cultural asset. The Railway museum and the old railway station building could be rehabilitated to showcase the area as the origin of Nairobi. Hence, the existing Kenya Railways headquarters building can become a new cultural center in the central area of CBD. A Public library, a civic center, and other performance and exhibition halls could be accommodated within a rich architectural heritage atmosphere. In addition to the MICE function, high-end cultural facilities like Nairobi orchestra can be very promising.

During the thematic group workshop, monuments or landmarks that showcase African culture or the history of Nairobi were considered key for preservation. The location of the museum is suggested to be accessible from the MICE facilities, with links to KICC and the Kenya National Theatre.



**Figure 5-28 Cultural Program in the Schematic Layout**



**Figure 5-29 Monuments Program in the Schematic Layout**

### 5) Formalizing the Informal Traders

The issue of informal traders commonly referred to as the “Hawkers” was raised in the Thematic group workshop. Their key trading areas are along Ladhies Road, along Moi Avenue, along Haile Selassie road, at the railway bus station and also along workshop road area.

Suggested considerations to formalize their presence were as follows;

- Provision of small shops and kiosks along walkways and
- Temporary market in the public square.

The Plan recommends that they be accommodated along Commercial Street and at the public open space.

## Network layer: Urban Space-Green Structure

Green structure with open space is the back bone of the recreational spaces in the planning area. This will ensure the connectivity of existing natural assets like Ngong river basin and Uhuru park. Within a 2 km radius map, the existing green network in the CBD is as weak as there are no open spaces between Uhuru park and Nairobi river. According to the 3 concepts for the Greater CBD, green linkage could be achieved by the Plan along the railway track.

From the planning perspective, segmentation of green space will as outline below.

- **Station Square:** Located in front of the new central station, an ideal place for an urban square that can be utilized for diverse functions such as meetings, waiting and temporary commercial uses.
- **Ngong River Area:** The current water quality is not good but, considering future improvements of the water conditions<sup>25</sup>, Ngong river area has a strong potential of being a nature-oriented place and represent the memory of “cool water”. Combined with dining streets and shops, it could be developed into a charming place in The Railway City.
- **Community Green:** Located near the residential blocks and educational facilities to provide these areas with public green places.
- **Railway Green:** Along the railway track, the two sides having a green buffer space, which could be linear green network in CBD.
- **Linkage Green:** Green nodes in the site could be connected and linked linearly combined with pedestrian streets.

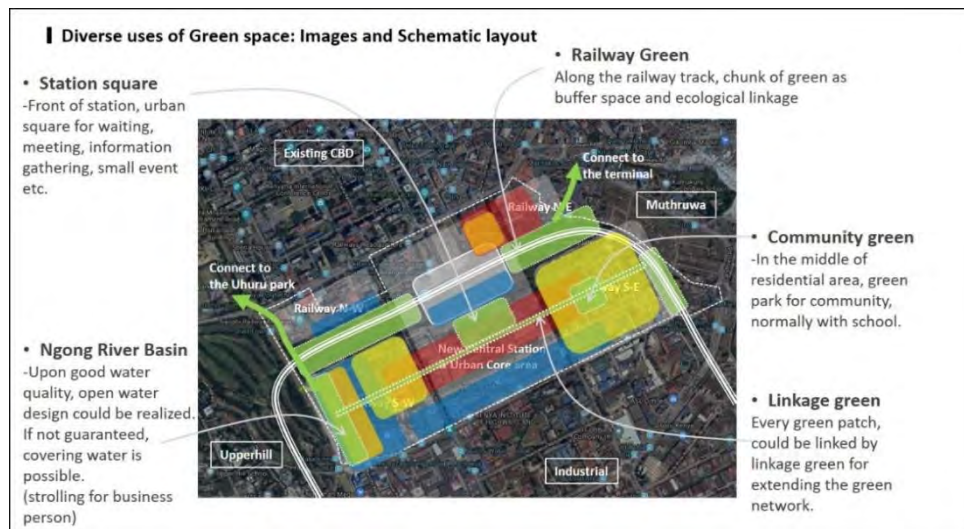


Figure 5-30 Green Space Program in the Schematic Layout

<sup>25</sup>The Consultant heard an anecdote that NCCG has deep interest in revitalizing the entire Nairobi open water quality by “sewage improvement masterplan”

## Network Layer: Road, NMT

This layer focuses on the physical planning direction in relation to the transport network urban function.

### 1) Road

Three roads will be enhanced in the site. Workshop road extension to Haile Selassie avenue. Enterprise road will also be extended to Haile Selassie with a new road in the middle to accommodate the traffic volume inside the planning area as illustrated in the figure below.

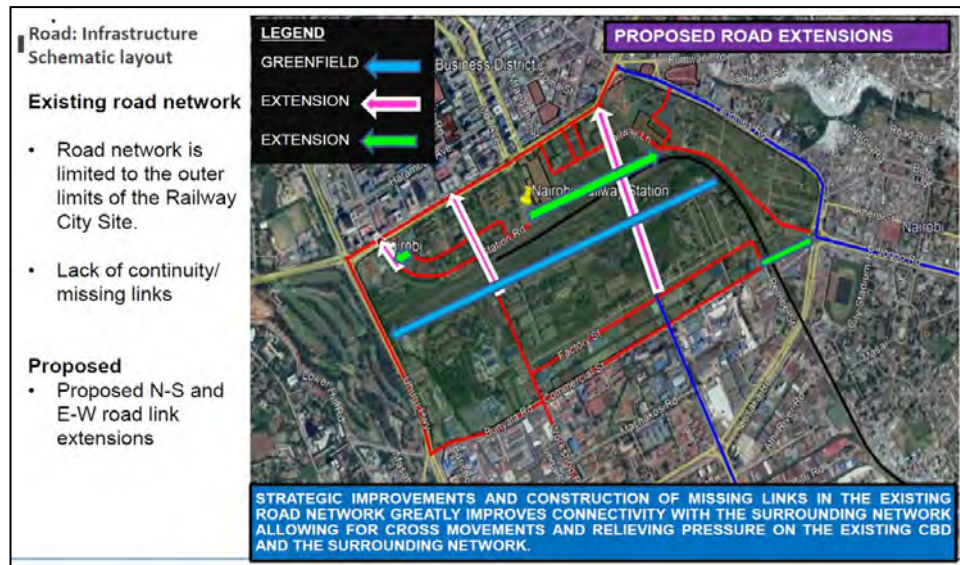


Figure 5-31 Schematic Road Network

### 2) Pedestrian Way

The existing CBD's future pedestrian network will be based on the Priority Pedestrian Walkways by NCCG. This schematic layout of future pedestrian way could be integrated and expanded into the planning area, as illustrated in the figure below. There are five (5) new axis suggested by the plan.

- Uhuru park – Site - Machakos market
- Uhuru park - Site - city stadium
- Ngong river - Lusaka road
- Workshop road extention - Lusaka road
- Moi avenue - site - Lusaka road

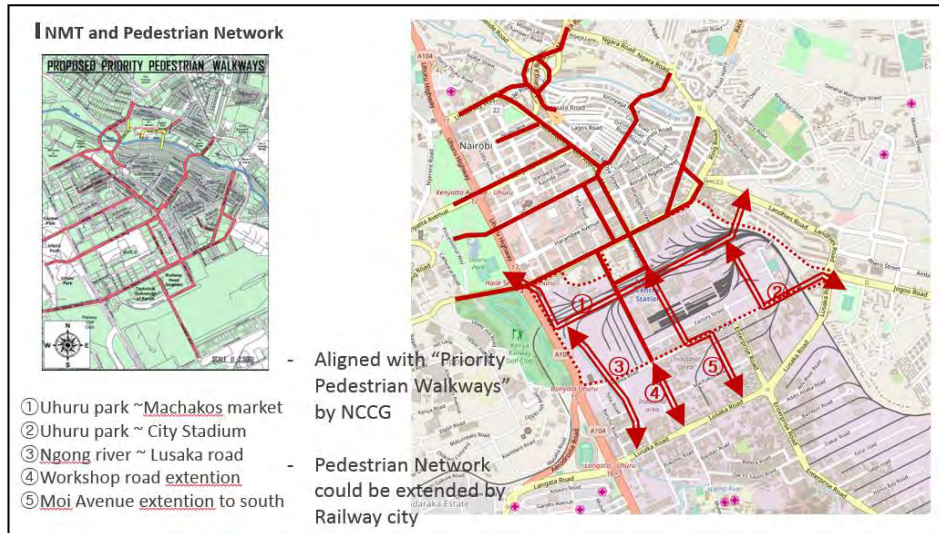


Figure 5-32 Schematic Pedestrian Network

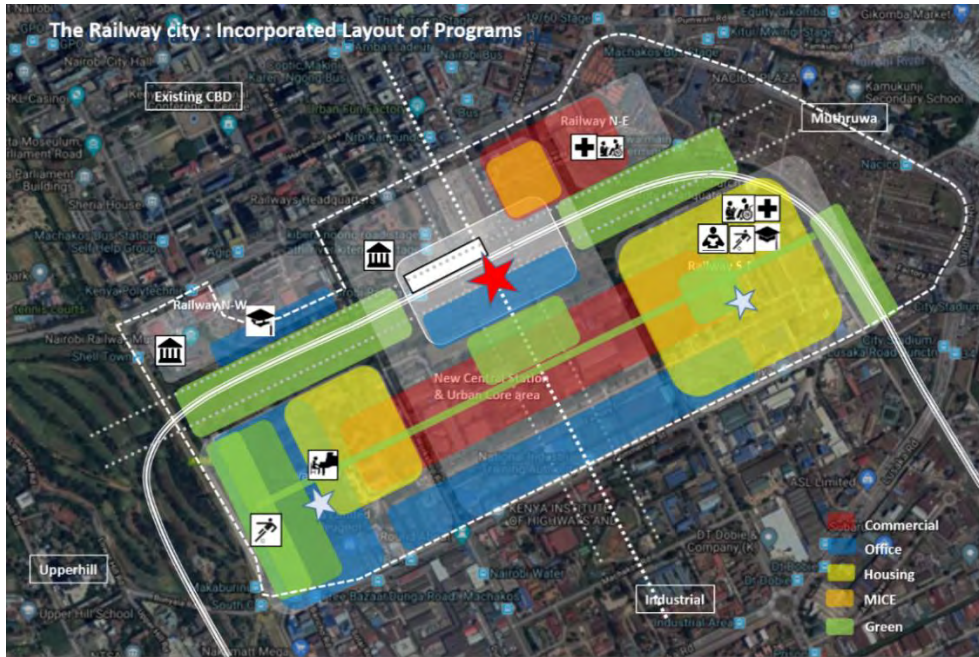
### Integrated Diagram: Integrated Land Use/Transportation Concepts

One of the advantages of the layering approach is that each layer represents its own meaning of urban activity, function and economic aspects and these could be overlapped to deliver the multiple aspects as shown in the figures below.



Figure 5-33 Schematic Layout of Network

The above figure indicates the pedestrian network and the new road infrastructure. Workshop Road can be developed as a pedestrian way. In the central vertical axis, the pedestrian way from Moi Avenue can be extended into the site, detached from carriage way. Bridge installment could be considered to easen pedestrian crossing over carriage way.



**Figure 5-34 Schematic Layout of Program**

The figure above shows an integrated layout of the various programs. Commercial functions are located in the center while the Office and MICE functions are in southern and western parts. Residential areas are accommodated in the East and West, with the east being the main areas for residential development. Social facilities are dispersed in the site along the complementing programs, such as high culture facilities near MICE area, educational facilities near residential areas and hospital facility near the east area.



**Figure 5-35 Schematic Layout of Network and Program**

The integrated layout of the Network and Programs is the final schematic layout of the Plan. This layout outlines the relationship between land use and transportation, which should be matched functionally. For example; the main pedestrian way could provide easy accessibility

for the main public programs like museums, sports, and other functions. Crossing points of the network are in high density program sections like commercial and office functions.

This schematic layout of the Plan is the the foundation of the 3 options.

### 5.5.3 Plan Options/ Alternatives

The schematic layout was developed into three options. Each option has specific urban form in line with functional allocation.

#### Option A

Option A focuses on the grid form with a center core concept with two housing blocks in the east and west. Strong street commercial concept is also suggested. The new urban core is located in both the eastern and western sides divided by the wide pedestrian street. The urban core is composed of high-rise office, commercial and meeting rooms/small MICE developments, and hotel and apartments. 1.2 km long linear Commercial Street provides a homogenous experience in the commercial strip and provides a physical link between Uhuru park and the Machakos terminus.

Offices are located in both the urban core area and in the commercial street area. The existing industrial plots adjacent to the TUK are ideal for office development. The neighboring educational and technical institutions namely the TUK and the National Industrial Training Authority can provide a catalyst for future SME and new industrial clusters in this area. However, the development maybe be likely to be retarded by the compensation process due to private area.

The Residential area is divided into two, the eastern and the western sides, which are main residential blocks. A Social housing area is specifically zoned as an independent district (social housing village), which is detached from the other housing blocks. This zone incorporates other activities that complement the residential function.

The MICE function is located on the western side near the Ngong River area, and is complemented by low density cultural facilities.

The grand pedestrian walkway will create urban continuity from Moi Avenue to The Railway City forming a new urban axis towards the south. The 50m wide pedestrian way will attract diverse urban activities in addition to the strong visual gate image of The Railway City station.

The public square will be located next to the station building and at the middle of the grand pedestrian walkway. A rectangular shape of 400 X 300m will provide a venue for diverse urban activities.

The main pedestrian way together with the linear commercial street will provide an excellent opportunity to mesh the green network of The Railway City. A 20m wide passage with open spaces and green ways could be integrated along the route with both ends of the green way designed into parks, one at the MICE center adjacent to the Ngong River basin and the other a neighborhood park within the residential area. The greenway will provide a pedestrian link between Uhuru Park and the Machakos Terminus.

Aligning with the schematic layout of the road network, two roads running perpendicular to the site and one running parallel to the site are designed to accommodate the internal traffic volume. Near the future commuter rail train station as NCS, 2 K&R facilities are located. The one attached to the Enterprise Road and the other is adjacent to Workshop Road. Enterprise Road side K&R covers the route for north-east direction of NMR and Workshop Road side one covers the route for south-west direction of NMR. 2 K&Rs could function as a multi modal hub accommodating BRT, Bus, Taxi and NMT.

BRT integration could be realized in the site using the new road. BRT line 1, 2, and 6 could be tapped for 2 K&Rs areas and generate inflow into the existing CBD from Moi Avenue to Uhuru Highway and vice versa.

The Pedestrian network is based on the schematic layout. Two walkways parallel to the station are proposed. One to run from Uhuru park to the commercial street through the public square terminating at the new Muthurwa Market and Machakos terminus in the east.

The other one shall link the Upper Hill area to the Eastlands area, subsequently linking the Nyayo Stadium to the City Stadium. These 2 main walkways can share the pedestrian traffic load of Haile Selassie Avenue from east to west and vice versa. Moi Avenue can be extended into the Railway City, leading pedestrians to the public square and connecting them to southern side.



Figure 5-36 Option A Schematic Layout

### Option B

Option B has circular shape with the Central Station and fan shape square having a strong symbolic spatial image. The new urban core shall comprise mixed-use developments with a multimodal hub for the Nairobi Metropolitan area as the core concept.

International business district is located at the west side of the project site. The Consultant sets this area as the international prime office area in conjunction with the Upper Hill. It is expected to be a business area with high rise offices that symbolize the city center of Nairobi in the future.

At the east side of the project site, quality apartment complexes and serviced apartments for diverse users are proposed. In order to attract foreign expats, placing international educational facilities in the complex is suggested. The option also suggests creating a walkable environment in which children can commute to school with safety and convenience.

A symbolic fan shaped public square is proposed in front of the railway station. From Moi Avenue, pedestrian traffic shall flow into the fan shaped central square and be disseminated

in the southern direction with radial shaped pedestrian walkways. The station front area adjacent to Moi Avenue will have ample green open spaces.

Option B has smoother BRT and vehicular flow into the site. The round shaped Kiss and Ride function allows easy vehicular access to the station. Passengers can easily embark and disembark the vehicle.

The pedestrian walkways run parallel to the project site. One runs from Uhuru Park, crosses the site and then terminates at the Machakos Terminus and new Wakulima Market. The other route runs from Upper hill to the Eastlands area essentially linking the Nyayo stadium and the City stadium. A perpendicular pedestrian route from Moi Avenue can pass through the fan shaped square and cross, terminating into the radial shaped walkways on the southern side.



Figure 5-37 Option B Schematic Layout

### Option C

Option C emphasizes the linkage between the east and the west by grand green axis, which has a strong catalyst linking Upper Hill to Eastlands.

A commercial street is located next to the Railway Station. In the central area, 2 commercial street areas with mid-rise office blocks are located. Between the 2 commercial streets, the 50m wide “grand” green space is located.

The urban core on the western side is composed of MICE facilities that include mixed use buildings, high rise offices, retail areas, conference areas, exhibition areas as well as hotels and apartment buildings. This area is adjacent to the Ngong River basin.

The Eastern side is a residential area complemented by a public anchor program e.g. a hospital, or an administrative building. This public anchor will serve railway city residents as well as those living in the Eastlands area. It could therefore be the development catalyst of the underdeveloped east side of the CBD.

The southern part of the site is proposed to be offices for R&D and SME. The area’s schematic layout shall be similar to that of the adjacent industrial area.

This option has a distinct structure of a green axis running parallel to the station area. Ngong River basin in the west and green spaces can be connected by this grand green way. To connect to the existing CBD, Moi Avenue can be extended to the southern direction, intersecting with the grand green way.

The general carriage way design is similar to that of Option A. 2 K&R facilities are accessed through the extended Enterprise and Workshop Roads respectively. BRT integration is achieved by 2 Kiss and Ride facilities. The BRT route from Uhuru Highway to the existing CBD can also be realized.

Pedestrians can pass the grand green space in the center, which links Upper Hill, Eastland area, Uhuru Park, new Wakulima Market and Machakos Terminus. Walking through the green space experiences different from that of walking through a commercial street area as in Option B.



Figure 5-38 Option C Schematic Layout

### Difference of the Options

#### 1) Urban Form

The 3 options have distinctively different urban forms in the Greater CBD area.

- Option A emphasizes on the continuity of spatial structures from Moi Avenue to the south - realized by the grand pedestrian walkway. Program balancing in the east and west is proposed resulting in a symmetrical land use plan.
- Option B key characteristics are the symbolic central station area, the fan shape square and radial pedestrian circulation.
- Option C creates a physical link between the east and west through the grand green space. The western and eastern cores have strong catalysts



**Figure 5-39 Comparison of the Urban Form of 3 Options**

## 2) Functional Allocation

### a. Urban Core

Option A has 2 cores in the east and the west composed of mixed-use programs such as high-rise office, hotel, apartment and lower floors with MICE functions. Option B has 2 cores, one is the “special development district” comprised of mixed-use buildings and the central railway station. The other core is the western side composed of office blocks targeting international businesses. Option C also has 2 cores, one a mixed-use MICE core in the West, and the other a public anchor program area integrated with a housing area.

### b. Housing

Option A has 2 housing districts in both the east and west. It is the only option with a district scale housing area in the west. Option B and C have most of the housing on the eastern side while accommodating housing in mixed use buildings on the west. All options have housing in close proximity to the school.

### c. MICE

The MICE function could be easily accommodated into the mixed-use building. Option A has 2 areas of MICE, one is located in the lower floor of the urban core area, and the other is located in the western side next to the Ngong River basin aiming to utilize this natural asset. In option B, the MICE function is located at the front of the central station within the “special development district”. In Option C, the MICE is located in the west within the mixed-use urban core and at the Ngong River area.

### d. Social Facilities

All options have similar social contents based on the schematic layout. In general, the western part is allocated for cultural facilities which include rehabilitating the existing railway museum and railway headquarters building for future public use. The eastern side has essential social infrastructures such as a hospital and a school together with other potential public anchor programs e.g. an administrative service center for the Eastlands area. The main difference in the options is the social housing concept. While Option A has an independent social housing district, which is integrated with economic activity places such as street shops<sup>26</sup>, Option B and C have social housing as independent blocks in the housing areas.

<sup>26</sup> Social housing “district” concept reflects the idea of Korean resettled residence district concept. In general, even though it is not mandatory- no legal base-, some part of land for resettled residents is allocated the in newly developed area. It comprises low rise housing with street commercial activities like retail shops and restaurants serving the resettled people. In Thematic group and County level workshop, many discussions were done about the social housing issue. As a result, the Consultant would like to proceed more mixed tenant approach – resettled residents and newcomers-such as both tenants in same block with vertical division.

### 3) Network

All options have the following common characteristics;

- Intercity termini to be located outside of The Railway City<sup>27</sup>
- lowering the railway, and
- multi-modal hub formation with Commuter rail, BRT, Bus and Taxi integration. However, K&R, BRT integration and Pedestrian network are different in each of the options.

#### a. K&R and BRT integration

Option A and C have two K&R, which shall serve different areas of the Nairobi metropolitan area. One is attached to Enterprise Road in the north-east, and the other is accessed through Workshop Road extension for south-west part of NMR. Option B has an integrated K&R next to the new commuter train, which can allow for direct transfer to different transportation modes. BRT integration is complemented by K&R facilities, which means that in Option A&C, the BRT is connected to separate K&Rs, while in Option B, the BRT access is integrated with K&R.

#### b. Pedestrian Network

Based on the schematic layout- as an outcome of the thematic group workshop-, all options allow for connection of the Upper Hill area, Nyayo Stadium, Eastlands, Machakos Terminus and the new Muthurwa Market through a pedestrian network. Moi Avenue and the southern industrial area, along the Ngong River can be connected in all options. However, pedestrian circulation has different routes. In Option A, the main pedestrian walkway from the east to the west passes through the commercial street ensuring pedestrian safety. Options B and C routes cross through mainly green areas and/or open spaces, offering a different experience from that of the commercial street shown in Option A

### 4) Urban Space

The 3 options have distinct urban forms and physical environment composition. This can be identified as the high-rise buildings areas, public square and pedestrian passages.

#### a. High-Rise Buildings

High-rise buildings in Option A is an urban land mark in the central area, next to the grand pedestrian open space. Option B and C have western high-rise districts comprised offices and mixed-use developments.

Location of High rises buildings at the center – as in Option A- could be a significant landmark structure in the Railway City. High-rise buildings in the west are easily assimilated into the Upper hill area urban context. The flight path from Moi Airbase may affect the height of the high-rise buildings in the central area.

#### b. Public Square and Pedestrian Passage

The public square in each option takes different forms. Option A has a rectangular form, while Option B has fan-shaped square and Option C has linear shape. The form of the square can generate different kinds of urban activities. The rectangular form can accommodate more flexible activities, but fan-shape has more symbolic character.

---

<sup>27</sup> In order to avoid further traffic congestion, the Intercity termini is suggested to be allocated outside of the future CBD. This could add on to the decentralization concept of future Nairobi – further, the intercity termini could be a strong catalyst for sub center development-, which can complement the goal of NIUPLAN

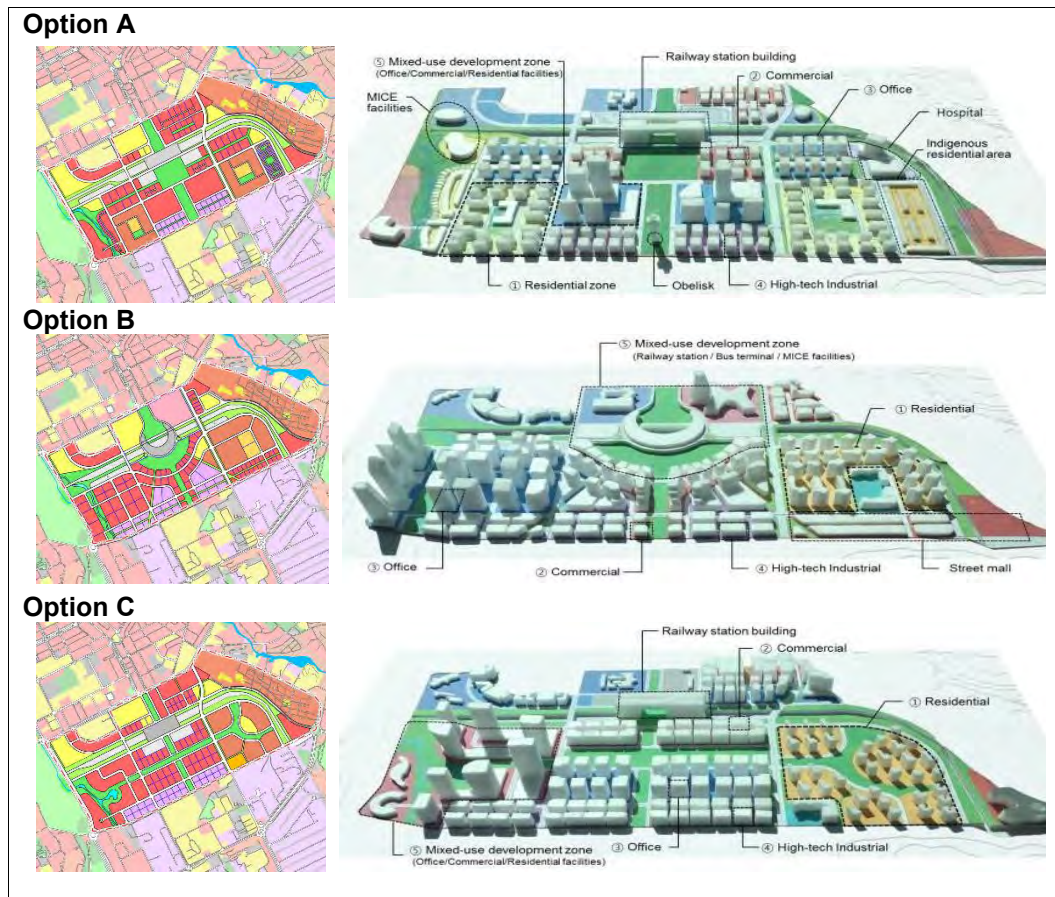


Figure 5-40 Land Use Plans and the Model Comparison of 3 options

#### 5.5.4 Final Design Directions<sup>28</sup>

The options were presented during the first County Level workshop held on 28th March 2018. Each option had different strengths and weaknesses based on the 4 pillar evaluation criteria. The workshop concluded that the final design should reflect all the strengths of each option. The strengths of each option are as follows;

##### Option A

- Major pedestrian walkway with commercial activities, which could generate more safe, economic driven passage along the green area
- Balancing the East and West

##### Option B

- Smooth integration of multi-modal connections,
- High density in the Western area as a core area and
- Strong symbolic fan-shaped spatial layout.

##### Option C

- Physical link between East and West,

<sup>28</sup> The options were presented during the first County Level workshop held on 28th March 2018 and final option was shared and determined on 2<sup>nd</sup> County level workshop on 24 October 2018.

- Balancing of development on both East and West
- Eco-friendly design of the Ngong River area.

**Table 5-2 Final Option Directions**

Decision Criteria		Option A	Option B	Option C	Suggestion to the final direction
Economy -real estate	Urban core location	Center core	West core	West core East core	3 cores: Center (Activity core), West (MICE core) and East core (public anchor) for balancing the development
	West housing development type	District	Mix use block	Mix use block	Mix use block for efficiency of land use in the West
	MICE location for east	MICE in Center + high end MICE in West	MICE in Station area	MICE in West	MICE in West + high culture, station area for tourism center
Transportation	Kiss and Ride +BRT integration	Divided East and West	Integrated K&R	Divided East and West	Integrated K&R with BRT integration
	Pedestrian network of East-West Connection	Passing through commercial area	Passing through green space	Passing through green space	Passing through the commercial area for safety and amenity
Urban space	High rise	Center	West	West	West as priority (Center may conflict the air path)
	Urban square form	Rectangle square	Fan shape square	Linear square	Test more but Fan shape focused
Sociality	Social housing	Social housing district as village (Korean type)	Social housing block	Social housing block	Social housing with affordable class housing district for social mix
	Public anchor	High culture in West, East for essential function	High culture in West, East for essential function	High culture in West, East for public anchor	High culture in West, East for public anchor

## 5.6 Spatial Framework

The three Urban Cores (MICE, Center, and East) are placed on the southern side of the railway track in the current marshaling yard. The Center Core is located next to the new station area in the south. The MICE Core is located in the Ngong river area next to the Uhuru highway. The East Core is on the eastern side of the site bordering the Muthurwa area.

A horizontal axis runs through the three core areas essentially connecting each core. The street commercial area is planned to be next to the station area, due to its potential as an economic activities' catalyst. In addition, there is pedestrian traffic flowing from Uhuru park in the west to Machakos termini in the east. The railway front area bordering the old CBD is composed of TUK and urban service zone, which is similar to the approach of the previous options. The figure below shows the spatial framework of the final option.

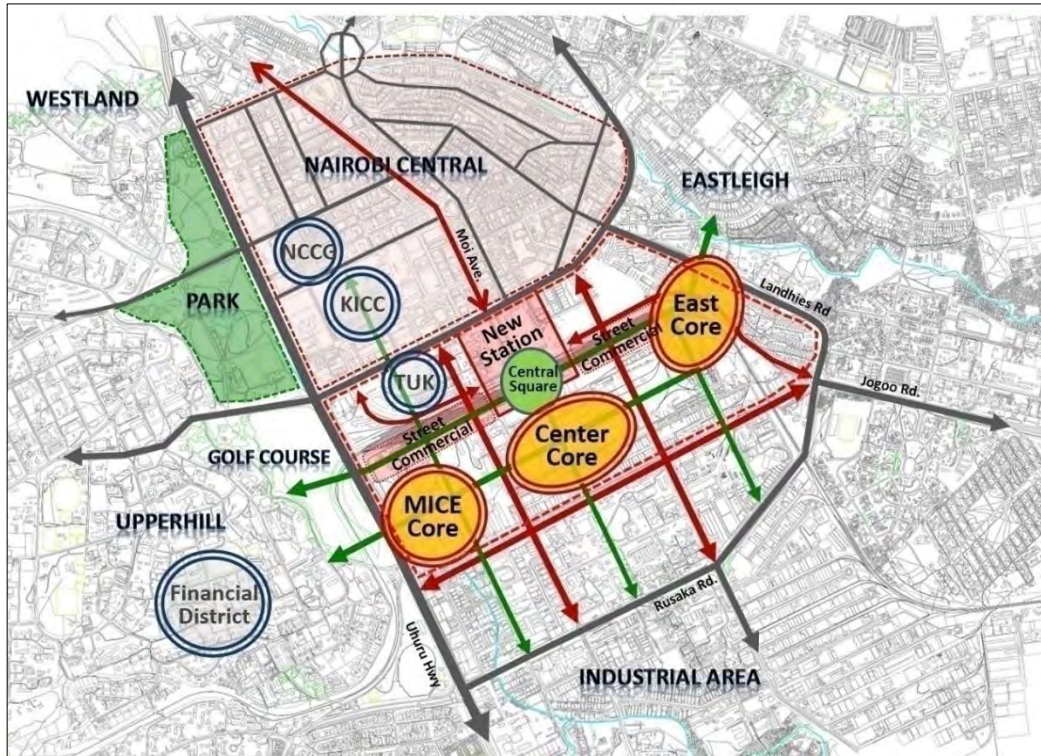


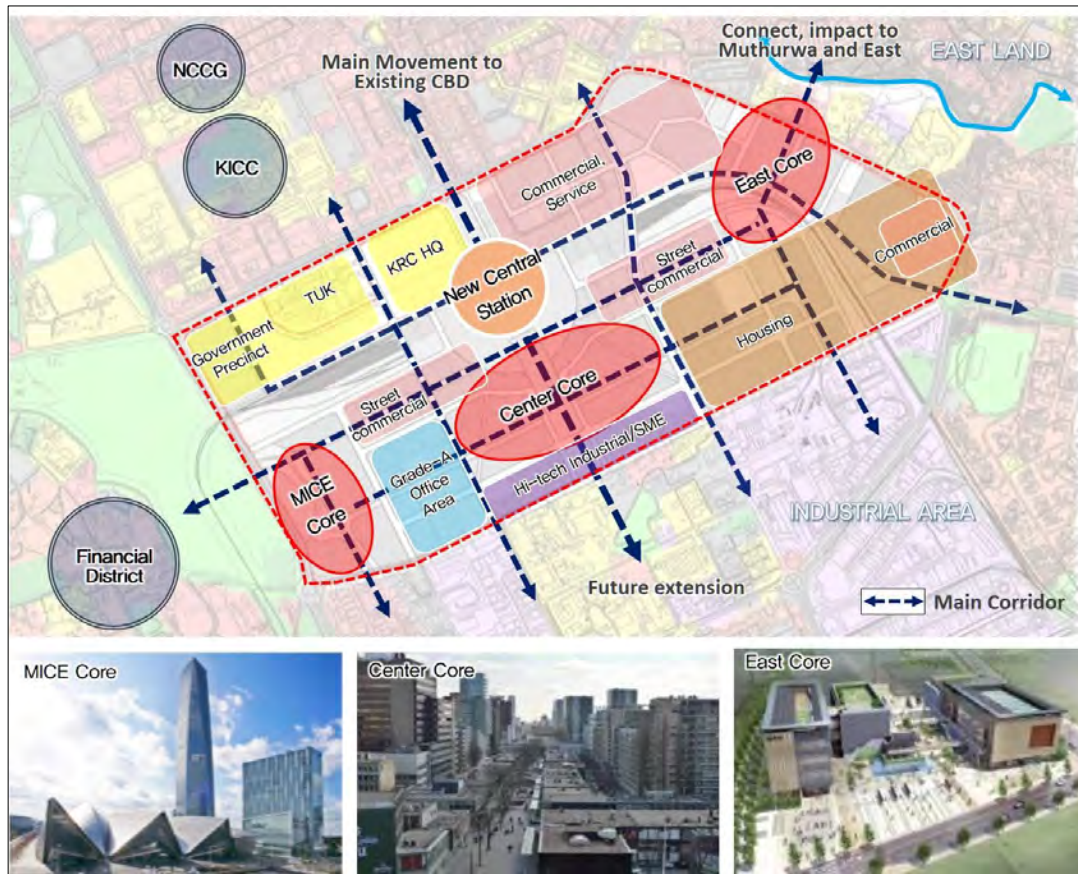
Figure 5-41 Spatial Framework of the Plan

### 5.6.1 Economic Layer: Private Sector

The core area requires a major investment to ensure viable mixed-use developments that include retail, office and housing programs. The main housing area is located on the eastern side, but different housing types are located in the entire area to ensure night time activity. The housing demand in general is stable in urbanized areas, especially in this kind of metropolitan scale cities. Thus, to ensure the development is profitable for developers, the mixture of housing and other programs such as commercial is recommended even in the one block scale.

The main housing area is valuable because the housing program could be implemented early to provide monetary return on the infrastructure investment.

Each core has different characteristics. The MICE Core (area with MICE facilities) is proposed to be a commercial area with a predominantly MICE function complemented by office and housing functions. An international office zone is adjacent to the MICE core with the potential to absorb the office demand in the Upper hill area. Grade-A office buildings with retail areas could generate synergy and boost the office working environment. The East Core is characterized by public anchor programs which will provide public services to the surrounding areas.



**Figure 5-42 Economy Layer of the Plan**

In the south, bordering the existing industrial area, a new SME (Small Medium Enterprise) or light industry could be initiated. The current urban plot has a narrow form, and it would be better if it is amalgamated with neighboring blocks for more sizable and viable development opportunities in future.

The Street commercial is the main retail-oriented place in Railway city. It is located along the main pedestrian walkway between the Uhuru Park and the Machakos Termini. This area has massive potential for small-scale investors. There will be approximately 2 km linear “street shopping mall” providing a unique and vibrant retail place along the main walkway. Two street commercials are proposed in both the east and the west. The street commercial will originate at the central station square and branch towards the respective cores. The West street commercial focuses on the office-mix, whereas the East commercial will complement the housing function.

The eastern side of the railway front area borders Haile Selassie Avenue and the existing CBD. Most of the land in this area is under private ownership and therefore the long-term development approach needs to be analyzed. The Easy Coach and Old Coffee Mill Building are historical buildings that should be preserved.

A Government Office precinct is proposed including the TUK area. TUK in conjunction with other neighboring universities, namely University of Nairobi and Kenyatta University could also act as catalysts for a research-based industry in this area.

In the three-core strategy, every core has a specific impact and relationship with neighboring areas. The Western Core as MICE could achieve strong connection with the existing KICC (Kenya International Convention Center) and government offices as well as the Upper hill area and the Kenya Railway golf course. The Center Core is adjacent to the public square and the

new central station. It will impact the existing southern industrial area positively spurring future transformation. The East core is located at the edge of the eastern area of the site. It shall positively impact the neighboring areas namely Eastlands areas.

### 5.6.2 Social and Urban Space Layer-Public Sector

The social programs are located in both the eastern and western sides divided by the central square. On the western side the social programs comprise of cultural programs and MICE oriented facilities. The option proposes that the Kenya railway headquarters be transformed into the “Kenya Railway Cultural Center”. It shall accommodate diverse cultural programs such as education, art performance and exhibition areas. An outdoor amphitheater will be located near Uhuru highway near the railway golf course. The social programs located on the eastern side are comprised of essential social infrastructure programs will include administrative government offices, a hospital, a school and/or a community center.

The green and open space network should create a connection between the different areas. The Central square is located at the center of the city with a fan shape, providing strong spatial perception of centrality to the Nairobiian. To the west, Ngong River is a significant spine of the green corridor. The eastern and western areas are linked by an open space network which will create physical link between those two areas.



Figure 5-43 Social and Urban Space Layer of the Plan

### 5.6.3 Network Layer

The road network consists of three main collector roads; in the North-South direction, the extended Workshop Road and Enterprise Road, and in the East-West direction Bunyala Road extending into Commercial Road. These three roads are the main missing links connecting to the existing city center (Central Business District area in Nairobi).

The project shall ensure integration of the Bus Rapid Transit (BRT) in the Station area, ensuring easy interchangeability of transit modes. There are 4 BRT lines accessing the project site. Line 1 and 2 runs from Uhuru Highway to Enterprise road then into Haile Selassie Avenue. Line 3 runs along Haile Selassie Avenue touching northern boundary of the project site. Further, the newly proposed Line 6 runs along Enterprise Road providing an important link to JKIA. The route could also be used to access the industrial area which is a key economic production area for Nairobi.

There are several key proposed pedestrian network links providing access to and through the project site. One of the main pedestrian links runs from Uhuru Park through the Central Square, passing through the project commercial area into the Machakos termini. The route will relieve the pedestrian traffic volume from Haile Selassie Avenue and Upper hill, through the project site to Eastlands. Another important spine of the pedestrian network runs from Bunyala Road through to Commercial Road, providing a link between Nyayo Stadium and City Stadium. In the North-South direction running from Moi Avenue is a grand open space that will provide a connection between the existing CBD and the Industrial area as shown in below figure. Currently the Industrial Area bears strong potential for further development following development of links to the Nairobi South Station and the JKIA.

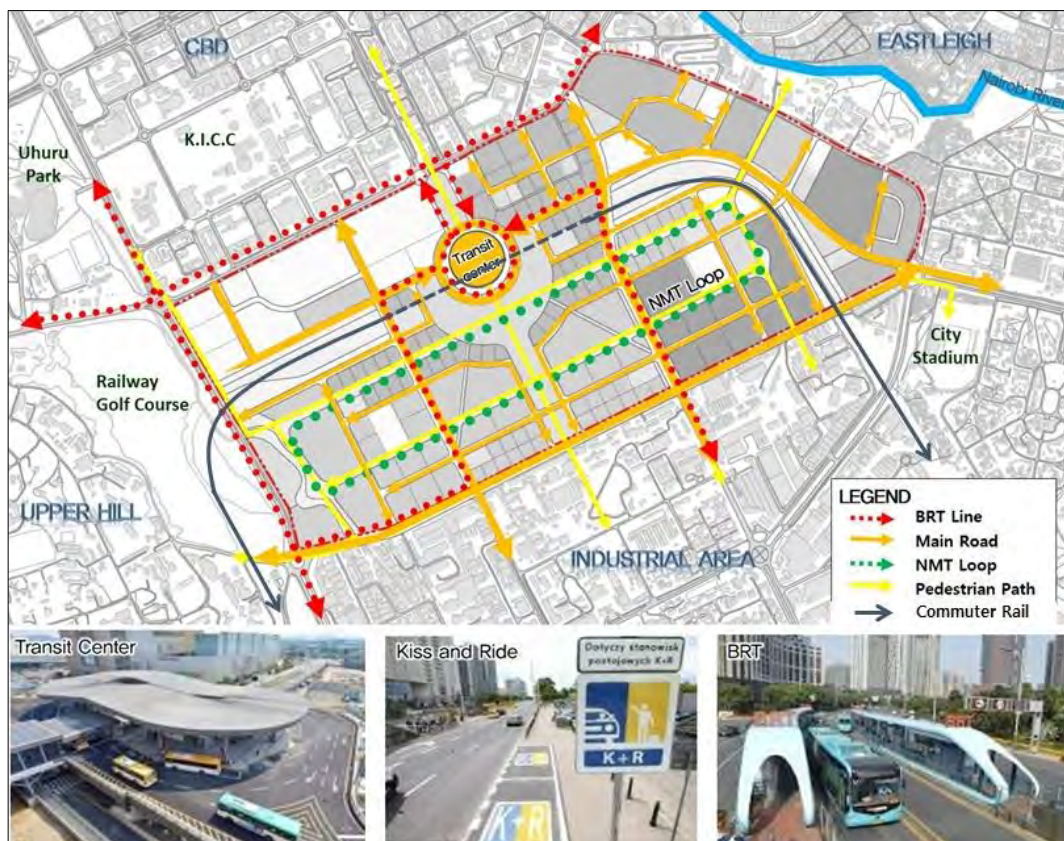


Figure 5-44 Network Layer of the Plan

An “NMT loop” is proposed in the final option to provide easy flow of pedestrian and bicycle traffic especially in the flat areas of the project site. It eases traffic movement and access to the main urban area, resulting in decreased motorized traffic volumes.

### 5.7 Land Use Plan

The planning area as greater CBD needs special attention for the vivid liveliness and quality urban environment. Nairobi Central Station is the linchpin position of the Plan and also entire greater Nairobi CBD.

Grand open space in front of the new station can provide affluent green area for the Nairobi and also provide strong centrality of the area. From the central open space, continuous commercial strip actually links the east and west area of the site and expand the neighboring area like Upper hill and Eastlands.

Entire area of the Plan seeks to be a functional mix area for ensuring urban liveliness. A set of office, commercial and residential is a package of ingredients. In addition, some area accommodates a single dominant program such as residential, office, industrial, or commercial, which is adapting to the characteristic of neighboring area.

Green and open space seeks a continuous network form which can be expanded to the surrounding area in every direction. Public facilities like government precinct, hospital, school and utility facilities like power station is allocated as dispersed way.

The site of The Railway City covers a total area of 176ha. The table below shows the proposed land use area that was used in preparing the land use plan. It indicates the land use allocations and their respective areas in hectares and gives the percentage of each.

The figure below shows the proposed land use plan. The Plan illustrates the location and size of each land use presented in the following table.

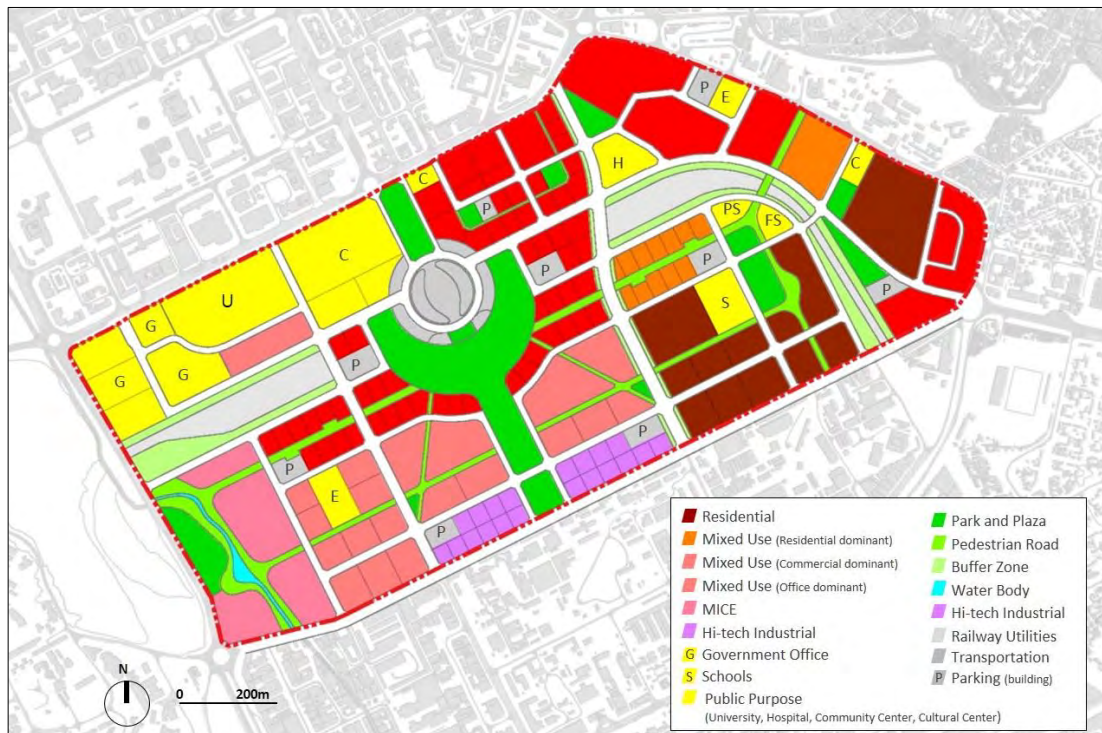


Figure 5-45 Land Use Plan

**Table 5-3 Land Use Plan Table**

Classification	Option Final	
	Area (m <sup>2</sup> )	Proportion (%)
Residential	151,350	8.6
Mixed use(Residential dominant)	47,190	2.7
Mixed use(Commercial dominant)	291,520	16.5
Mixed use(Office dominant)	173,920	9.8
MICE	73,870	4.2
High-tech Industrial	42,240	2.4
Public Facilities	110,100	6.2
- KR HQ office	61,460	3.5
- Sub Station	17,350	1.0
- Community Center	8,610	0.5
- Administration Building	9,810	0.6
- Hospital	12,870	0.7
School	13,860	0.8
University(Technical University of Kenya)	48,900	2.8
Government Office	63,160	3.6
Transport	36,530	2.1
Railway Utilities	70,700	4.0
Open Space	330,390	18.7
- Park and Plaza	160,330	9.1
- Pedestrian Road	88,090	5.0
- Railway Buffer Zone	75,950	4.3
- Water body (Ngong River)	6,020	0.3
Parking lot(Parking Building area)	38,550	2.2
Road	276,280	15.6
<b>Total</b>	<b>1,768,560</b>	<b>100.0</b>

### 5.7.1 Road Layout

A comprehensive internal network will be provided within The Railway City in order to relieve current traffic congestion along Uhuru Highway and Haile Selassie Avenue. North-south link from Enterprise Road to Haile Selassie Avenue provides relief not only for Uhuru Highway and Haile Selassie Avenue, but also for Jogoo Road, Lusaka Road and other neighboring roads.

The Plan aims to create a better accessible and walkable Railway City. Perimeter roads of the site provide smooth circulation around the area so that traffic volume is minimized within the central urban areas of the project site.

Local distributor roads and pedestrian roads connect the urban functions and the urban plot resulting in decreased traffic volume. The NMT loop is located at the heart of Railway city promoting sustainable transportation modes such as walking, cycling and public transportation.

For better utilization of urban functions, commercial districts are accessible through these pedestrian and bicycle roads. This network could be expanded to nearby Eastlands, Upper hill and industrial areas in the south.

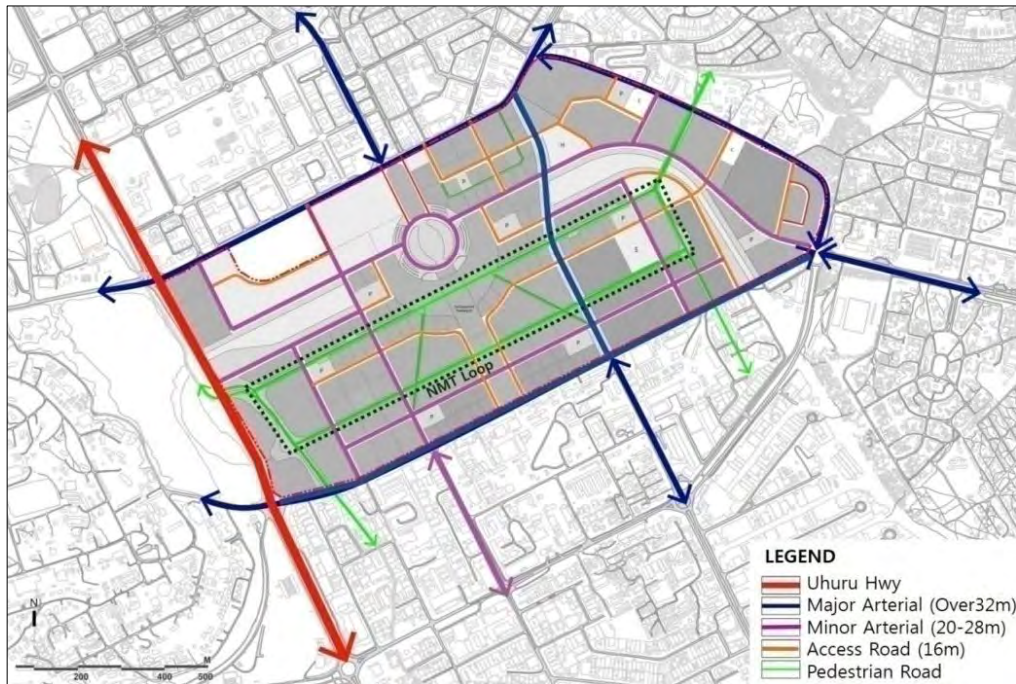


Figure 5-46 Proposed Road Hierarchy in the Plan

### 5.7.2 Open Space Plan

The open space plan is important in the master plan as it seeks to connect the existing disconnected open space network.

Diverse forms of open spaces are proposed in the land use plan. The figure below shows a plaza, river basin, small park, square and buffer area. The central plaza has a special meaning as it functions as the gateway into the Railway City, a monument and a landmark for the project.

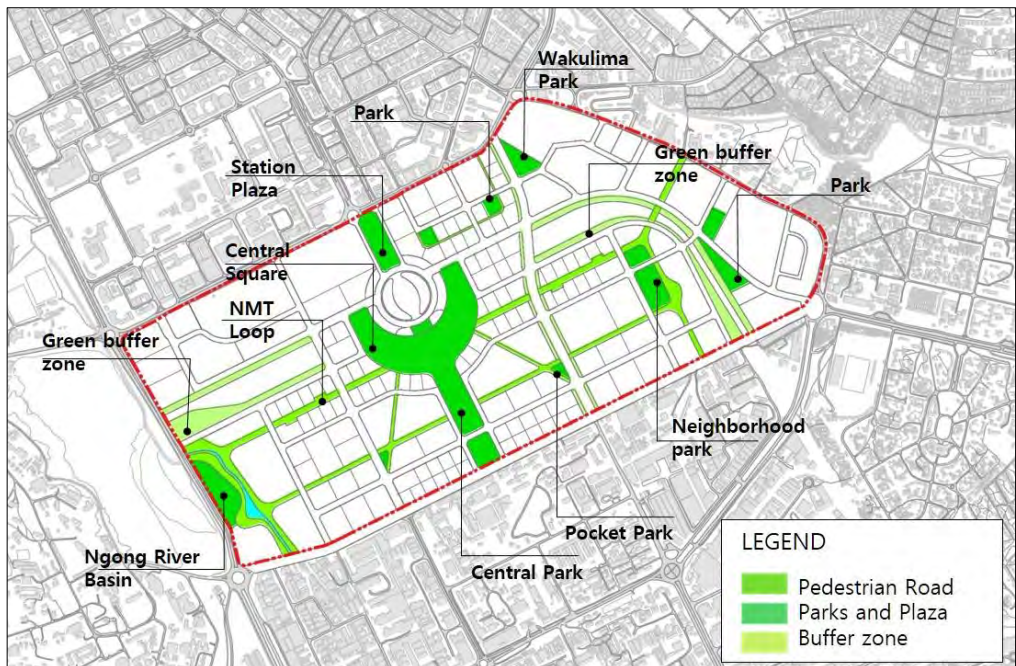


Figure 5-47 Open Space Network in the Plan

**Table 5-4 Open Space Category**

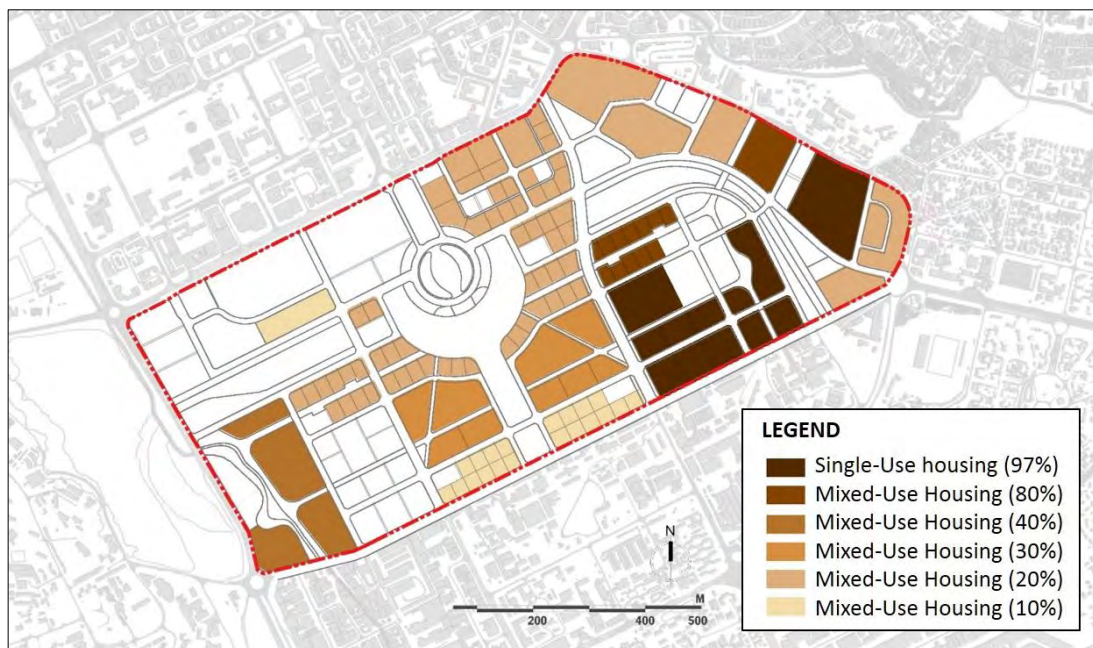
Category	Area (m <sup>2</sup> )	Ratio (%)	Characteristics
Park and Plaza	160,330	9.1	Station Plaza, Central square and park, Wakulima Park, neighborhood park, pocket park
Pedestrian Road	88,090	5.0	NMT loop, Pedestrian Road
Buffer Zone	75,950	4.3	Surrounding railway area and Enterprise Road
River basin	6,020	0.3	Ngong River
Total	330,390	18.7	

### 5.7.3 Population and Housing Plan

The total population of the Railway City is estimated at 29,936 people. TOD initiative has been strongly driven by many station area developments worldwide. Main aim is that reducing traffic needs by securing an extent of density range as 100~200 person/ha around station area<sup>29</sup>. Proposed option reaches the 170 person/ha which can ensure a level of liveliness of Nairobi CBD.

The housing scheme for these population is categorized into two groups; Single-use housing and Mixed-use housing.

Single-use Housing scheme means that 97% of housing ratio is dedicated to housing. Mixed-use housing is divided into five sub-groups depending on each mixed housing ratio. With a mix ratio ranging from 10% to 80%, diverse type of housing mixes could be realized in the Project.



**Figure 5-48 Population and Housing Plan**

<sup>29</sup> UN-habitat, *Guideline for Urban Planning*, 2013.

**Table 5-5 Population and Housing Type**

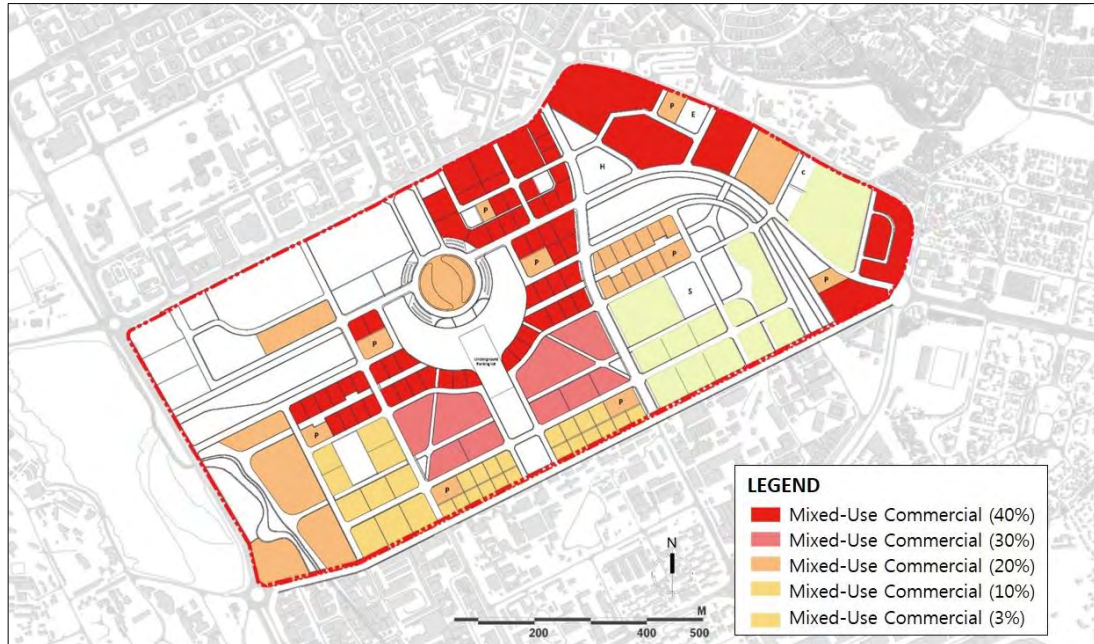
Housing Type	Area(m <sup>2</sup> )	Housing Ratio(%)	Housing Area(m <sup>2</sup> )	No. of Units	m <sup>2</sup> per Unit	No. of Residents per unit	No. of Residents
Single-Use Housing	106,350	97%	257,899	2,345	110	3.2	7,503
	45,000	97%	109,125	1,819	60	3.2	5,820
Mixed-Use Housing	47,190	80%	104,488	950	110	3.2	3,040
	73,870	40%	177,288	2,085	85	2.0	4,171
	97,810	30%	146,715	1,334	110	3.2	4,268
	291,520	20%	197,450	2,323	85	2.0	4,646
	57,690	10%	20,759	244	85	2.0	488
<b>Total</b>	<b>719,430</b>	<b>-</b>	<b>1,013,723</b>	<b>11,100</b>	<b>-</b>	<b>-</b>	<b>29,936</b>

\*Note: Type of Unit - 110 m<sup>2</sup> for a family(Applied for 3.2 residents per unit)  
 - 85 m<sup>2</sup> for a studio type(Applied for 2 residents per unit) including core area.  
 - 60 m<sup>2</sup> for an Affordable/Social Housing (Applied for 3.2 residents per unit).

**5.7.4 Commercial Area Plan**

An estimated number of the total users of the commercial area is 165,624. This is calculated as one person per 10 square meters in accordance with the Planning Handbook in Kenya.

Similar to the housing mixed use scheme, commercial mixed-use development is also suggested in Railway City, with mixes ranging from a minimum ratio of 3% in the Housing area to a maximum of 40% in Street commercial and the eastern station front commercial area.



**Figure 5-49 Commercial Area Distribution Plan**

**Table 5-6 Commercial Area Category**

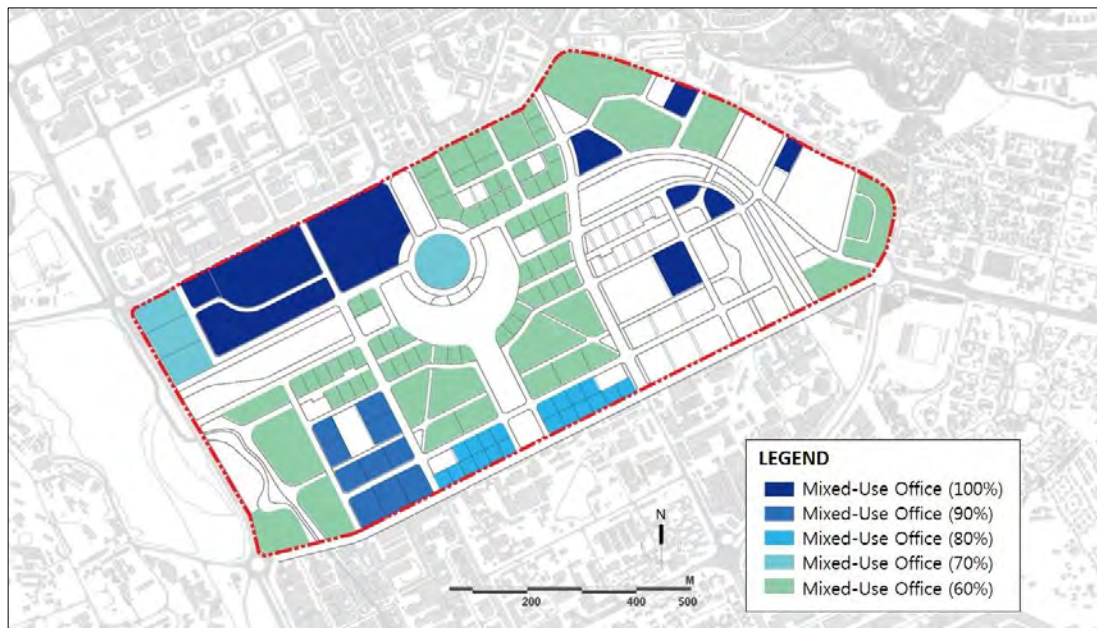
Category	Area(m <sup>2</sup> )	Total Floor area(m <sup>2</sup> )	Floor area for Commercial area(m <sup>2</sup> )	User
Mixed use Commercial (40%)	291,520	987,250	394,900	65,817
Mixed use Commercial (30%)	118,930	573,530	172,059	34,190
Mixed use Commercial (20%)	175,060	734,160	146,832	28,305
Mixed use Commercial (10%)	102,900	532,920	53,292	36,178
Mixed use Commercial (3%)	151,350	378,375	11,351	1,135
Total	839,760	2,827,860	778,434	165,624

\*Note: Design Population -Commercial (Store) - 10 m<sup>2</sup>/person

**5.7.5 Office Area Plan**

Total users of the office area are estimated to be 204,275 persons. This is calculated as one person per 15 square meters in accordance with the Planning Handbook in Kenya. Various types of office mixed use are suggested ranging from 40% to 100% of office area. Within Railway city, office space will meet the demand of conventional type offices and services in the current CBD. Diverse types of high value production space including High-tech industry and R&D facilities could sprout in this area

Among the many office spaces, International office precinct aims to be a global top tier class company zone in Nairobi, which will combine the future Nairobi CBD landscape with the MICE core.



**Figure 5-50 Office Area Distribution Plan**

**Table 5-7 Office Area Type in the Plan**

Category	Area(m <sup>2</sup> )	Total Floor area(m <sup>2</sup> )	Floor area for Office space(m <sup>2</sup> )	User
Mixed use Office (100%)	218,670	605,160	605,160	44,832
Mixed use Office (90%)	60,660	363,960	327,564	25,477
Mixed use Office (80%)	42,240	168,960	135,168	10,701
Mixed use Office (70%)	36,570	123,105	86,174	9,052
Mixed use Office (40%)	463,200	1,919,520	767,808	114,213
Total	821,340	3,180,705	1,921,874	204,275

\*Note: Design Population -Office and Public Purpose - 15 m<sup>2</sup>/person

### 5.7.6 Public Facility Plan

The proposed types of social and community facilities can be divided into two categories, namely

- Those that are essential and
- Those services and facilities that are desirable to have in the Railway City.

Railway City Development Authority as the master developer will be responsible for ensuring an appropriate spread of essential social facilities across the city. In accordance with physical planning handbook (2008), required space and threshold by population will be secured as much. In case of inconsistency, the developer shall discuss with master developer and with NCCG. The residential population is estimated to be 29,936, and it shall require the following essential facilities. The Plan area is not isolated. Existing facility location map is illustrated in the figure below.

**Table 5-8 Essential Social Facility List in the Plan**

Facility	Population threshold	Demand	Existing	Deficit	Land size	Proposed in Railway city
Primary school	3,500	7	7 (Surround area)	-	2.0ha	1 school (in Housing zone, 1.39ha)
Secondary School	8,000	3	3 (Surround area)	-	3.5ha	-
Health center	10,000	2	3	-1	2.0ha	-
Hospital	330,000	-	-	-	3.0ha	1 Hospital (level IV, 5.1ha-Total Floor area)
Park	10,000	2	-	2	1.5ha	Multiple parks (in sum, 16.6ha)
Community center	20,000	1	1*		0.5ha	1 community center (0.5ha)
Library	20,000	1	-	1	0.4ha	1 Library (in administrative office, 1ha)
Fire station	75,000	-	-	-	0.4ha	1 Fire station (1.3ha-Total Floor Area)
Police station	10,000	2	-	-	2.0ha	1 Police station (1.2ha-Total Floor Area)

\*Note: Muthurwa Social Hall

The desirable facilities are proposed for their unique role in the Railway City. These are shown in the table below.

**Table 5-9 Desirable Social Facility List in the Plan**

Facility	Land Area(ha)	location	For the purpose of
Police station	1.2ha (Total Floor Area)	East core area	For the security of The Railway City
Kenya Railway Cultural center	6.15ha	Kenya Railway zone	Old headquarter building for new KR cultural center, open to the public
TUK expansion area	4.37ha	R&D zone near TUK	Reflecting the idea of TUK expansion masterplan

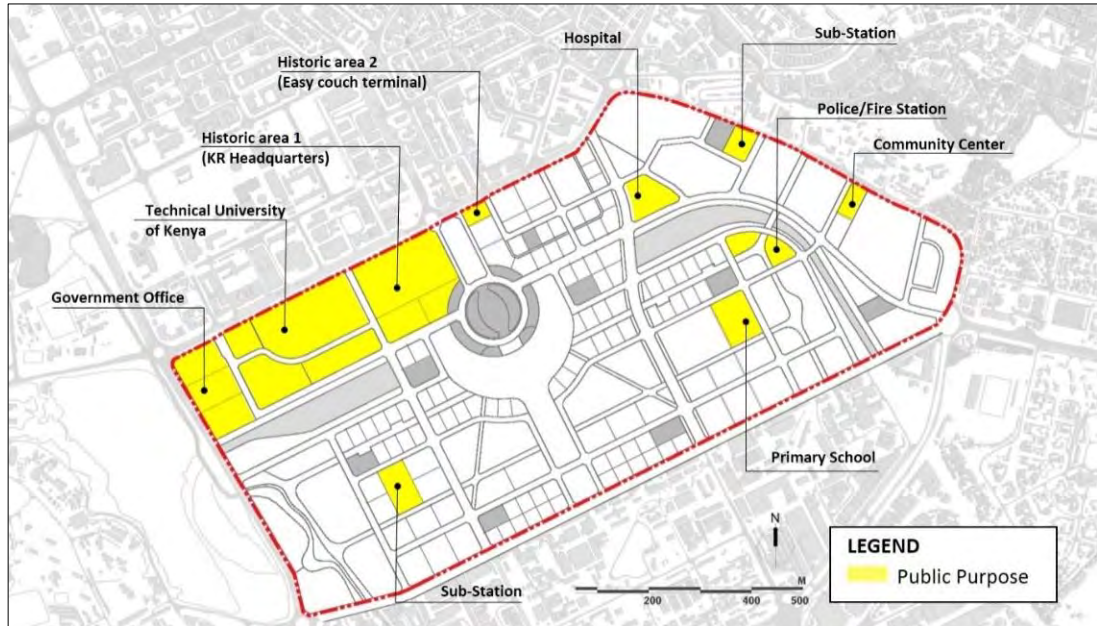


Figure 5-51 Public Facilities Distribution Plan

### 5.7.7 Building Height Plan

The broad view of the Railway City skyline is that west is high, and the east is low. The tallest building has 45 floors and is located in the MICE core area and with 25 floor buildings at the international office zone. At the Center core the maximum height is 20 floors, whereas the housing area has a maximum of 12 floors. The Street commercial is the lowest zones with 8 floors. To harmonize with the skyline of the existing CBD, building height plan focuses on locating most of high-rise buildings in west-north side of the project area.

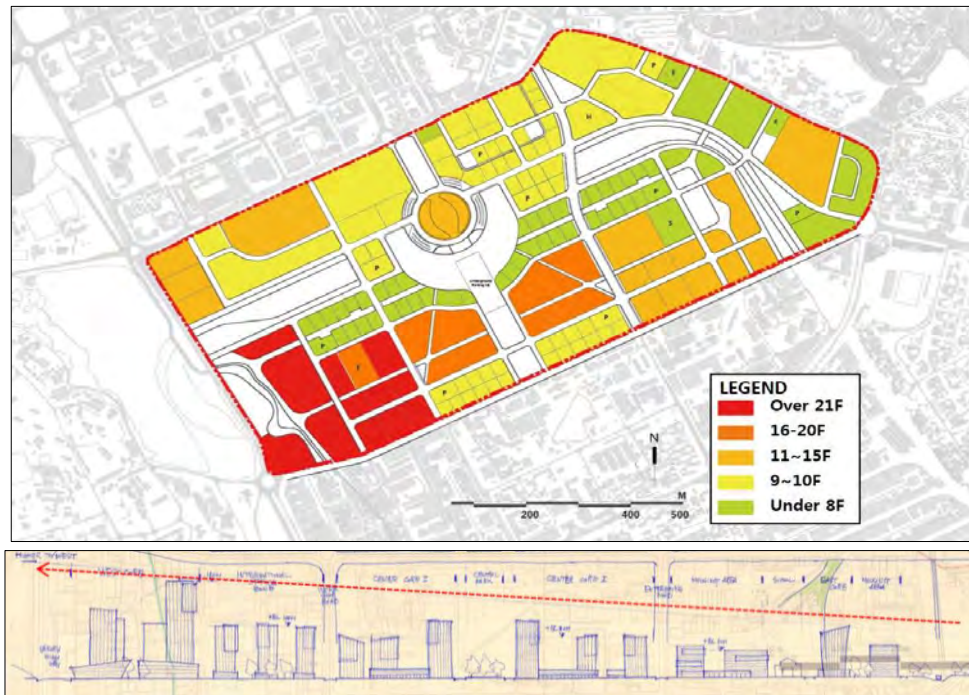


Figure 5-52 Building Height Plan and Skyline

The project site is about 1.5km away from the Moi Airbase, and hence it has a direct impact on the building height due to the flight safety zone. The Plan proposes the project building height guidelines with reference to international aviation regulations and the Eastlands master plan. In addition, KCAA approved the building height plan of the Plan. (Appendix 3. KCAA letter about Building Height Plan)

# Chapter 6. STRATEGIC SECTORAL PLANS

## 6.1 Transportation Plan

As a Transit Oriented Development (TOD), the transport system acts as the backbone to the Nairobi Railway City and it is paramount that adequate access and connectivity are provided in the planning area. It is important that the transport network provides connectivity, not only within The Railway City, but also to the existing CBD to the north and other areas surrounding it including the industrial area to the south, commercial and residential areas to the east, and the Upper Hill area to the west. It is also necessary for various modes – both motorized and non-motorized – to interact in a safe, convenient and efficient way.

The main transport planning considerations and recommendations will be in relation to the:

- Road Network
- Public Transport
- NMT Network

### 6.1.1 Road Network

New roads and reconstruction of the existing roads has been proposed on the site to suit the expected traffic in the new city as determined from the ongoing traffic study, the geological conditions as determined from the ongoing geological study and hydrological requirements as determined from the ongoing hydrological study as well as the transportation aspirations for the new city.

The roads scheme and hierarchy that has assumed a lowered rail option is as shown below.

#### North-South Links

- Extension of Enterprise Road northward to link up with Haile Selassie Avenue
- Extension of Workshop Road to provide planning area access to Bunyala Road and Haile Selassie Avenue

#### East-West Links

- Missing link from Commercial Street to Jogoo Road (at City Stadium)
- Extension of Station Road to Haile Selassie Avenue and Ladhies Road
- Collection of an East-West collector through and for the planning area

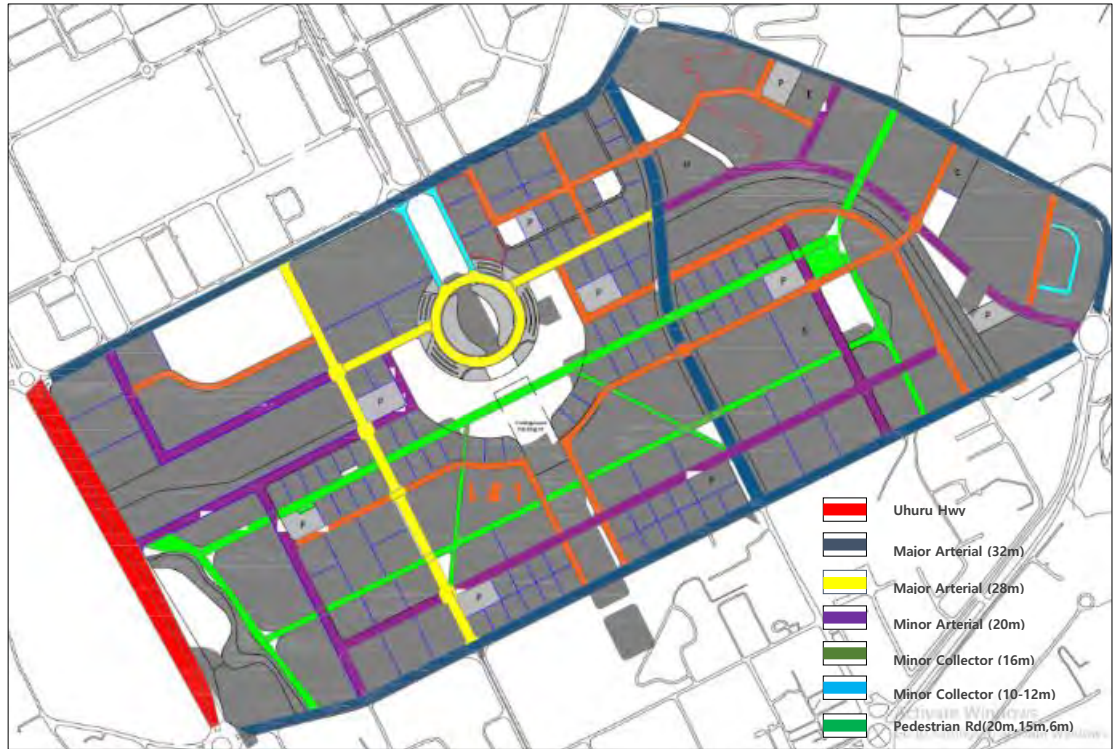
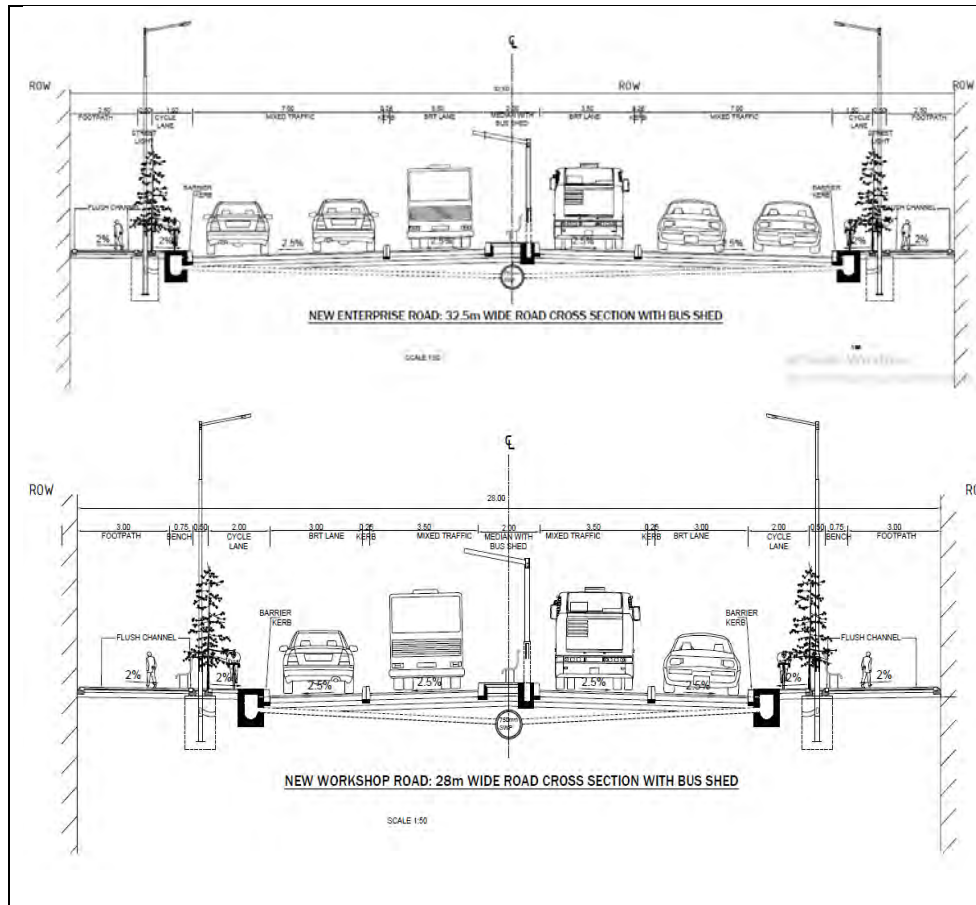
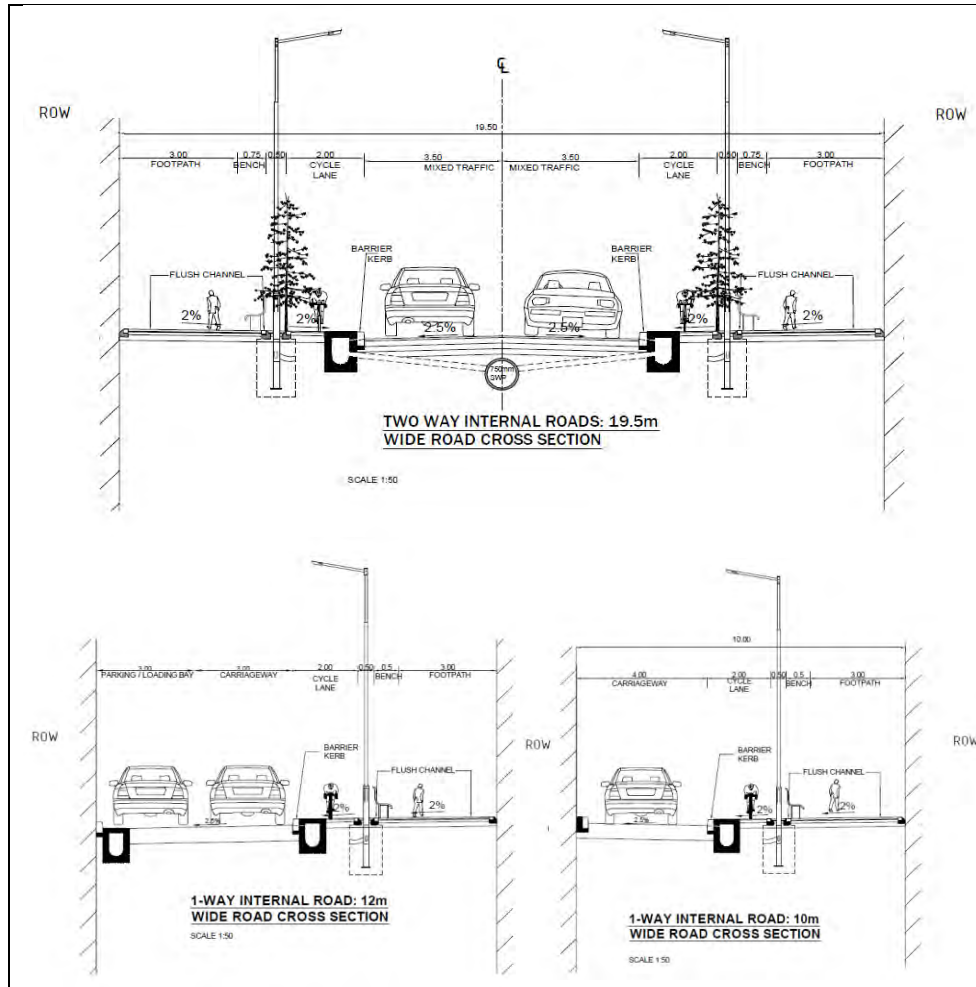


Figure 6-1 Proposed Road Network and Hierarch in the Plan



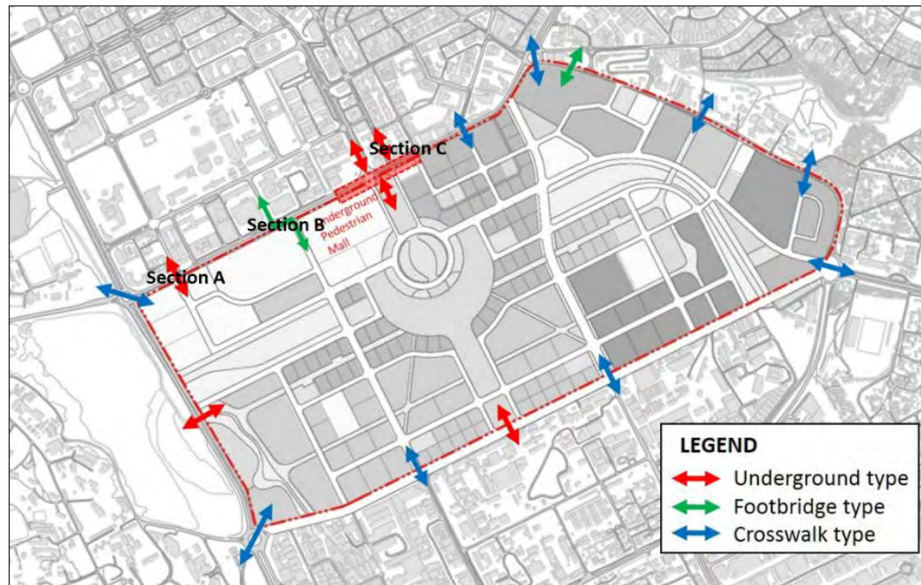


**Figure 6-2 Proposed Road Cross Section**

**The suggestion for enhancing network linkage with existing CBD**

To ensure that the Railway City is effectively connected to the existing CBD, the following proposals have been put into consideration along, Haile Selassie Avenue, the major arterial bordering the project and the CBD.

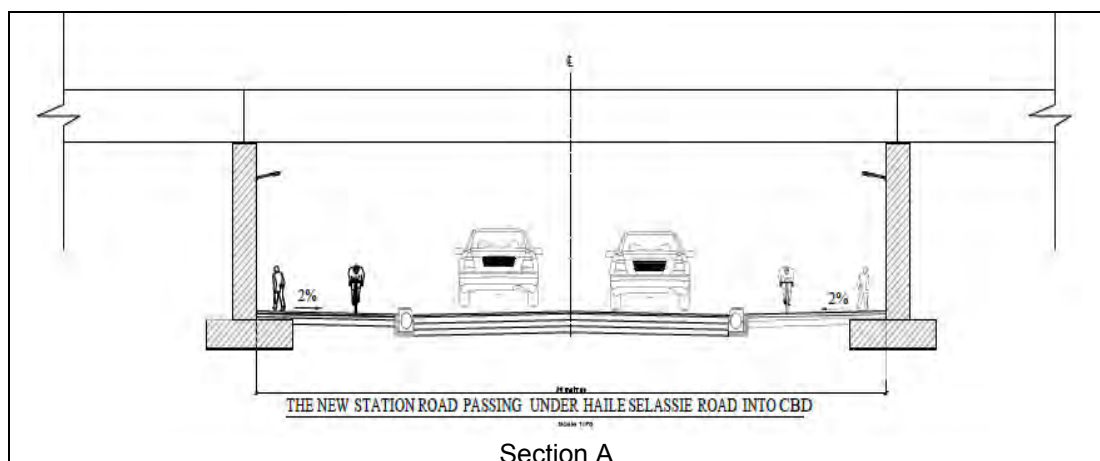
In this guideline, the Plan suggests a connection of the existing walkway on each of the four sides, with continuation into the Railway City. The figure below indicates the general scheme.



**Figure 6-3 Suggestion for Enhancing Network with Surrounded Area**

- The proposed new Station road to be connected to CBD through an underpass under Haile Selassie road
- The proposed Junction of New Workshop road and Haile Selassie to be At-Grade but restricted to left-turn, only to avoid conflict with traffic flow on Haile Selassie Avenue. Provision of a footbridge at this junction over Haile Selassie road to be considered to cater for pedestrians from the planning area into CBD and vice versa.
- Proposal to have a footpath underpass with shops on the sides at the entrance to the New Central station to cater for pedestrians to and from the planning area.<sup>30</sup>
- The New Enterprise road is proposed be connected At-grade Junction located between improved Racecourse and Ladhies junctions (as proposed in the Viaduct project)

The above proposals are illustrated in the sketches below:



<sup>30</sup> This section shall consider Sewer layout of Parliament road to Racecourse road.

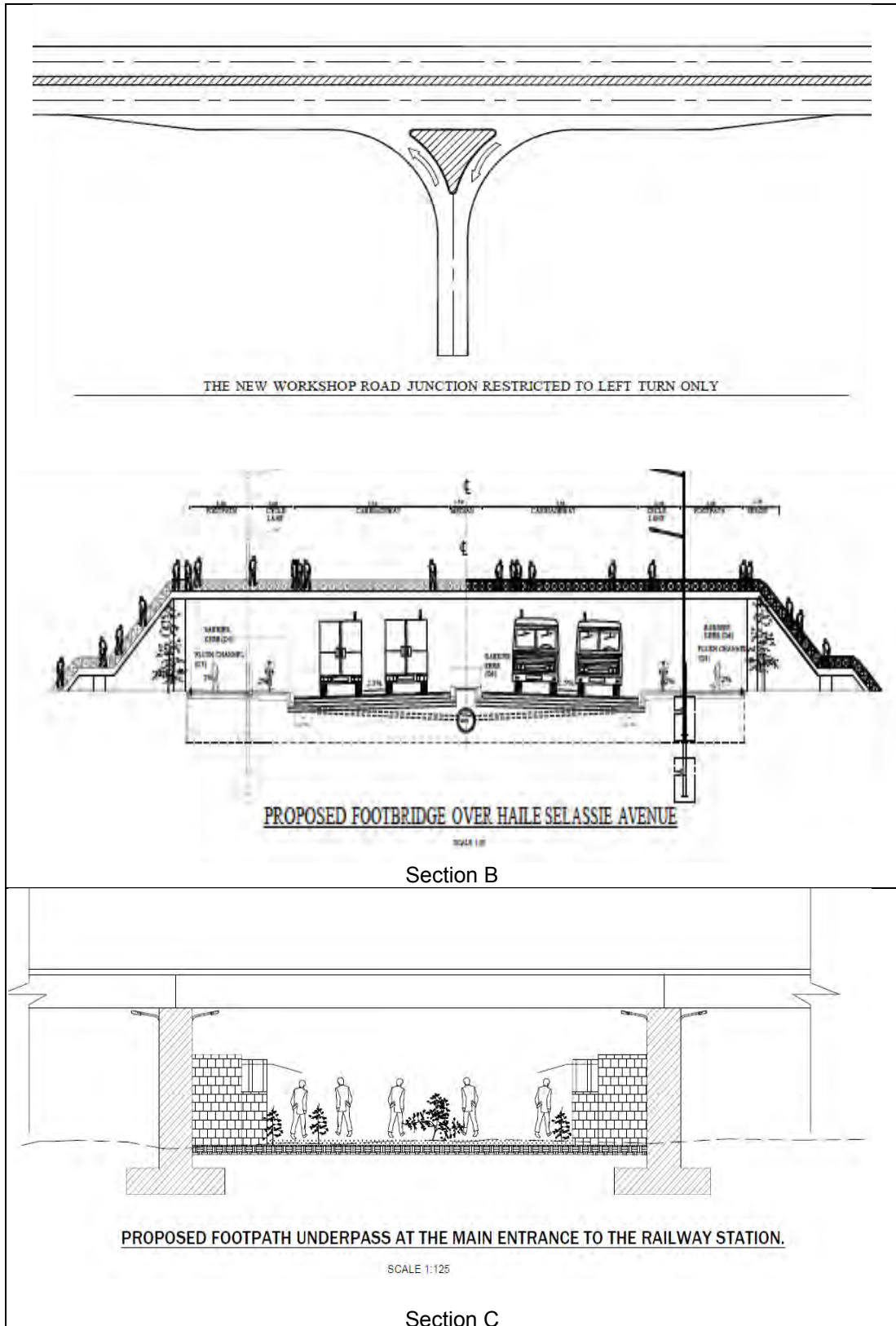


Figure 6-4 Idea Sketches for Linkage between Existing CBD and the Planning Area

### 6.1.2 Public Transport

Road-based public transport accounts for 40.6% of all trips in Nairobi. As the planning area is being developed as a Transit-Oriented Development (TOD), provision of well-planned, adequate public transport facilities and network is critical.

The main public transport proposals include 1) BRT (Bus Rapid Transit), 2) Commuter Rail.

Five Bus Rapid Transit (BRT) routes have been proposed under the Nairobi MRTS Harmonization Study for the Nairobi Metropolitan Region (NMR). BRT#5 on Outer Ring Road is not shown as it is outside the scope of this map and does not directly interact with the planning area. Three of these proposed BRT routes pass along the boundaries of the Nairobi Railway City planning area as follows:

- BRT lines 1 & 2 along A104 Uhuru Highway on the western boundary of the planning area;
- BRT line 3 along Haile Selassie Avenue on the northern boundary of the planning area linking to the existing CBD.

In order to enhance the position of the Nairobi Railway City as a Transit Oriented Development, the Plan proposed the introduction of three additional lines to go through the proposed inter-modal hub at the Nairobi Central Railway Station. These were:

- Spur line 1B and 2B to access the inter-modal transport hub and provide access to The Railway City.
- BRT line 6 to provide access from Industrial Area to the inter-modal hub
- Capacity on Bunyala Road be enhanced to accommodate BRT lines
- The Plan also proposed that Haile Selassie Avenue be designed as low-volume vehicle link with provision of crossings for pedestrians and other NMT modes at several locations to provide links to the inter-modal hub from BRT line 3 and from the existing CBD. 45% of the traffic on the road is currently matatus; once these are replaced by BRT, this will be possible.

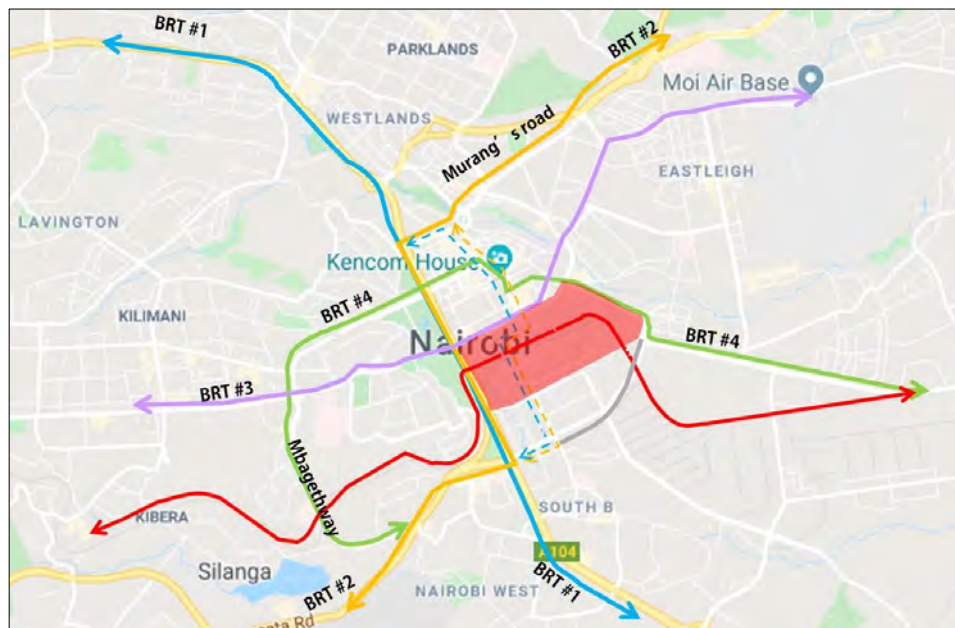


Figure 6-5 Proposed BRT Spur Lines

The project 'Consultancy Services for Development of Commuter Rail Master Plan for the Nairobi Metropolitan Region' is covering the redevelopment of commuter rail aspects in the region and therefore in the Nairobi Railway Station. The project aims to carry out a modernization and expansion of under-utilized railway transport infrastructure facilities within Nairobi in order to attract passenger traffic from the roads thus reduce congestion and create an efficient and affordable mass rapid transit transport system from the city.

The development will be within existing railway corridors to provide commuter rail services between Nairobi Railway Station and the following destinations<sup>31</sup>:

- Ruiru
- Syokimau
- Jomo Kenyatta International Airport
- Kikuyu
- Embakasi Village

Commuter Rail is forecast to carry 16% of all public transport trips in the Nairobi Metropolitan Region (NMR). It is also estimated that the Nairobi Central station is forecast to have 30,000 station exits, 8,000 entries and 9,000 people changing trains to cross the CBD without entering or exiting the station.

Further, dealing with Nairobi City scale, there can be two main types of operation designs for BRT systems:

- Trunk and Feeder System: Low density areas are served by low capacity vehicles which feed into the high capacity vehicles running on the main line via transfer/feeder stations.
- Direct Services System: The high capacity vehicles run along the main line as well as into the residential areas regardless of density.

The proposal would involve implementation of a Trunk and Feeder BRT system for Nairobi. Other public transport modes including buses and matatus run in the local streets and estates in the outer parts of Nairobi and terminate at various specific termini that feed to the BRT routes. Customers then transfer to the BRT for commute to the Central Business District. There is therefore an exclusive BRT zone closer to the CBD resulting in reduced traffic congestion and the possibility of transferring between BRT lines without the need to travel into the central CBD area.

---

<sup>31</sup> Kenya Railways Website [krc.co.ke/Nairobi-commuter-rails/](http://krc.co.ke/Nairobi-commuter-rails/)

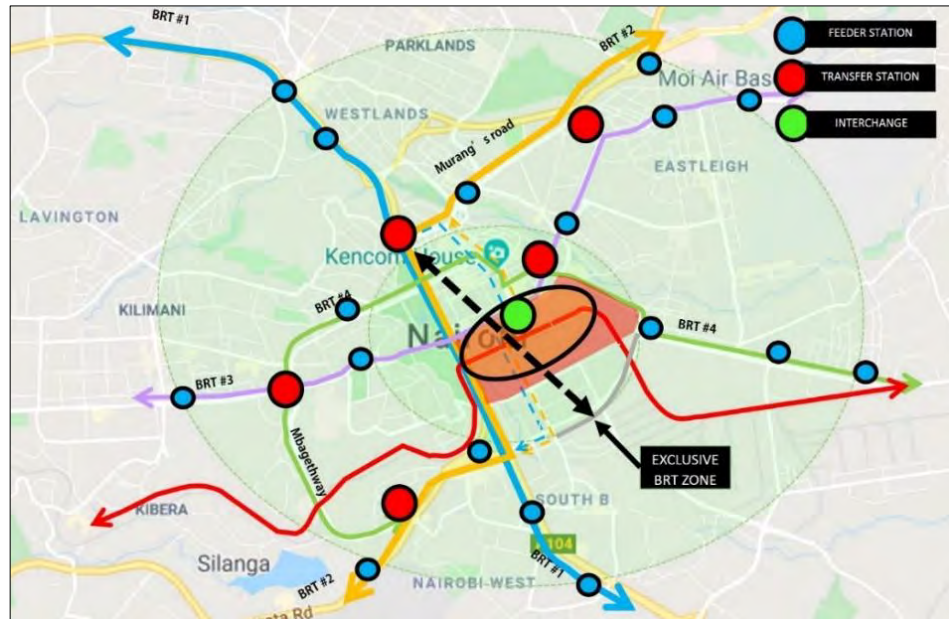


Figure 6-6 Proposed BRT Trunk and Feeder System with BRT Exclusive Zone

### 6.1.3 Non-Motorised Transport Network

Provision for Non-Motorized Transport (NMT) modes is at the heart of any TOD and the bias for ease of movement in the planning should be towards these modes. Non-motorized modes include:

- Pedestrians
- Cyclists
- Hand carts

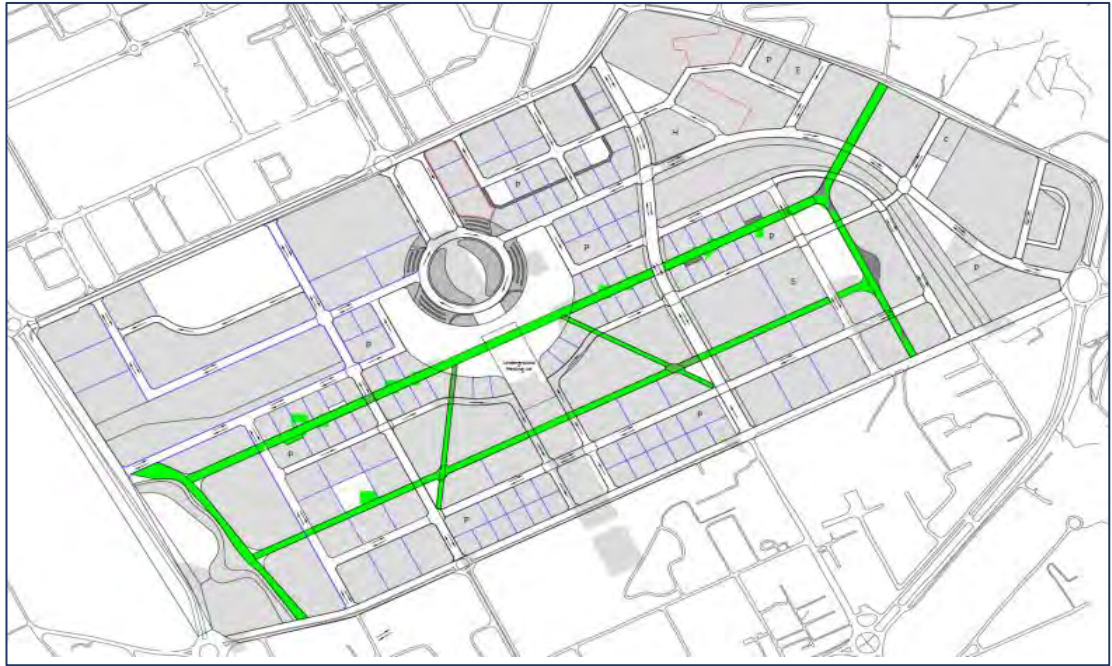
NMT has been determined to be the primary mode of travel in Nairobi. According to NIUPLAN, 39.7% of citywide trips are made on foot (pedestrians), which is currently the largest proportion of NMT modes in the city. Only 13.6% of trips are made by private vehicles. However, provision of NMT infrastructure including paths, footbridges etc. is currently an afterthought, inadequate and poorly located.

The Plan proposed and provided NMT facilities along the entire road network shown in the planning area. The cross-sections showing this provision are shown in the infrastructure section of this report. As shown in the table below, the facilities provided for NMT along the roadside (as part of the road network) for both pedestrians and cyclists is 35% of the corridors provided.

Table 6-1 Provision of Traffic Facilities in the Plan

Dedicated Corridor Section	Proportion	Transit Type
Carriageway (Mixed Traffic)	25%	MT
Bus lanes	3%	MT
Pedestrian walkways (Roadside)	21%	NMT
Pedestrian Corridor	28%	NMT
Cycle Lanes	14%	NMT
Streetlights, Kerbs, Benches etc.	9%	

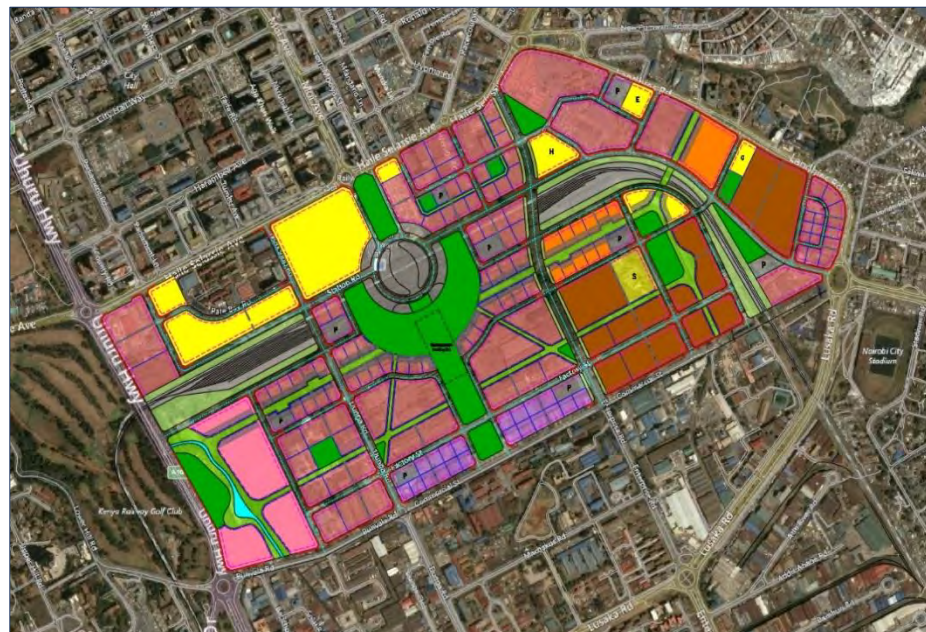
An additional 28% of the corridor is provided as an exclusive NMT corridor shown below.



**Figure 6-7 Exclusive NMT Corridor in the Planning area**

#### 6.1.4 Transport Analysis

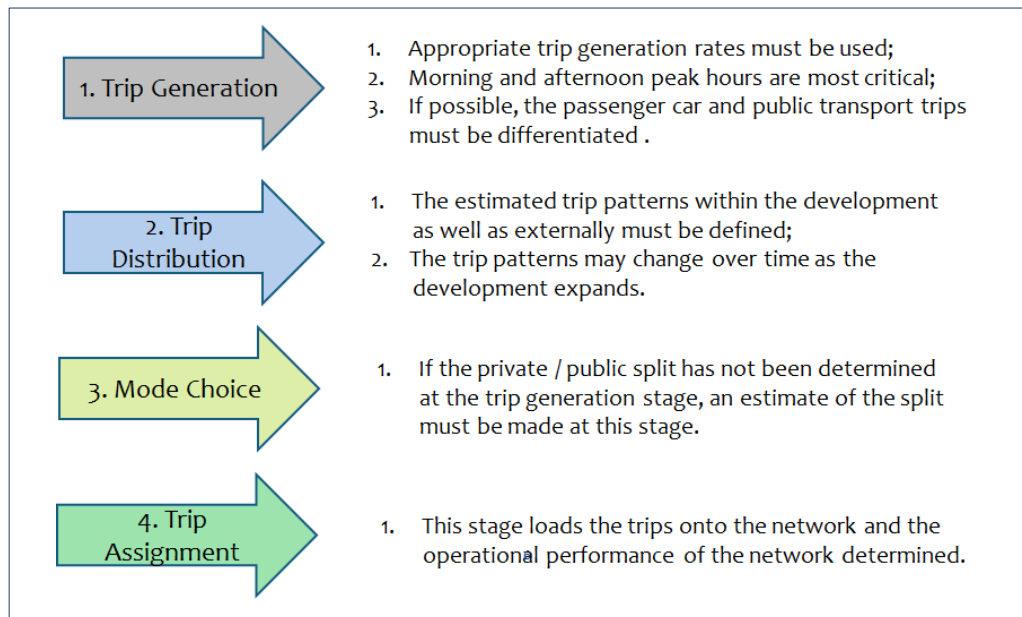
The objective of this stage is to establish the transport infrastructure requirements based on forecasted traffic from the surrounding network and traffic generated by the development. Due to the overlapping characteristics of the Green Mall and Viaduct Projects with the plan, the traffic data obtained from the two projects was used for further analysis of traffic patterns in the Plan.



**Figure 6-8 Railway City and Surrounding Transport Network**

## Travel Demand Modelling

The transport demand was determined using the 4-step traffic modelling process which is summarized below:



**Figure 6-9 Four Step Modelling Process**

### 1) Trip Generation

Trip generation is a critical first step in the determination of traffic impact from proposed developments and plays a key role in this study. Trip generation, based on the prescribed land-uses for the development and their corresponding estimated trip rates, sourced from the 9<sup>th</sup> Edition of the Institute of Transportation Engineers Trip Generation Manual.

Table below shows the total number of person trips generated by the development in the morning peak (AM) and evening peak (PM). The IN-trips represent those arriving at the various precincts while the OUT trips are those originating within railway city precincts. As the PM peak is higher, it has been adopted for further analysis since it represents the worst-case scenario.

**Table 6-2 Summary of AM and PM Person Trips**

Time Period	In	Out	Total (Peak Hour)
<b>AM Trips</b>	29,014	20,844	49,858
<b>AM Distribution</b>	58%	42%	-
<b>PM Trips</b>	34,064	36,850	70,914
<b>PM Distribution</b>	48%	52%	-

The table below shows the PM peak hour person trips for the respective precincts, based on their land uses:

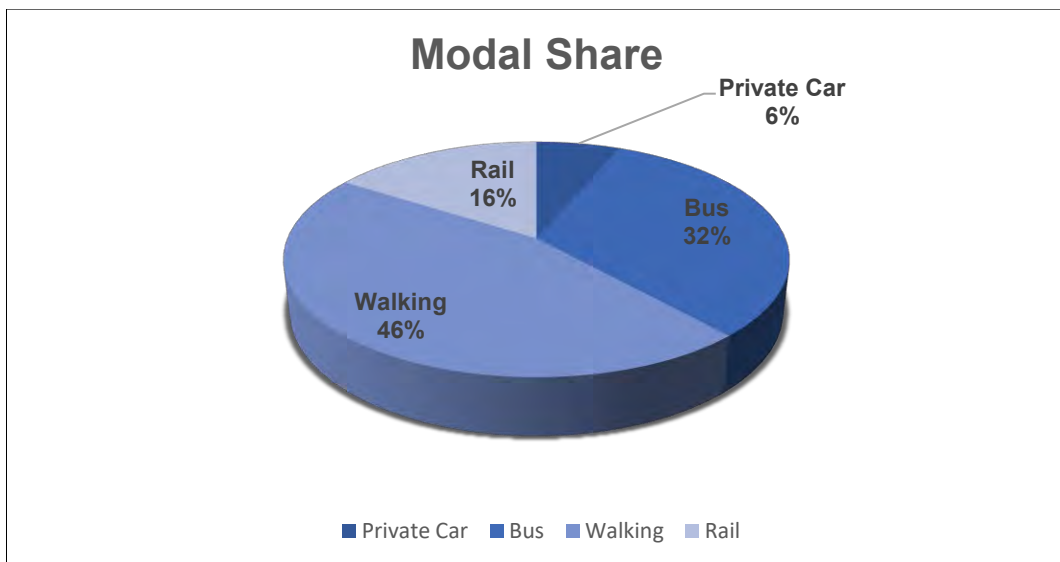
**Table 6-3 Summary of PM Person Trips**

PRECINCT	IN	OUT	TOTAL	IN	OUT
Street Commercial (SC)	2,456	3,273	5728	7.2%	8.9%
MICE Core	2,250	3,773	6023	6.6%	10.2%
Center Core (CC)	2,936	4,419	7355	8.6%	12.0%
East Core (EC)	386	1,308	1695	1.1%	3.6%
International Office (IO)	608	906	1513	1.8%	2.5%
Housing (H)	12,566	7,226	19792	36.9%	19.6%
Hi-tech SME (H-Tech)	1,647	603	2251	4.8%	1.6%
Wakulima and Muthurwa Commercial (WMC)	4,443	6,483	10926	13.0%	17.6%
Kenya Railway (KR)	1,685	1,754	3440	4.9%	4.8%
R&D Zone With TUK (RD)	792	2,341	3133	2.3%	6.4%
New Central Station (NCS)	4,294	4,763	9057	12.6%	12.9%
TOTALS	34,064	36,850	70914	100%	100%

**2) Trip Generation and Mode Choice for Transit Oriented Developments**

Nairobi Railway City is a Transit Oriented Development (TOD). As such, public transit and non-motorized transport are prioritized over private, single occupancy vehicles. NIUPLAN determined that walking was the main mode of movement within Nairobi at 45.7%. This was followed by Buses at 40.7% and private cars at 13.5%.

DAR Consultants, responsible for development of the Nairobi Commuter Rail Masterplan, projected a modal share of 16% for rail, even with BRT implemented. Based on this and additional policies on restricted parking and circulation within the Nairobi Railway City to discourage the use of private cars, the modal share was adjusted as shown below:



**Figure 6-10 Modal Share of the Plan**

Studies of five TOD's in the United States of America<sup>32</sup> have shown that TOD's generate between 30 – 50% less trips than a conventional mixed used development. The Plan adopted 40% percentage reduction of vehicle trips, which were shifted to public transit modes.

The equivalent volume of transit trips gained from the reduction of vehicle trips is dependent on the respective vehicle occupancies. Vehicle occupancy as determined by NIUPLAN was 1.96 for private cars and 16.4 for buses. However, since Railway City is founded on the implementation of BRT, it was necessary to convert the bus occupancy into BRT occupancy. Integrated Transport Planning Limited determined that a bus capacity of 75 passengers would be adequate for Nairobi's BRT system. Consequently, the Plan have adopted a conventional occupancy of 40 for BRT buses which translates to 53% of the proposed BRT bus capacity. The trips per mode are summarized below.

**Table 6-4 Summary Trips per Travel Mode in the PM Peak**

Mode of Transport	Mode Share	Person Trips Per Mode		Vehicle Trips per Mode	
		In	Out	In	Out
Private Car	6.4%	1,308	1,415	667	722
Bus	32.0%	11,773	12,735	294	318
Walking	45.8%	15,601	16,877		
Rail*	16.0%	5,450	5,896		
<b>Total</b>	<b>100%</b>	<b>34,132</b>	<b>36,924</b>	<b>962</b>	<b>1,040</b>

The peak hour vehicle trips per precinct were then calculated as follows:

**Table 6-5 Vehicle Trips per Precinct/ Zone in the PM Peak**

NAIROBI RAILWAY CITY PRECINCT / ZONE	IN	OUT	TOTAL
Street Commercial (SC)	69	92	162
MICE Core	64	107	170
Center Core (CC)	83	125	208
East Core (EC)	11	37	48
International Office (IO)	17	26	43
Housing (H)	355	204	559
Hi-tech SME (H-Tech)	47	17	64
Wakulima and Muthurwa Commercial (WMC)	125	183	308
Kenya Railway (KR)	48	50	97
R&D Zone with TUK (RD)	22	66	88
New Central Station (NCS)	121	134	256
<b>TOTAL</b>	<b>962</b>	<b>1,040</b>	<b>2002</b>

### 3) Trip Distribution and Assignments

#### a. Trip Distribution

<sup>32</sup> R. Ewing, R. Cervero, et al. 2011. *Traffic Generated by Mixed-Use Developments*. *Journal of Urban Planning and Development* and Reid Ewing\*, Guang Tian, et al. 2016. *Trip and parking generation at transit-oriented developments: Five US case studies*

In order to carry out the trip distribution, further analysis of the Origin-Destination (OD) matrix developed by the Green Mall Consultant was carried out. This entailed consolidation of 117 OD zones into 6 zones that will feed into the following entry points to Railway City:

- Entry 1: Uhuru Highway (Mombasa bound side after the railway bridge)
- Entry 2: Bunyala Road Roundabout
- Entry 3: New Workshop Road (at Bunyala Road)
- Entry 4: New Enterprise Road (at Bunyala Road)
- Entry 5: Jogoo Road (at City Stadium Roundabout)
- Entry 6: Ring Road Ngara (at Ladhies Road Roundabout)



**Figure 6-11 Consolidated OD Zones**

A new OD matrix, shown below, was then derived using these zones, highlighting the trips that would originate or terminate in Railway City.

**Table 6-6 OD Matrix of the Plan**

	1	2	3	4	5	6	RC	
1			3.62%	10.88%			0.33%	15%
2			16.46%	2.89%	7.24%		1.08%	28%
3	3.37%	16.27%				4.22%	1.30%	25%
4	10.85%	3.18%					0.05%	14%
5		6.37%					0.19%	7%
6		3.40%	4.04%				0.36%	8%
RC	0.37%	1.14%	1.21%	0.03%	0.42%	0.34%	0.38%	4%
	15%	30%	25%	14%	8%	5%	4%	

Based on this matrix, the following trip proportions were developed for each entry point:

**Table 6-7 Trip Proportions per Entry/Exit Point**

Entry Point		Proportion of Trips
1	Uhuru Highway (Mombasa bound side after the railway bridge)	17%
2	Bunyala Road Roundabout	8%
3	New Workshop Road (at Bunyala Road)	4%
4	New Enterprise Road (at Bunyala Road)	21%
5	Jogoo Road (at City Stadium Roundabout)	23%
6	Ring Road Ngara (at Ladhies Road Roundabout)	27%

These trips were then distributed using the following weighted percentages, (determined by the percentage of trips generated by each precinct) with respect to the origin/destination and the entry/exit point.

**Table 6-8 Trip Distribution Summary**

Precinct	UH Entry	Bunyala	New Workshop	New Ent	Jogoo	RRNgara
	17%	8%	4%	21%	23%	27%
Street Commercial (SC) 1	0.59%	0.28%	0.16%	0.77%	0.84%	0.96%
Street Commercial (SC) 2	0.59%	0.28%	0.16%	0.77%	0.84%	0.96%
MICE Core	1.09%	0.51%	0.29%	1.41%	1.54%	1.76%
Center Core (CC) 1	0.71%	0.33%	0.19%	0.92%	1.01%	1.15%
Center Core (CC) 2	0.71%	0.33%	0.19%	0.92%	1.01%	1.15%
East Core (EC)	0.19%	0.09%	0.05%	0.24%	0.26%	0.30%
International Office (IO)	0.29%	0.14%	0.08%	0.38%	0.42%	0.48%
Housing (H)	6.09%	2.82%	1.64%	7.89%	8.61%	9.84%
Hi-tech SME (H-Tech)	0.80%	0.37%	0.22%	1.03%	1.13%	1.29%
WMC Housing	0.26%	0.12%	0.07%	0.34%	0.37%	0.42%
WMC Commercial	1.59%	0.74%	0.43%	2.06%	2.25%	2.57%
WMC RF Commercial/Office	0.18%	0.09%	0.05%	0.24%	0.26%	0.30%
WMC Public	0.12%	0.05%	0.03%	0.15%	0.16%	0.19%
Kenya Railway (KR)	0.82%	0.38%	0.22%	1.06%	1.15%	1.32%
R&D Zone with TUK (RD)	0.38%	0.18%	0.10%	0.50%	0.54%	0.62%
New Central Station (NCS)	2.08%	0.96%	0.56%	2.70%	2.94%	3.36%

**b. Trip Assignment**

In order to present the peak hour volumes in AADT, it was necessary to calculate a conversion factor using previously collected traffic data for Haile Selassie and Uhuru Highway. The factor was calculated by taking the average of the ratio of peak hour traffic to average annual daily traffic for the two roads. An average factor of 7.89% was adopted.

The generated AADT was then calculated by scaling up the peak hour traffic, which represents 7.89% of the AADT to 100%. The Trips per precinct are shown in the table below:

**Table 6-9 Trips per Precinct in the Plan**

PRECINCT	PEAK HOUR (7.89%)		AADT (100%)	
	IN	OUT	IN	OUT

Street Commercial (SC)	69	92	879	1,171
MICE Core	64	107	805	1,350
Center Core (CC)	83	125	1,050	1,581
East Core (EC)	11	37	138	468
International Office (IO)	17	26	217	324
Housing (H)	355	204	4,496	2,586
Hi-tech SME (H-Tech)	47	17	589	216
Wakulima and Muthurwa Commercial	125	183	1,590	2,320
Kenya Railway (KR)	48	50	603	628
R&D Zone With TUK (RD)	22	66	283	838
New Central Station (NCS)	121	134	1,537	1,704
<b>TOTALS</b>	<b>962</b>	<b>1,040</b>	<b>12,189</b>	<b>13,186</b>

These trips were then assigned using the respective precinct percentages shown in table 2-15 for both the IN and OUT scenarios.

**Table 6-10 Peak Hour and AADT Volumes**

Precinct	UH Entry		Bunyala		New Wkshp		New Ent		Jogoo		RRNgara	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Street Commercial 1	72	97	34	45	20	26	94	125	103	137	117	156
Street Commercial 2	72	97	34	45	20	26	94	125	103	137	117	156
MICE Core	133	223	62	103	36	60	172	289	188	315	215	360
Center Core 1	87	130	40	60	23	35	112	169	123	184	140	211
Center Core 2	87	130	40	60	23	35	112	169	123	184	140	211
East Core	23	77	11	36	6	21	30	100	32	109	37	125
International Office	36	53	17	25	10	14	47	69	51	76	58	86
Housing	742	427	344	198	200	115	962	553	1,049	603	1,199	689
Hi-tech SME	97	36	45	17	26	10	126	46	138	50	157	58
WMC Housing	32	17	15	8	9	5	41	22	45	24	52	28
WMC Commercial	194	210	90	97	52	57	251	272	274	297	313	339
WMC RF Comm/Office	23	138	10	64	6	37	29	180	32	196	36	224
WMC Public	14	17	7	8	4	5	18	23	20	25	23	28
Kenya Railway	100	104	46	48	27	28	129	134	141	146	161	167
R&D Zone With TUK	47	138	22	64	13	37	61	179	66	195	76	223
New Central Station	254	281	118	130	68	76	329	365	359	398	410	454

The following schematic shows the IN and OUT volumes on the network within Railway City.

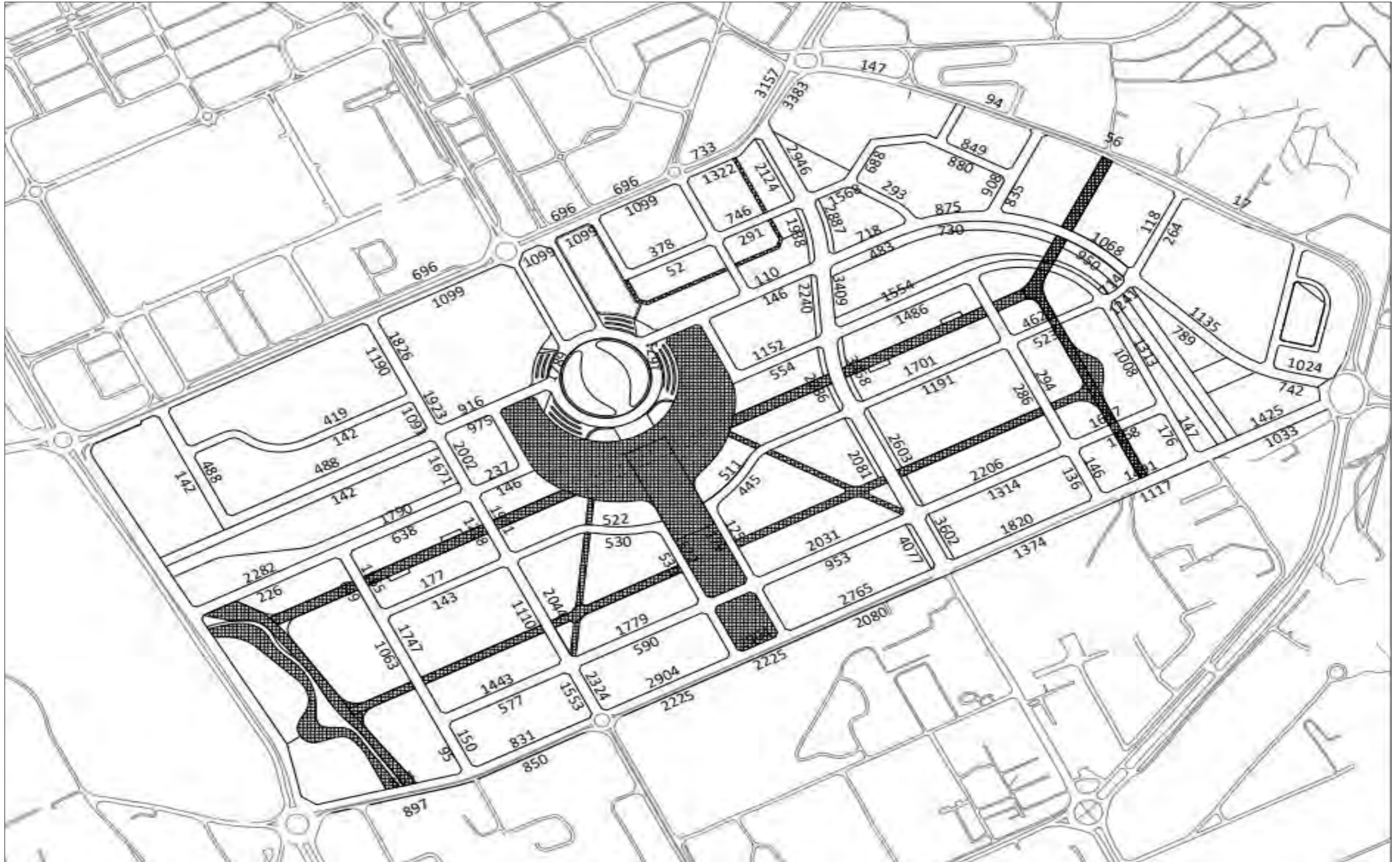


Figure 6-12 Schematic Layout of In and Out Generated AADT in 2030

In order to carry out a like for like comparison with the generated traffic, traffic volumes from scenario 2 (2030) of the Green Mall project were adjusted to incorporate BRT by applying the public transport percentages shown below and the respective vehicle occupancies for buses and BRT.

These percentages were established from classified traffic data previously collected by the Consultant. The average public transport percentage, 23%, was adopted as the minimum percentage on the assumption that BRT would have been fully implemented by 2030 on the surrounding network. It was also applied to the roads where traffic data was unavailable such as Bunyala Road.

**Table 6-11 Public Transport Coverage in the Road**

Road	% Public Transport
Uhuru Highway	13%
Haile Selassie Avenue	42%
Lusaka Road	7%
Ladhies Road	29%
Jogoo Road	26%
Average	23%

The revised Green Mall scenario 2 (2030) volumes were then redistributed to incorporate New Workshop Road, after which they were combined with the generated traffic volumes. The schematic is shown in the figure below.

It is noted that the purpose of this schematic is to show the potential improvements to the surrounding network and is only representative. The true impact of the improving the road links through implementation of railway city will require an update of the traffic model developed by the Green Mall Consultant.

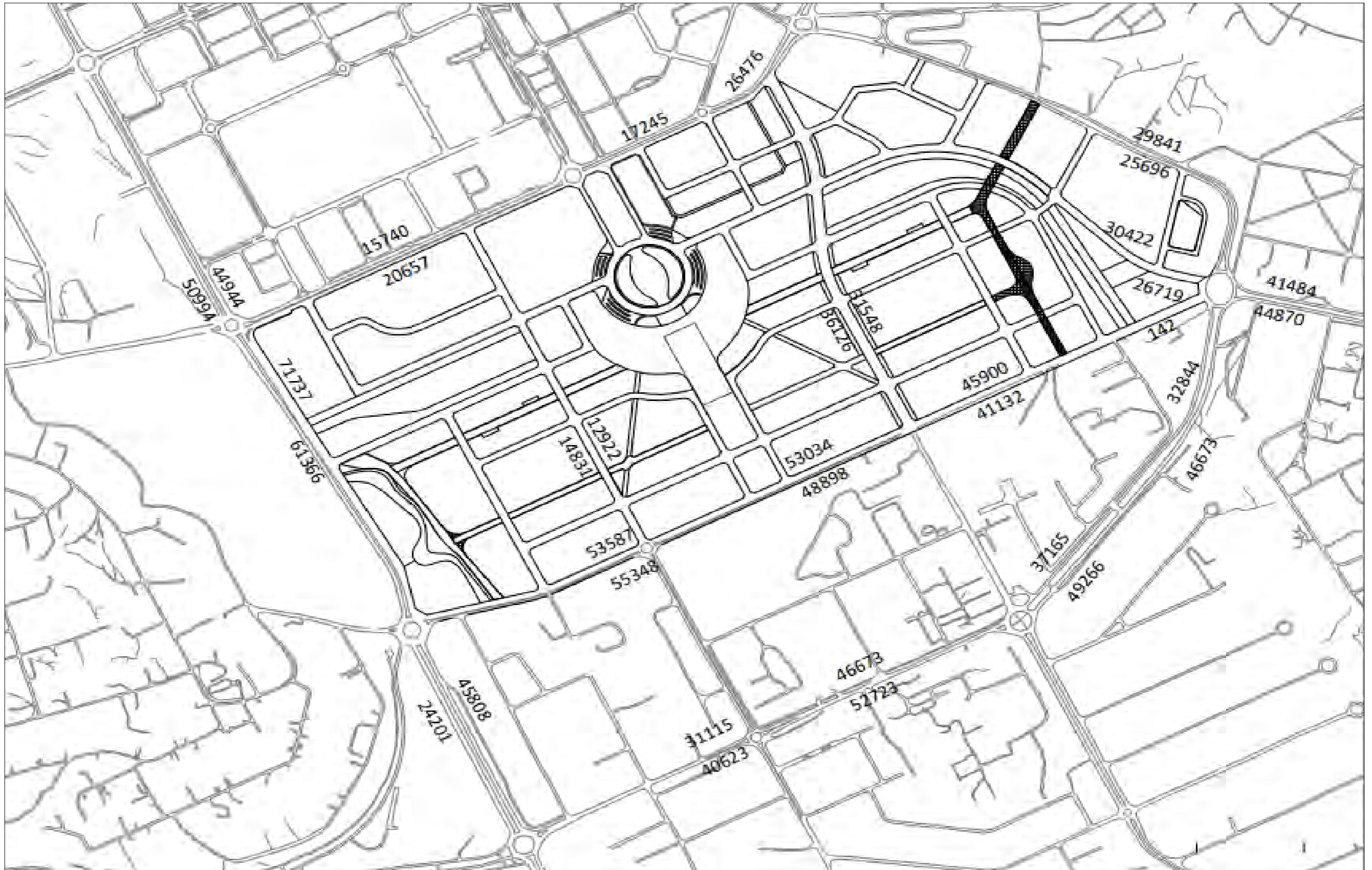


Figure 6-13 Schematic Layout of Adjusted Green Mall Traffic + Generated AADT in 2030

### Capacity and Estimated Number of Lanes

The road capacity and estimated number of lanes was determined for the various roads within and around Railway City using the Kenya Draft Road Design Guidelines for Urban Roads (2001) and the Highway Capacity Manual HCM, (2010). As they roads are primarily urban, a design speed of 50 km/h was adopted, with the exception of Uhuru Highway, where 100km/h was adopted.

The Kenya Draft Road Design Guidelines for Urban Roads recommends the following capacities for Urban roads.

**Table 6-12 Practical Capacities of Two-way Urban Roads**

Effective width of carriageway in metres (excluding refuges or central reservation)	2-lane		3-lane	4-lane	6-lane	Remarks
	7.0m	7.3m	10m	14m	20m	
Description	Capacity in pcu's per hour for both directions of flow			Capacity in pcu's per hour for one direction of flow		
All purpose roads with no frontage access, no parked vehicles permitted and negligible cross traffic	1350	1500	2200	2 200	3300	Appropriate to all-purpose distributors
All purpose streets with high capacity junctions and 'No waiting' restrictions	1000	1200	1800	1 350	2250 (or 2450 for dual carriageway)	Applicable to distributors and access roads where accesses is frequent but capacity is not unduly restricted by junctions
All purpose streets with capacity restricted by parked vehicles and junctions	450 to 600	600 to 750	1100 to 1300	900 to 1000	1500 to 2000	Applicable to roads waiting vehicles and with heavy cross traffic limit capacity

The demand volumes shown in the table below were obtained by summation of the revised Green Mall data and the generated traffic volumes.

The capacities in the table above were applied in the calculation of the volume to capacity (V/C) ratio using the methodology from the Highway Capacity Manual. The volume to capacity ratio of a road link shows the relationship between the peak 15-minute flows to the lane capacity. As the value approaches one, the traffic flow conditions deteriorate. The table below summarizes the number of required lanes based on the v/c ratio.

**Table 6-13 Road Capacity Requirements for Road Network within and around the Planning Area**

Link	Direction	Demand Vol. (veh/h)	Peak 15-min Flow Rate (pc/h/ln) <i>(c = b/(exfgxh)</i>	Capacity (pc/h/ln)	PHF	N	f <sub>HV</sub>	f <sub>p</sub>	Avg PC Spd (km/h)	Density (pc/km/ln)	V/C Ratio <i>(l = c/d)</i>
	(a)	(b)		(d)	(e)	(f)	(g)	(h)	(i)	(j = c/i)	
New Enterprise	EB	2,226	1,216	2,200	0.95	2	0.97	0.99	50	24	0.55
	WB	2,662	1,454	2,200	0.95	2	0.97	0.99	50	29	0.66
New Workshop	EB	1,057	1,155	1,350	0.95	1	0.97	0.99	50	23	0.86
	WB	1,175	1,284	1,350	0.95	1	0.97	0.99	50	26	0.95
Bunyala Road	EB	5,109	1,847	3,300	0.95	3	0.98	0.99	50	37	0.56
	WB	5,216	1,885	3,300	0.95	3	0.98	0.99	50	38	0.57
Haile Selassie	NB	0	0	3,300	0.95	2	0.98	0.99	50	0	0.00
	SB	1,831	993	3,300	0.95	2	0.98	0.99	50	20	0.30
Uhuru Highway	EB	6,640	2,400	3,300	0.95	3	0.98	0.99	100	24	0.73
	WB	5,680	2,053	3,300	0.95	3	0.98	0.99	100	21	0.62
Minor Arterials	EB	174	93	1,000	0.95	2	1.00	0.99	50	2	0.09
	WB	104	55	1,000	0.95	2	1.00	0.99	50	1	0.06
Minor Collectors	NB	134	72	1,000	0.95	2	1.00	0.99	50	1	0.07
	SB	94	50	1,000	0.95	2	1.00	0.99	50	1	0.05

**N** - Number of lanes; **f<sub>HV</sub>** - heavy vehicle factor, **f<sub>p</sub>** - proportion of driver population familiar with the road; **PHF** - Peak Hour Factor;; **v/c** - volume to capacity ratio

From the table above, 2 lanes in each direction are adequate for New Enterprise Road. The minor arterials and collectors have excess capacity with a single lane in each direction. Based on this analysis, the Plan derived typical cross sections for the roads within the Railway City, which are discussed further in section 6.1.1 Road Network.

The Plan recommends capacity enhancement of Bunyala Road as the increased connectivity between and East and West greatly increases its attractiveness as an alternative route.

The Plan also propose enhancement of Haile Selassie Avenue to ensure ease of crossing especially for pedestrians and cyclists moving to and from the existing CBD and the BRT Line 3 to the Central Railway Station. As previously stated, this will be possible if this area is part of the BRT exclusive zone.

## 6.2 Infrastructure Plan

### 6.2.1 Storm Water and Drainage Facilities

The two rivers namely Ngong and Nairobi should be retained as the main outlets for storm water originating from the planning area. Hydrological study of the area will determine the current and expected peak flows and the flows that will be picked by the various channels in consideration of the water that will be channeled to the proposed underground tank below the proposed New railway station and the various greening areas.

Storm water drainage facilities that will be sized on the basis of the hydrological and hydraulic studies have been proposed on both sides of all the roads within the development. The proposed side drains will be covered, concrete u-shaped drains, allowing for utilization of the full width of the transit corridors. These will also reduce cases of blockage common with open channels.

New pipe and box culverts shall be provided at crossing points as determined by the hydraulic requirements. Relevant existing bridges, pipe and box culverts that are outside the site area will be assessed for both hydraulic and structural capacity to confirm the measures that had been proposed in earlier studies and/or propose new measures.

Utilize open greenspaces – e.g. attenuation ponds and swale for storage of surface runoff; infiltration boxes where water is temporarily stored and before moving through the soil or can be used for greening.



Figure 6-14 Proposed Drainage Scheme of the Plan

### 6.2.2 Water supply

Water demand projection considering the appropriate water consumption per capita, the total estimated water demand is 9,535 m<sup>3</sup>/day for the Railway City. This is as calculated and tabulated in the table below.

**Table 6-14 Calculated Water Demand**

Zone	Land use	Resident Population			Non Resident Population		
		Residents	Per capita water demand (lpd)	Water demand (m3/day)	Users	per capita water demand (lpd)	Water demand (m3/day)
Street Commercial	Sub Total	3,065		460	21,046		526
	Mixed use(Commercial)	1,299	150	195	18,400	25	460
	Mixed use(Residential)	1,766	150	265	1,518	25	38
	Parking lot	-	150	-	1,128	25	28
MICE Core	Sub Total	4,173		626	20,692		517
	MICE	4,173	150	626	20,692	25	517
Center Core	Sub Total	4,268		640	27,710		693
	Mixed use(Office)	4,268	150	640	27,710	25	693
East Core	Sub Total	1,501		225	5,945		149
	Mixed use(Commercial)	227	150	34	3,217	25	80
	Mixed use(Residential)	1,274	150	191	1,095	25	27
	Public purpose	-	150	-	1,633	25	41
International Office	Sub Total	-			25,494		637
	Mixed use(Office)	-	150	-	25,494	25	637
	Sub-Station (KPLC)		150			25	
Housing	Sub Total	13,773		2,066	12,760		319
	Residential	7,499	150	1,125	797	25	20
	Residential – Affordable with Social Housing	5,820	150	873	338	25	8
	Mixed use(Commercial)	454	150	68	6433	25	161
	Public purpose	-	150	-	817	25	20
	School	-	150	-	4,170	25	104
	Parking lot	-	150	-	205	25	5
Hi-tech Industrial	Sub Total	397		60	11,363		284
	Hi-tech Industrial	397	150	60	10,691	25	267
	Parking lot	-	150	-	672	25	17
Station Front Commercial	Sub Total	2,665		400	43,968		1,099
	Mixed use(Commercial)	2,665	150	400	37,760	25	944
	Public purpose – Community Center		150		617	25	15
	Public purpose – Hospital		150		5,160	25	129
	Public purpose – Sub Station		150			25	
	Parking lot		150		176	25	4
	Parking lot (Muthurwa)		150		255	25	6
Kenya Railway	Sub Total	-	-	-	10,250		256
	Public purpose – KR HQ	-			10,250	25	256
Government Office	Sub Total				16,657		416
	Government Office		150		9,440	25	236
	Government office	-	150		4,633	25	116

Zone	Land use	Resident Population			Non Resident Population		
		Residents	Per capita water demand (lpd)	Water demand (m3/day)	Users	per capita water demand (lpd)	Water demand (m3/day)
	Mixed use(Office)		150		2,583	25	65
New Central Station	Sub Total	-	-	-	6,471		162
	Station	-	150		6,471	25	162
	Transportation Facilities	-	150		-	25	-
Total		29,843		4,476	202,354		5,059
Total demand for the Project							9,535

### Final Design Directions

The current demand for Nairobi City stands at 669,888m<sup>3</sup> /day against a production capacity of 528,100 m<sup>3</sup>/day. The Nairobi City Water Supply Master Plan Study provides the future water supply systems as presented in the table below.

**Table 6-15 Future Water Supply Systems**

Implementation Period	New Sources	Capacity (m <sup>3</sup> /sec)
2012-2013	Kyunyu Well fields	0.4
2012-2013	Ruiru Well fields	0.35
2013-2016	Northern Collector Phase I	1.6
2017-2021	S Mathioya transfer +Maragua 4 Dam	1.53
2022-2026	Northern Collector Phase II	1.39
2025-2029	Ndarugu I Dam	2.5
TOTAL		7.77

From the above, a combined source capacity of 671,328 m<sup>3</sup>/day would be achieved after the development of all the above sources. In addition to the above, at the time of preparing this report, Athi Water Services Board was in the process of procuring for the development of, Maragua and Karemno dams. Procurement for Ruiru II dam has already been finalized. It is however noted that the demand for Nairobi City is unlikely to be fully met in the near future.

In order to supplement the mains water supply, the following shall be undertaken:

- Ground water development;
- Water recycling;
- Rain water harvesting

The proposed borehole locations, which will be subject, to conclusive hydrogeological studies will be in the following zones:

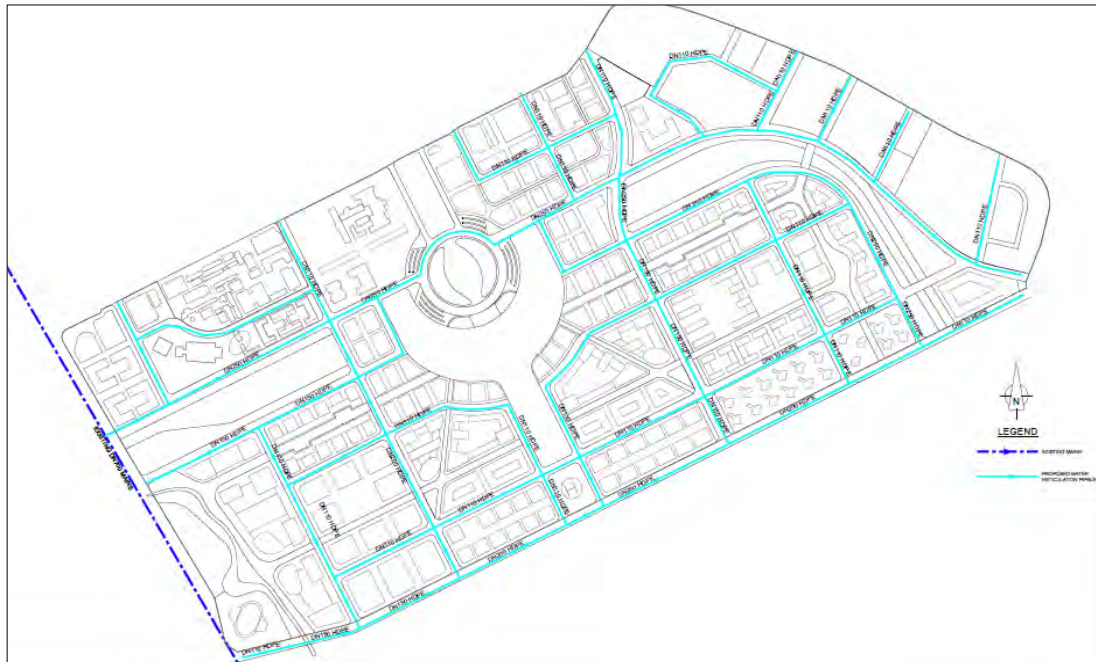
- Residential area, apartments;
- Commercial area;
- School area.

Water Connection and Distribution: The size of connection required was calculated using the simple formula  $Q=VA$ , as DN 250mm. Storage shall be provided at the various block

developments to meet the peak demand. The proposed network ranges between DN 250mm and DN100mm.

Irrigation Water Plan: The proposed green area is 24 ha and therefore the water requirement was estimated as 350m<sup>3</sup>/day. The irrigation water demand will be met from the recycled water which will be supplemented by rainwater harvesting. The irrigation water requirement was estimated based on a water requirement of 1.0l/s/ha for 4hrs per day at the peak.

A 16,000m<sup>2</sup> on plan underground tank has been proposed at the new railway station for collecting the rain water which will be used as indicated above.



**Figure 6-15 Water Supply Plan**

### 6.2.3 Wastewater collection and Disposal plan

#### Wastewater Generation

The wastewater generation was estimated as 80% of 9,535 m<sup>3</sup>/day (water demand) 7,628 m<sup>3</sup>/day or 0.09m<sup>3</sup>/s. This flow will be conveyed to two existing trunk sewers namely DN 1200mm Nairobi River Trunk Sewer and DN 600mm Uhuru Highway Trunk sewer.

The wastewater collected shall be conveyed to Dandora Sewage Treatment Plant whose capacity has been recently upgraded to 160,000m<sup>3</sup>/day although it is still being operated at 120,000m<sup>3</sup>/day and has adequate capacity for the new city

#### Sewer reticulation Network

The entire CBD area is adequately served by piped sewerage system. However, the system is old and designed for a smaller population. It is noted that the proposed development will involve a redesign of the road network and therefore a new sewer system will also be designed to follow the new road alignments.

### Sizing of the outfall Sub-Trunk Sewers

Taking for concrete pipes  $n=0.013$  and  $s=0.005$  (*Poorest allowed slope*), assuming the pipe is flowing two thirds full, DN 375mm concrete pipe size was selected based on the Colebrook white formula.

### Sizing of the Reticulation Sewers

The minimum size of reticulation sewers allowed is DN 225mm.



**Figure 6-16 Wastewater Collection and Disposal Plan**

### 6.2.4 Water Recycling

The recycled water will meet the irrigation water demand estimated as  $350\text{m}^3/\text{day}$  for the whole city as well as WCs flushing needs for the three zones namely:

- MICE Core;
- Center Core;
- Housing

Three wastewater onsite treatment plants shall be considered at the above locations to treat wastewater for recycling as follows:

- MICE Core:  $800\text{m}^3/\text{day}$ ;
- Center core:  $850\text{m}^3/\text{day}$ ;
- Housing area:  $1,500\text{m}^3/\text{day}$ .

### 6.2.5 Power supply

The Railway City shall be provided with high voltage electricity to supply the proposed development such as residential, mixed use (residential dominant), mixed use (commercial dominant), mixed use (office dominant), MICE, high-tech industrial, public purpose, school, transport, railway utilities, buffer zone (green), open spaces (park, plaza, pedestrian roads).



Figure 6-17 Existing GIS 2x200MVA Substation

#### Existing Power Supply

As part of the study, a survey was carried out to establish whether there is adequate power supply infrastructure within the project. The table below gives the utility provider's existing substations within and near the Proposed New City.

Table 6-16 Existing Substations around the Planning Area

S/No	Substation Name	Substation Capacity (MVA)	HTLine Capacity	Status
a	Ragati Road	2 x 45.00	66 / 11kV	In operation
b	Muthurwa	2 x 3.00	66 / 11kV	In operation
c	City Center	2 x 200.00	220 / 66kV	Commissioned on 1st May 2018
d	Jivaji	2 x 23.00	66 / 11kV	In operation
e	South C	2 x 23.00	66 / 11kV	In operation

#### Railway City Power Demand Estimation

The estimated electric power demand for the new city is given in the table below.

Table 6-17 Power Demand Estimation of the Plan

S/No	Final Option Development Buildings / Facilities Classification	Buildings / Facilities Approximate Area	Demand in VA/Sq. M	Total Power Demand (MVA)
1	Residential Spaces	378,250	40.00	15.13
2	Mixed use (Residential Dominant)	623,403	40.00	24.94
3	Mixed use (Commercial Dominant)	987,150	70.00	69.1
4	Mixed Use (Office Dominant)	996,400	70.00	69.75
5	Hi tech Industrial Spaces	168,800	70.00	11.82
6	MICE	443,400	40.00	17.74
7	School (Education Center) Spaces	130,100	40.00	5.2
8	Infrastructure Spaces	126,950	20.00	2.54
	Total Load	3,798,050	-	216.21
Approximately 10% of the buildable area will be taken by lifts, shafts ways				194.59
Assume Diversity factor of 70%				136.21

The City Center 2x200MVA substation reveals that there is adequate power capacity to support the new development.

### Power Reticulation

The high voltage power shall be supplied to a new power substation to be constructed near the New Railway station. It shall then be reticulated to the development through underground cable installation via the common utility tunnels.

Power to the consumers shall be distributed by use of step-down transformers at 11kV/415V which shall be installed within each building depending on the load required for the building.

It is proposed to enhance power reliability through use of:

- Integrated solar lighting;
- Power saving appliances;
- Smart grid system technology – a self-healing technology.



**Figure 6-18 Transformer**

### 6.2.6 Telecommunication and CCTV

Several communication service providers are with the vicinity of the proposed development.

They include:

- Airtel Kenya Ltd;
- Safaricom Ltd;
- Wananchi Ltd;
- Liquid Telecom Ltd;
- Jamii Telecom Ltd;
- Orange Kenya Ltd;
- Access Kenya Ltd.

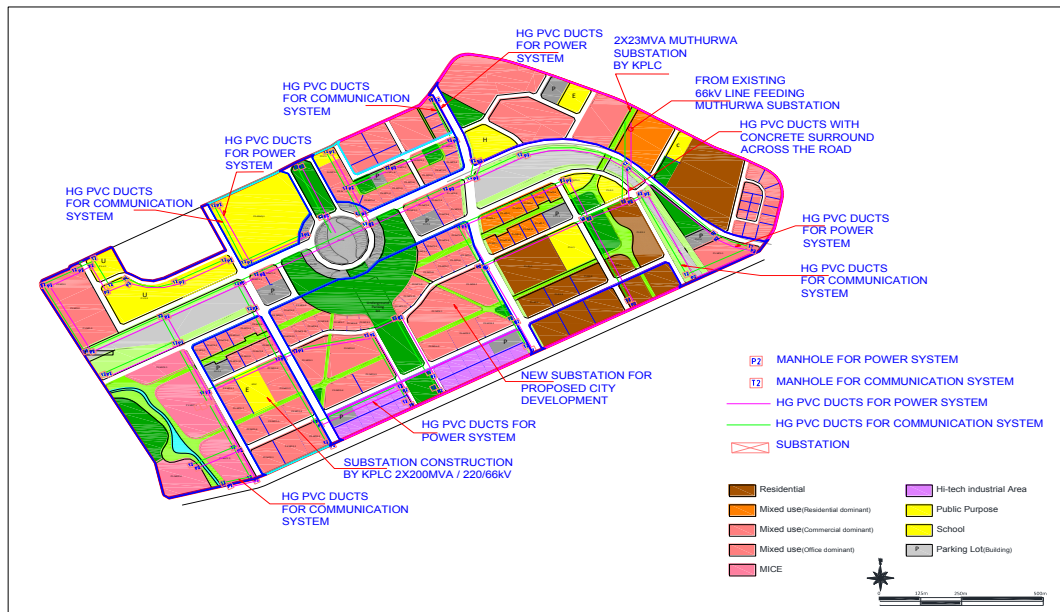
Telecommunication requirements shall be discussed with the private suppliers and communication infrastructure shall employ the use of fiber optic for connectivity. This will give easier connectivity to the proposed railway city with less communication media being installed which normally takes a large space due to their bulkiness.

The networks shall make use of the underground cable installation via the common utility tunnels.



**Figure 6-19 CCTV example**

Security installation shall be managed by the developers and the Railway City authorities. It will include use of CCTV and other monitoring equipment installed at strategic locations with a manned central command center.



**Figure 6-20 Power and Communication Network Plan**

### 6.2.7 State of Art infrastructure – Smart designs

Several smart alternatives have been considered in the design of the New city including the following:

- Common utility tunnel system where services are accommodated in one accessible tunnel. New services are installed easily without requiring new excavations and cutting. This enables easier tracing in case of faults and breakages;
- Use of water efficient fixtures including shower heads, taps, toilets;
- Water recycling used for flushing of the toilets and landscape irrigation;
- Use of sustainable energy solutions including integrated solar lighting system for street lighting and public places, power saving appliances and daylight natural lighting technology;
- Employing green building technology as a way of minimizing 100% dependence on grid power supply.

### Common Utility Tunnels

A utility tunnel is considered an optimal solution to avoid underground crowding of utilities in narrow right-of-ways. Shared infrastructure can save significant costs, especially with provision for maintenance, upgrade and growth over the lifecycle. This requires cooperation among stakeholders.

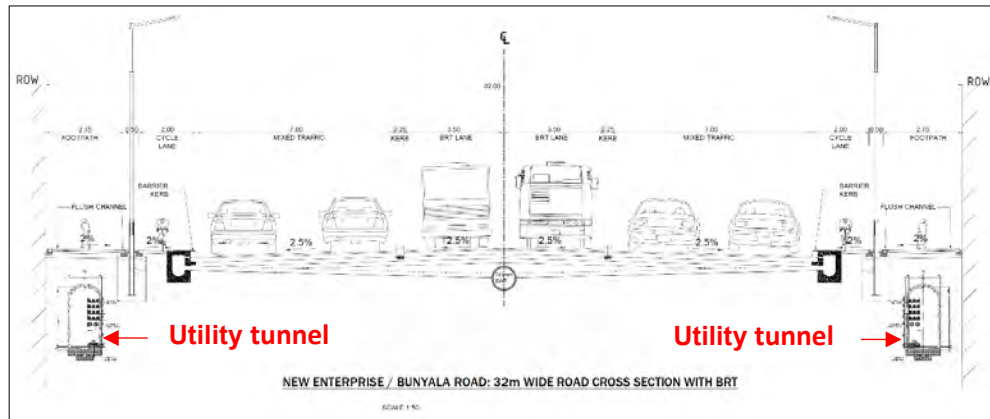


Figure 6-21 Utility Tunnels example drawing of the Plan

### 6.3 Strategic Environmental and Social Management Plan

The Strategic Environmental and Social Management and Monitoring Plan (SESMP) is prepared to show how specific concerns and mitigation measures can be addressed through the implementation of the plan. This SESMP has been developed with project knowledge and information available to date. As project commencement and scheduling plans are developed and changed, components of the SESMP might require amending. This is therefore a working document, which can be updated whenever new information is received or planning area conditions change.

#### 6.3.1 Purpose and objectives of SESMP

The SESMP describes the range of environmental and social issues associated with the project and outlines corresponding management strategies that can be employed to mitigate potential adverse environmental impacts. It conveys the Project's environmental and social constraints. The project should comply with all local laws and regulations, which seek to ensure that the implementation of the project does not adversely affect the environment and social community resources.

The objectives of the SESMP are:

- To serve as a commitment and reference for the project planners and implementers including conditions of approval from NEMA;
- To serve as a guiding document for the environmental and social monitoring activities for future studies on requisite progress reports;
- To provide detailed specifications for the management and mitigation of activities that have the potential to impact negatively on the environment;
- To provide instructions to relevant project personnel regarding procedures for protecting the environment and minimizing environmental effects; and
- To document environmental concerns and appropriate protection measures.

#### 6.3.2 Responsibilities of the SESMP

- In order to ensure the sound development and effective implementation of the SESMP, it will be necessary to identify and define the responsibilities and authority of the various persons and organisations that will be involved in the project. The following entities will be involved in the implementation of the SESMP:
- National Environment Management Authority (NEMA);

- Kenya Railways (KR);
- proposed Nairobi Railway City Development Authority;
- Contractor
- The contractor will be tasked with implementation of the Construction ESMP i.e. CESMP, except for the Resettlement Action Plan. The Contractor will be required to comply with the requirements of the specific projects ESIA, and the SESMP;
- Supervising Consultant(s) / Engineer(s)
- The supervising engineer will be in charge of the day to day monitoring of the implementation of the CESMP by the contractor(s). He will be required to oversee the construction program and construction activities performed by the contractor, in compliance with the present SESMP. The supervising consultant should have an Environmental, Health and Social Officer (EHSO) in his team to co-ordinate all aspects of the environment, safety and social matters during project implementation
- Kenya Police Service, Traffic Police Department;
- Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works (MoTIH&UD & PW);
- National Transport and Safety Authority (NTSA);
- Nairobi City County Government;
- Nairobi City Water and Sewerage Company (NCWSC);
- Water Resources Authority (WRA);
- Kenya Forest Service (KFS);
- National Land Commission (NLC);
- Kenya National Commission on Human Rights (KNCHR);
- Directorate of Occupational Safety and Health Services (DOSHS);
- Kenya National Highways Authority (KeNHA);
- Nairobi Metropolitan Area Transport Authority (NAMATA);
- Ministry of Health;
- Department of Geology and Mines; and
- *Proposed* Nairobi Railway City Development Authority

Of the above, NCCG and the proposed special purpose vehicle i.e. Nairobi Railway City Development Authority will be key in spearheading environmental and social risks and impacts management during the Plan implementation and operation. While NCCG has a functioning department of environment, the proposed authority will need to develop its capacity in directly managing various investors and contractors during the infrastructure development phase.

### **SESMP Implementation**

The SESMP has been aligned to the proposed Railway City implementation stages which include:

- Phase I – 2 years, - Basic infrastructure development
- Phase II – ~3 to 5 years, - Activation of economy, and
- B Phase – 5 years – Spontaneous development by development guidelines

The table below provides the monitoring plan for the SESMP.

**Table 6-18 Strategic Environmental and Social Management Plan**

Possible Impacts	Programs affected	Mitigation or Enhancement Measures	Institutional Responsibility	Time Frame
Employment and income opportunities for the locals	All (Land use plan; Infrastructure plan; Transportation plan)	Developers should be required to have a labor policy that requires employment of local labor as much as possible. The project implementers to as much as practically possible purchase his materials locally within Nairobi County.	KR NCCG MoTIH&UD &PW Project contractor(s) DOSHS KNCHR NCA <i>Proposed</i> Railway City Development Authority	Phase I and Phase II
Gender mainstreaming in employment opportunities	All (Land use plan; Infrastructure plan; Transportation plan)	The proponent to ensure that both women and men have equal rights and responsibilities in adherence to the <i>Constitution of Kenya, Part 2 (27) on Equality and Freedom from Discrimination</i> . The project proponent to demonstrate equality in all aspects of worker recruitments from skilled to semi-skilled and non-skilled workers.		Phase I and Phase II
Infringement of labor rights and standards on employment	All (Land use plan; Infrastructure plan; Transportation plan)	The proponent to ensure that all workers receive equal pay for work for equal value in adherence to the requirements of the International Labor Conventions. The project implementer to accord equal treatment and opportunity in employment; The project implementer to ensure that there is no discrimination against individual in their employment and occupation on the basis of either race, color, religion, political inclination, sex, or social origin. The project implementer to notify his employees in advance on the project closure date and adequately compensate them; and Employee/worker dismissal procedures shall be compliant with Employment Act, 2007.	KR NCCG MoTIH&UD &PW Project contractor(s) Kenya Police <i>Proposed</i> Railway City Development Authority	Phase I and Phase II
In-migration/Influx of labor and/or people  <i>Individuals are likely to migrate into the area which may cause conflict with resident communities, and put pressure on resources and infrastructure, resulting in increase in both formal and informal settlements, and may cause the public health and security situation to deteriorate.</i>	All (Land use plan; Infrastructure plan; Transportation plan)	ESIAs of individual projects in the planning are to include a labor influx management plan; Undertake periodic monitoring of population (residents and laborers) attracted to Railway City relative to the planned population numbers to inform any requisite interventions During construction phase, the project implementer should have an employment policy which gives preference to the locals; thus, in a way deterring in-migration Security patrols should be increased in the formal and informal settlements in the planning area; and Construction camps to be located far from water courses (i.e. away from Ngong river tributary and Nairobi river), and with adequate water and sanitation facilities.		Phase I and Phase II

Possible Impacts	Programs affected	Mitigation or Enhancement Measures	Institutional Responsibility	Time Frame
<p>Pressure on local resources</p> <p><i>Procurement of significant amounts of local goods (e.g. water, gravel from quarries, sand, ballast) and services for the road development and workforce could deplete resources available for local communities.</i></p>	<p>All (Land use plan; Infrastructure plan; Transportation plan)</p>	<p>The developers shall be required to undertake due diligence amongst their suppliers for regular compliance, The developers/ proponent to carry out independent EIA(s) and seek NEMA's approval for new borrow pits and quarries. The project implementer to sustainably procure what will be required through accurate budgeting and estimation of actual construction material; The project implementer to consider reuse and recycling of construction materials.</p>	<p>KR NCCG MoTIH&amp;UD &amp;PW Project contractor(s) NEMA Dept. of Geology and Mines <i>Proposed</i> Railway City Development Authority</p>	<p>Phase I and Phase II</p>
<p>Physical and economic displacement of people and assets</p> <p><i>Development of the project will require acquisition of additional road reserves, wayleaves and land that is occupied by businesses along Factory street, commercial street and Uhuru highway, as well as Muthurwa and Landi Mawe estates</i></p>	<p>All (Land use plan; Infrastructure plan; Transportation plan)</p>	<p>Consult owners of land parcels where land acquisition will be required prior to project implementation. A resettlement action plan to be undertaken as per applicable Kenyan laws and project financier (World Bank) guidelines, and be implemented prior to commencement of construction works; The proposed Nairobi Railway City Development Authority to develop a policy on space allocation and management for small scale traders, including a monitoring plan for its effectiveness; Give sufficient notice for persons who have encroached on the road reserve to demolish their structures; Give priority to uptake of affordable housing in the planning area to the current residents of Landi Mawe and Muthurwa estates. Phased development to ensure no eviction takes place at once but such that some residential areas are ready for occupation before entire pre-existing occupants are relocated.</p>	<p>KR NCCG MoTIH&amp;UD &amp;PW NLC KeNHA KURA NWSC <i>Proposed</i> Railway City Development Authority</p>	<p>Phase II and B Phase</p>
<p>Landscape and microclimate modification</p> <p><i>Clearing the top soil vegetation due to road works will also expose the soil surface to agents of soil erosion (wind and rain).</i></p> <p><i>Development of the project site will lead to trimming and cutting down of trees and vegetation to</i></p>	<p>All (Land use plan; Infrastructure plan; Transportation plan)</p>	<p>Enforcement of the proposed development guidelines to ensure the envisaged urban landscape is not distorted; Planting embankments with shrubs and grass, Any areas that vegetation/trees will be cleared for implementation of the land uses should be re-vegetated to prevention creation of a 'concrete jungle'. Construction of erosion protection structures such as stone pitching on slopes of &lt;4% gradient, and scour checks on steep slopes with &gt;5% gradient. Monitoring of erosion protection structures should be carried out to ensure they are de-silted when clogged, Earthworks should be controlled so that land that is not required is not disturbed.</p>	<p>KR NCCG MoTIH&amp;UD &amp;PW Project contractor(s) KFS NEMA <i>Proposed</i> Railway City Development Authority</p>	<p>Phase I and Phase II</p>

Possible Impacts	Programs affected	Mitigation or Enhancement Measures	Institutional Responsibility	Time Frame
<i>provide space for construction work</i>		Wherever possible, earthworks should be carried out during the dry season to prevent soil from being washed away by rain. Excavated materials and excess earth to be kept at appropriate sites approved by the project's Supervising Engineer. Wherever possible, the earth dumping sites will be designed in such a manner as to facilitate natural water discharge.		
Water pollution  <i>Earthworks and stockpiles for soil and gravel will potentially result in siltation of the Ngong river tributary that cross and/or run along the planning area.</i>	Land use plan;	All discharges from the site/working areas (including wash-down areas) to water courses (i.e. Ngong river tributary and Nairobi river) should be contained and disposed of properly as per NEMA water quality regulations; Potential pollutants of any kind and in any form, shall be kept, stored and used in such a manner that any escape can be contained and the identified rivers not polluted; Wash areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas (including surface water bodies) are not polluted; Developers should not to divert or modify any water courses without approval from WRA and other relevant authorities. The proponent must develop an emergency incident management plan and act promptly on remedying any pollution incidents on site; Repair and replacement of any leaking and malfunctioning equipment within the contractors' camp shall be done at purpose-built workshops to avoid contamination of the identified rivers. Construction camps should be located away from the rivers, at least 200m away. The Proponent should acquire an "easement" for any new outfall drains in the planning area.	KR NCCG MoTIH&UD &PW Project contractor(s) WRA NEMA <i>Proposed</i> Railway City Development Authority	Phase I and Phase II
Impacts on public health including Spread of HIV/AIDS and STIs  <i>Site preparation activities will lead to air pollution through use of machines emitting exhaust emissions and dust arising from stripping and excavations of</i>	All (Land use plan; Infrastructure plan; Transportation plan)	Ensure dust suppression by regularly spraying water on the roads and work sites; Wetting or covering stockpiles; Practice dust management techniques, including watering down the dusty road sections during drier weather periods; Ensure proper location of material stockpiles away from habitation and business premises; Covering loaded trucks during the transportation of material; Maintenance of vehicles and machinery in accordance with the equipment specifications and manufacturer's standards;	KR NCCG MoTIH&UD &PW Project contractor(s) Ministry of Health <i>Proposed</i> Railway City Development Authority	Phase I and Phase II

Possible Impacts	Programs affected	Mitigation or Enhancement Measures	Institutional Responsibility	Time Frame
<p><i>soil. As a result of vehicular traffic during the project construction, there might be an increased occurrence of diseases and illnesses propagated by dust, to the immediate and neighboring population.</i></p> <p><i>Development also comes with its negative impacts to society such as gambling, drug abuse, prostitution and physical altercations. This is mainly initiated by the project's labor force who due to their incomes from the project construction phase, utilize it during their leisure time to spread social evils</i></p>		<p>Workers shall be sensitized on management of air pollution from vehicles and machinery;</p> <p>Activities generating dust (excavation, handling and transport of soils) to be carried out in calm weather where possible;</p> <p>Any removal of vegetation shall be avoided until such time as clearance is required and exposed surfaces shall be re-vegetated or stabilized as soon as practically possible;</p> <p>Demolition of existing structures should be done in a manner that the dust from demolitions can be controlled where feasible. Where structures have asbestos containing materials, asbestos hazard assessment shall be done guided by NEMA regulations before demolition works can take place.</p> <p>Undertake regular air quality monitoring and conduct corrective adjustments where necessary.</p> <p>Contractor to undertake awareness campaigns on HIV/AIDS and maintain records of such publicity drives and trainings.</p> <p>Contractor, including his workers should also attend all trainings as they are working in an HIV/AIDS prevalent area.</p> <p>Ensure as much as possible that unskilled labor is recruited from the planning area</p>		
<p>Noise and vibration</p> <p><i>Machine operations during construction and movement of trains at operation phase will generate some level of noise pollution and vibrations that might significantly affect learning and religious worship institutions, and integrity of buildings near the planning area.</i></p>	Transportation plan	<p>Workers to use ear plugs for work producing over 85 dB of noise.</p> <p>Regular maintenance of equipment.</p> <p>Any complaints received by the Contractor regarding noise will be recorded and communicated to the Supervising Engineer for further remedial action.</p> <p>Project implementer to avoid or minimize the use of explosives at material sites.</p> <p>Project implementer to take an insurance cover against claims of cracks or damage to adjacent buildings in the planning area. For structures in very close proximity to the railway lines in the planning area, documentation of the baseline condition prior to planned works and project operation stage involving excessive vibration will be undertaken.</p>	<p>KR NCCG MoTIH&amp;UD &amp;PW Project contractor(s) NEMA NAMATA Proposed Railway City Development Authority</p>	<p>Phase I Phase II, and B Phase</p>
<p>Community and occupational safety and health hazards</p> <p><i>Workers in the planning area may be exposed to various occupational risks and hazards at the camp sites, borrow</i></p>	All (Land use plan; Infrastructure plan; Transportation plan)	<p>Formulate a safety and health management plan;</p> <p>Implement requirements of Occupational Safety and Health Act 2007 including provision of personal protective equipment (PPE), first aid, fire emergencies, and carrying out frequent toolbox trainings for workers.</p> <p>Making it mandatory that no alcoholic drinks will be used during work,</p>	<p>KR NCCG MoTIH&amp;UD &amp;PW Project contractor(s) DOSHS</p>	<p>Phase I Phase II, and B Phase</p>

Possible Impacts	Programs affected	Mitigation or Enhancement Measures	Institutional Responsibility	Time Frame
<i>pits/quarries, and road work sites.</i>		<p>Appointment of safety marshal(s) to monitor implementation of safety measures that include adequacy and proper use of personal protective equipment;</p> <p>Good construction site housekeeping and management procedures (including site access);</p> <p>Disease control measures, e.g. no pools of standing water, rodent control, treatment of water;</p> <p>Risk assessments and emergency response planning to consider impacts on local communities; and</p> <p>A strict code of conduct should be implemented which also includes Contractor's drivers not being under the influence of alcohol or medication during work hours.</p> <p>Dusty roads should be wetted to reduce dust from rising which would otherwise cause respiratory illnesses to the community.</p> <p>Restrict access to hazardous construction sites;</p> <p>Formulate and maintain a stakeholder engagement plan with grievance redress.</p>	<i>Proposed</i> Railway City Development Authority	
Waste pollution	All (Land use plan; Infrastructure plan; Transportation plan)	<p>Contractor to put in place well labelled solid waste segregation bins and ensure final disposal of the waste stream at designated dump sites.</p> <p>Separation and reuse of top soil for landscaping of the site;</p> <p>Empty packaging materials like cartons and cement bags shall be piled in a safe place and sold to waste paper recyclers. Any asbestos containing waste material will be disposed of as per NEMA guidelines in the "<i>National Guidelines on Safe Management and Disposal of Asbestos</i>"</p> <p>Other solid waste to be disposed at designated sites or collected and transported to approved disposal sites by NEMA registered waste transporters;</p> <p>Ensure solid wastes do not accumulate and further block the existing storm water drains and proliferation of vermin and scavenger birds that will cause hindrance to airplane movement;</p> <p>Provision of appropriate sanitation facilities for use by workers. The facilities should be established in compliance with OSHA and Public Health requirements.</p> <p>Disposal of solid waste should be in compliance with EMCA 1999, Waste Management Regulations of 2006;</p> <p>Segregation of waste to encourage reuse and recycling;</p> <p>Ensuring that the contracted waste collector is registered with NEMA to collect and dispose wastes in designated disposal</p>	<p>Kenya Railways NCCG MoTIH&amp;UD &amp;PW Project contractor(s) NEMA <i>Proposed</i> Railway City Development Authority</p>	<p>Phase I Phase II, and B Phase</p>





Possible Impacts	Programs affected	Mitigation or Enhancement Measures	Institutional Responsibility	Time Frame
		sites, and waste tracking documents filled for all the waste collected from the contractor's camp for disposal		
Impacts from material sites decommissioning	All (Land use plan; Infrastructure plan; Transportation plan)	The proponent to prepare management plans of the borrow pits and quarries during the operational lifespan, as well as restoration measures at their end of life, which should be submitted to, and approved by NEMA; and Cordoning off borrow pits and quarries during their operational life.	KR NCCG MoTIH&UD &PW Project contractor(s) NEMA <i>Proposed</i> Railway City Development Authority	Phase I and Phase II,
Traffic inconveniences and related accidents	All (Land use plan; Infrastructure plan; Transportation plan)	Formulate and implement construction phase traffic management plan in coordination with the traffic police and NCCG. Establish and enforce a strict code of conduct for all project drivers including outside suppliers delivering materials. The code should focus on safety, especially speed and loading. Erect road safety signage's for use by workers and other road users All construction sites should be well barricaded and safety signage's erected around the sites which should be visible even at night	<i>Project developer(s)</i> <i>Kenya Police Service</i> <i>NCCG</i> <i>Proposed Nairobi Railway City Development Authority</i>	During construction in Phase I, Phase II and B Phase
Stakeholders engagement during implementation  Stakeholders fatigue will be likely due to the phased implementation of the projects under the plan	All (Land use plan; Infrastructure plan; Transportation plan)	Develop implementation phase stakeholder engagement strategy to guide all developers/investors in the planning area	<i>Proposed Nairobi Railway City Development Authority</i>	Before any construction



# Chapter 7. URBAN DESIGN: DEVELOPMENT GUIDELINE

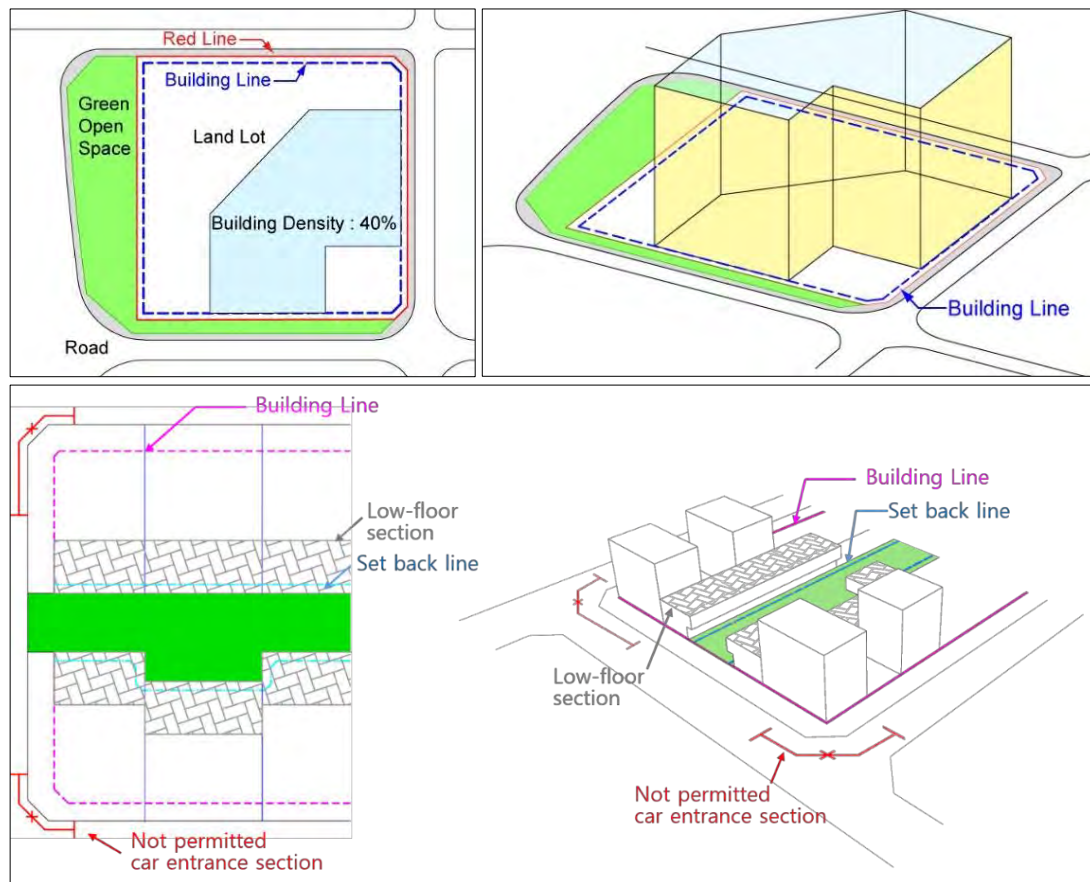
## 7.1 Definition of Terms<sup>33</sup>

Definitions of terms specified on the physical planning guidelines used in this report are as follows.

- Block: Boundary is determined by the roads with the following segmentation.
- Block plan: Plans used to identify site and locate outline of buildings in relation to town plan or other wider contexts.
- Boundary wall: Any wall, fence, enclosure or screen built on or along the boundary line or a parcel of land for the purpose of separating the land from another adjoining parcel of land.
- Building line : means the boundary line to obtain the construction permit for facilities or floor of the building (underground urban infrastructure facilities not included)
- Gross Floor Area: The area contained within the outer surface of external walls of a building measured at each floor level. Any portions of this area not floored must be included in the plot ratio calculation.
- Building Coverage Ratio (B.C.R): The building coverage ratio indicates the ratio of the building footprint to the area of the entire site. (The landscaped area, swimming pool, sports courts and other similar facilities are excluded from the building coverage ratio.
- Low floor (less than 3floor) section : means a section where three floors or less are to be located.
- NMT loop: Non-Motorized Traffic way with pedestrian walkway circulation in The Railway City area.
- Not permitted car entrance section : refers to a section in which vehicular access is not allowed from the adjacent road.
- Plaza: A plaza is an open space adjacent to a building and accessible to the public.
- Plot: A plot of land is a small piece of land in a block, that has been measured or marked out for a special purpose, such as building house.
- Floor Area Ratio (F.A.R): Floor area ratio (FAR) is the ratio of a building's total floor area (gross floor area) to the size of the piece of land upon which it is built.
- Power grid safety protection corridor: means the power device installed in accordance with cable and transformer station.
- Set back line : means the distance between the plot line and the building line.

<sup>33</sup>It is referred to the following; *Physical Planning Handbook (Ministry of Lands Physical Planning Department)*, *Planning and Building Regulations (2009, National planning and building Authority)*. *A guide of Nairobi City Development Ordinances and Zones (City Council of Nairobi)*, *A guide for making District unit plan of Korea (2014, Ministry of land and transportation)* and *Tatu City Development Guidelines and Codes (Tatu City)*

- Through-Block Pedestrian Link: It is planned pedestrian pathways in private properties.
- T.O.D: Transit Oriented Development



**Figure 7-1 Building Line Illustration for Development Guideline**

## 7.2 Goal and Ranges of The Railway City Development Guideline

### 7.2.1 Goals and Objectives

The Railway City development guideline (hereafter, the Guideline) aims to convey the urban design framework to the public/private developer. All activities relating to the physical intervention (new building construction, relocation, rehabilitation, reuse of the whole or partial) shall be reflected/ guided by the Guideline.

The Guideline does not provide the actual design of the building/ open space structure. However, it contains the direction/ framework for the actual design in the next stage. Every developer (public/ private) shall follow the Guideline.

The Guideline encompasses the actual guidance for physical structure by both quantity and qualitative description aiming at making a unique, user-friendly, and environmentally sustainable Railway city.

The Guideline shall be updated and modified by the City council, and the procedure will be determined by Nairobi City County.

### 7.2.2 Direction: Transit Oriented Development

The Transit-Oriented Development (TOD) is more than simply a project next to a transit station and cannot be defined by a prescribed set of densities and mix of uses. True TOD is incorporated into the district or neighborhood surrounding the station. It is comprised of the multiple new projects and existing developments. It includes a rich mix of choices and uses in a pattern of compact development and in a network of walkable streets, with access to transit neighborhood amenities with supporting design, and transportation choice.

Transit-oriented development in Railway city ought to create unique places that are carefully integrated into the neighborhood and matched with the function of the station and the needs and desires of those who live and work nearby. The unique qualities of place within the context of the surrounding areas should drive the mix of use, residential density, building design and character of the city. All of these elements help creates a sense of place, which may be as important to TOD as the transit service. This special guideline for The Railway City comprises

- Public realm,
- Private realm,
- Social/ Community facilities and
- Crime prevention scheme.

To adapt to the functions and urban programs, Railway city is segmented into 11 zones. 3 Cores (MICE, Center and East), International office, Street commercial, High tech Industry, Housing, Station Front Commercial, Kenya Railway zone and R&D zone near TUK. All zones have a certain special character which should be secured. In this Guideline, Kenya Railway zone and New station area is treated as public realm. The other 9 zones are dealt with in Private realm.

Transit Oriented Development of Nairobi Central Station area will contribute on the following,

- Make Railway city a 24-hour city through multiple function mix.
- Make actual linkages for the missing links in the Nairobi city structure as regards to urban function and network
- Make physical NMT expansion to the surroundings, resulting in a walkable Nairobi city
- Make a city with a social and time-mix encompassing the past, the present and diverse social classes.

The above contributions will make the Railway City to be unique Kenyan/ African Transit Oriented Development model.



Figure 7-2 Urban Design Guideline (whole)

Table 7-1 Urban Design Guideline (Table Form)

Classification by Zone

No.	Zone	Land use	Land use Plan Final																				
			Area(m <sup>2</sup> )	Proportion(%)	Plot Ratio (%)	Total floor area(m <sup>2</sup> )	Ground Coverage (%)	Floor (Average)	Mixed Use Ratio(%)			Mixed Use Area(m <sup>2</sup> )			Household			Population					
									Housing	Store	Office	Housing	Store	Office	Units	Sqm per Unit	Residents per unit	Residents	Users	Total Population (Residence+User)	Proportion(%)		
1	MICE Core	<b>Sub Total</b>	<b>123,270</b>	<b>7.0%</b>	-	<b>443,220</b>				<b>40%</b>	<b>20%</b>	<b>40%</b>	<b>177,288</b>	<b>88,644</b>	<b>177,288</b>	<b>2,086</b>			<b>4,171</b>	<b>20,684</b>	<b>24,855</b>	<b>10.3%</b>	
		MICE	73,870		600%	443,220	50%	12.0		40%	20%	40%	177,288	88,644	177,288	2,086	85.0	2.0	4,171	20,684	24,855		
		ETC(Open space)	49,400																				
2	Center Core	<b>Sub Total</b>	<b>114,620</b>	<b>6.5%</b>	-	<b>489,050</b>				<b>30%</b>	<b>30%</b>	<b>40%</b>	<b>146,715</b>	<b>146,715</b>	<b>195,620</b>	<b>1,334</b>			<b>4,268</b>	<b>27,713</b>	<b>31,981</b>	<b>13.3%</b>	
		Mixed use(Office Dominant)	97,810		500%	489,050	60%	8.3		30%	30%	40%	146,715	146,715	195,620	1,334	110.0	3.2	4,268	27,713	31,981		
		ETC(Open space)	16,810																				
3	East Core	<b>Sub Total</b>	<b>63,190</b>	<b>3.6%</b>	-	<b>127,725</b>				<b>42%</b>	<b>24%</b>	<b>34%</b>	<b>53,520</b>	<b>30,320</b>	<b>43,885</b>	<b>512</b>			<b>1,503</b>	<b>5,958</b>	<b>7,461</b>	<b>3.1%</b>	
		Mixed use(Commercial Dominant)	19,360		250%	48,400	70%	3.6		20%	40%	40%	9,680	19,360	19,360	114	85.0	2.0	228	3,227	3,454		
		Mixed use(Residential Dominant)	21,920		250%	54,800	70%	3.6		80%	20%	0%	43,840	10,960	-	399	110.0	3.2	1,275	1,096	2,371		
		Police Station / Fire Station	9,810		250%	24,525	70%	3.6		0%	0%	100%	-	-	24,525	-	-	-	-	1,635	1,635		
4	Government Office	<b>Sub Total</b>	<b>127,510</b>	<b>7.2%</b>	-	<b>371,815</b>				<b>1%</b>	<b>2%</b>	<b>97%</b>	<b>3,863</b>	<b>7,725</b>	<b>360,228</b>	<b>45</b>			<b>91</b>	<b>24,788</b>	<b>24,879</b>	<b>10.3%</b>	
		Government Office	35,360		400%	141,440	60%	6.7		0%	0%	100%	-	-	141,440	-	-	-	-	9,429	9,429		
		Government Office	27,800		250%	69,500	60%	4.2		0%	0%	100%	-	-	69,500	-	-	-	-	4,633	4,633		
		Mixed use(Office Dominant)	15,450		250%	38,625	60%	4.2		10%	20%	70%	3,863	7,725	27,038	45	85.0	2.0	91	2,575	2,666		
5	Kenya Railways Corporation Zone	<b>Sub Total</b>	<b>61,460</b>	<b>3.5%</b>	-	<b>153,650</b>				<b>0%</b>	<b>0%</b>	<b>100%</b>	<b>-</b>	<b>-</b>	<b>153,650</b>	<b>-</b>			<b>-</b>	<b>10,243</b>	<b>10,243</b>	<b>4.3%</b>	
		Public purpose_KRC HQ	61,460		250%	153,650	50%	5.0		0%	0%	100%	-	-	153,650	-	-	-	-	10,243	10,243		
		University(TUK)	48,900		250%	122,250	60%	4.2		0%	0%	100%	-	-	122,250	-	-	-	-	8,150	8,150		
		ETC(Open space)	12,100																				
6	New Central Station	<b>Sub Total</b>	<b>38,540</b>	<b>2.2%</b>	-	<b>84,480</b>				<b>0%</b>	<b>30%</b>	<b>70%</b>	<b>-</b>	<b>25,344</b>	<b>59,136</b>	<b>-</b>			<b>-</b>	<b>6,477</b>	<b>6,477</b>	<b>2.7%</b>	
		Station	21,120		400%	84,480	30%	13.3		0%	30%	70%	-	25,344	59,136	-	-	-	-	6,477	6,477		
		Transportation Facilities	15,410		0%	0	0%			0%	0%	0%	-	-	-	-	-	-	-	-	-	-	
		ETC(Open space)	2,010																				
7	Station front Commercial	<b>Sub Total</b>	<b>188,990</b>	<b>10.7%</b>	-	<b>664,815</b>				<b>18%</b>	<b>37%</b>	<b>46%</b>	<b>113,320</b>	<b>230,917</b>	<b>287,420</b>	<b>1,333</b>			<b>2,666</b>	<b>43,969</b>	<b>46,635</b>	<b>19.4%</b>	
		Mixed use(Commercial Dominant)	141,650		400%	566,600	70%	5.7		20%	40%	40%	113,320	226,640	226,640	1,333	85.0	2.0	2,666	37,773	40,440		
		Public purpose_Community Center	3,720		250%	9,300	50%	5.0		0%	0%	100%	-	-	9,300	-	-	-	-	620	620		
		Public purpose_Hospital	12,870		400%	51,480	50%	8.0		0%	0%	100%	-	-	51,480	-	-	-	-	5,148	5,148		
		Public purpose_Sub-Station	6,420		250%	16,050	50%	5.0		0%	0%	0%	-	-	-	-	-	-	-	-	-	-	
		Parking lot(Parking building)	2,190		400%	8,760	70%	5.7		0%	20%	0%	-	1,752	-	-	-	-	-	-	175	175	
		Parking lot(Parking building-Muthurwa)	5,050		250%	12,625	70%	3.6		0%	20%	0%	-	2,525	-	-	-	-	-	-	253	253	
		ETC(Open space)	17,090																				
8	Street Commercial	<b>Sub Total</b>	<b>159,300</b>	<b>9.0%</b>	-	<b>408,060</b>				<b>32%</b>	<b>38%</b>	<b>30%</b>	<b>115,818</b>	<b>136,782</b>	<b>110,340</b>	<b>1,200</b>			<b>3,062</b>	<b>21,034</b>	<b>24,097</b>	<b>10.0%</b>	
		Mixed use(Commercial Dominant)	91,950		300%	275,850	70%	4.3		20%	40%	40%	55,170	110,340	110,340	649	85.0	2.0	1,298	18,390	19,688		
		Mixed use(Residential Dominant)	25,270		300%	75,810	70%	4.3		80%	20%	0%	60,648	15,162	-	551	110.0	3.2	1,764	1,516	3,281		
		Parking lot(Parking building)	18,800		300%	56,400	70%	4.3		0%	20%	0%	-	11,280	-	-	-	-	-	-	1,128	1,128	
		ETC(Open space)	23,280																				
9	International Office	<b>Sub Total</b>	<b>75,140</b>	<b>4.2%</b>	-	<b>407,680</b>				<b>0%</b>	<b>10%</b>	<b>90%</b>	<b>-</b>	<b>36,396</b>	<b>327,564</b>	<b>-</b>			<b>-</b>	<b>25,477</b>	<b>25,477</b>	<b>10.6%</b>	
		Mixed use(Office Dominant)	60,660		600%	363,960	60%	10.0		0%	10%	90%	-	36,396	327,564	-	-	-	-	25,477	25,477		
		Sub-Station(KPLC)	10,930		400%	43,720	50%	8.0		0%	0%	0%	-	-	-	-	-	-	-	-	-	-	
		ETC(Open space)	3,550																				
10	Housing	<b>Sub Total</b>	<b>250,410</b>	<b>14.2%</b>	-	<b>517,990</b>				<b>76%</b>	<b>10%</b>	<b>14%</b>	<b>386,304</b>	<b>51,951</b>	<b>71,575</b>	<b>4,390</b>			<b>13,776</b>	<b>12,739</b>	<b>26,515</b>	<b>11.0%</b>	
		Residential	106,350		250%	265,875	30%	8.3		97%	3%	0%	257,899	7,976	-	2,345	110.0	3.2	7,503	798	8,300		
		Residential_Affordable with Social Housin	45,000		250%	112,500	30%	8.3		97%	3%	0%	109,125	3,375	-	1,819	60.0	3.2	5,820	338	6,158		
		Mixed use(Commercial Dominant)	38,560		250%	96,400	70%	3.6		20%	40%	40%	19,280	38,560	227	85.0	2.0	454	6,427	6,880			
		Public purpose(Community Center)	4,890		250%	12,225	70%	3.6		0%	0%	100%	-	-	12,225	-	-	-	-	815	815		
		School	13,860		150%	20,790	30%	5.0		0%	0%	100%	-	-	20,790	-	-	-	-	4,158	4,158		
		Parking lot(Parking building)	4,080		250%	10,200	70%	3.6		0%	20%	0%	-	2,040	-	-	-	-	-	204	204		
		ETC(Open space)	37,670																				
11	Hi-tech Industrial	<b>Sub Total</b>	<b>51,570</b>	<b>2.9%</b>	-	<b>202,680</b>				<b>10%</b>	<b>13%</b>	<b>77%</b>	<b>16,896</b>	<b>23,640</b>	<b>135,168</b>	<b>199</b>			<b>398</b>	<b>11,375</b>	<b>11,773</b>	<b>4.9%</b>	
		Hi-tech Industrial	42,240		400%	168,960	60%	6.7		10%	10%	80%	16,896	16,896	135,168	199	85.0	2.0	398	10,701	11,098		
		Parking lot	8,430		400%	33,720	60%	6.7		0%	20%	0%	-	6,744	-	-	-	-	-	674	674		
		ETC(Open space)	900																				
<b>Total(zone)</b>			<b>1,254,000</b>	<b>71%</b>	-	<b>3,871,165</b>						<b>1,013,723</b>	<b>778,434</b>	<b>1,921,874</b>	<b>11,100</b>			<b>29,936</b>	<b>210,456</b>	<b>240,392</b>	<b>100%</b>		
<b>Total Area</b>			<b>1,768,560</b>	<b>100.0%</b>																			

Note : 1. Type of Unit: 110m<sup>2</sup> for a family(3bed room, applied for 3.2 residents per unit), 85m<sup>2</sup> for a studio type(2bed room, applied for 2 residents per unit) including core area.

2. Design Population (Source: Planning and Building Regulation, 2009)

1) Residents - 3.2persons/Family unit, 2persons/Studio unit, 2) Commercial(Store) - 10m<sup>2</sup>/1person, 3) Office and Public Purpose - 15m<sup>2</sup>/1person, 4) Hospital - 10m<sup>2</sup>/1person, 5) School - 5m<sup>2</sup>/1person

3. Sub-station is not reflected in the population plan.

4. Parking lot means parking building which is a profitable facility including some commercial facilities. 20% of the total area is commercial facilities and it is designed user population by 10m<sup>2</sup>/1person.

5. University(TUK) which is a designed user population by 15m<sup>2</sup>/1person.

※ Transportation Facilities(135,480m<sup>2</sup>), Central Park(102,800m<sup>2</sup>) and Road Area(276,280m<sup>2</sup>) are excluding from Total Area of Zone.

### 7.3 Eleven (11) Precincts in The Plan

The Plan facilitates multiple functional mix and strengthens site-specific characters. Overall direction of the zoning plan intends for 1) Precinct identity for adapting heterogeneous site surroundings and 2) Mix use approach for 24-hour new city.

The Plan area is divided as 11 precincts;

- Mice Core
- Center Core
- East Core
- Government Office
- Kenya Railways
- New Central Station
- Railway Front Commercial
- Street Commercial
- International Office
- Housing
- High tech SME

Each precinct can be developed as site-specific approach with unique spatial character and identity.

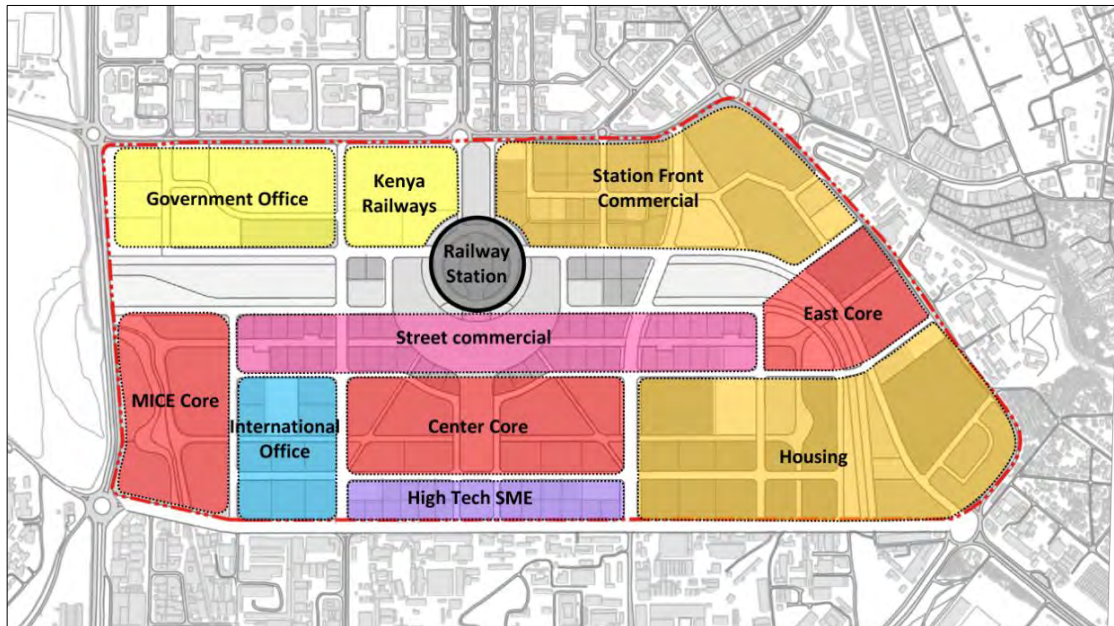
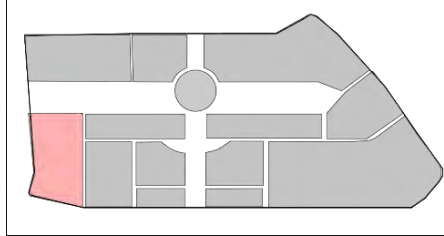


Figure 7-3 Precinct Map in the Railway City

### 7.3.1 MICE Core

#### Precinct Vision: MICE with multi use complex along Ngong River basin



#### Location character and main functions

Uhuru highway is the main arterial road for Nairobi and it links the Mombasa and Nakuru highways. The Upper hill side is currently experiencing an office and mixed-use development boom. The Southern industrial area is predominantly private industrial use. However, in future this area shall strive as a strong economic spine connecting the JKIA to the CBD. The recommended urban function for this area is state of the art buildings to accommodate Grade “A” office, hotel and housing with convention center or event space. The MICE function could complement KICC and other major conference centers such as Safari Park Hotel. The existing golf course can enhance the MICE function.

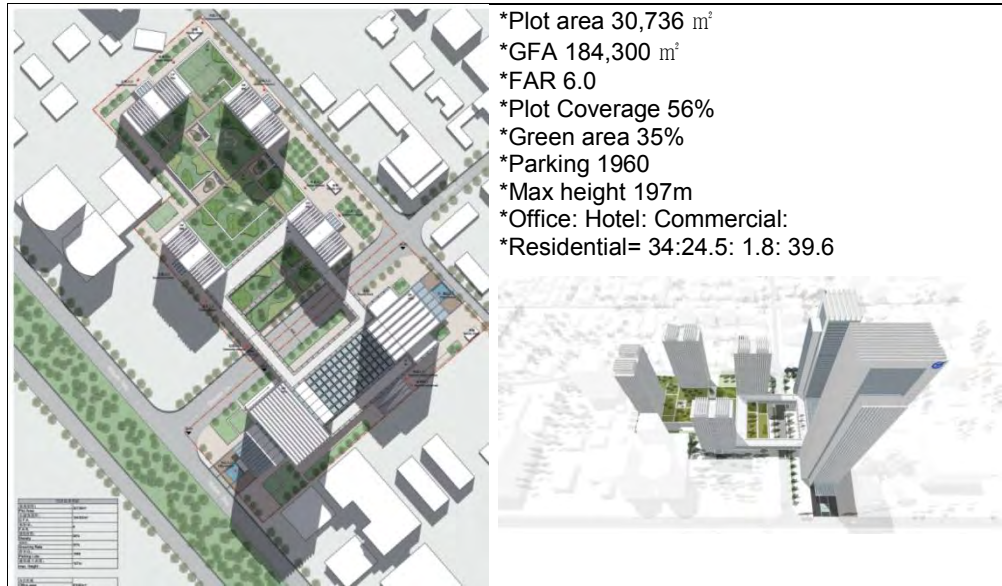
#### Spatial scheme

The MICE core is located in the western area of the site and is adjacent to Uhuru highway. Visibility of the area from Uhuru highway which is an international corridor is important as the core can serve as a landmark, hence high-rise buildings are suitable. The high-rise buildings will also maximize on the return on investment on the land value. The table shows 20 tallest buildings in Nairobi. All these buildings are located in the Upper hill area and the CBD area. Therefore, high rise buildings in the West core will be well assimilated into the Nairobi skyline.

**Table 7-2 High-rise Buildings in Nairobi (over 75m)**

No.	Building	Height	Floors	Completed
1.	Britam Tower	200m (660ft)	32	2017
2.	UAP Old Mutual Tower	163m (535ft)	33	2015
3.	Times Tower	140m (460ft)	34	2000
4.	Le Mac	126m (413ft)	30	2016
5.	Teleposta Towers	120m (390ft)	27	2000
6.	Kenyatta International Conference Center <sup>61</sup>	105m (344ft)	28	1974
7.	NSSF Building	103m (338ft)	28	1990s
8.	Kenya Commercial Bank Plaza	100m (330ft)	24	2013
9.	I&M Bank Tower	99.1m (325ft)	18	2001
10.	Nyayo House	84m (276ft)	27	1982
11.	Cooperative Bank House	83m (272ft)	25	1981
12.	Hazina Towers	81m (266ft)	24	-
13.	National Bank House	82m (269ft)	21	1976
14.	Rahimtulla Tower	80m (260ft)	18	1999
15.	Anniversary Towers	80m (260ft)	26	1992
16.	Lonrho House	80m (260ft)	22	1990
17.	Reinsurance Plaza(Office)	77m (253ft)	20	1982
18.	AmBank House	75m (246ft)	22	-
19.	Delta Corner Tower A(Hotel)	75m (246ft)	18	2012
20.	Delta Corner Tower B(Office)	75m (246ft)	21	2012

There are a number of ongoing high-rise mixed-use developments in Nairobi such as the Avic Center that has a diverse program mix. The developments ratios of the Avic project are as shown in figure below.



**Figure 7-4 Avic Center Development (Nairobi)**

Source: The Google source

Inclusion of a convention center must be considered in MICE area. Though GoK or KR can consider making a direct investment into the convention center but it can be mixed with other salable programs. Global examples such as South Korea indicate that if the viability of the project is assured, inclusion of MICE facility is a plus to the development. The figure below shows one of successful projects in South Korea with mixed use program with MICE<sup>34</sup>.



**Figure 7-5 Example of MICE Core Image (D-CUBE city, South Korea)**

<sup>34</sup>Figure shows that “D-cube city” project in Seoul. The site is notorious place of old coal depot area. Currently the master developer decides to develop the area as new commercial complex of which the main function is commercial office and open spaces with MICE function. Top tier hotel brand Sheraton has been launched from 2016.

### Design Guidelines

The MICE core precinct accommodates residential, commercial and office functions. The B.C.R is 50% and F.A.R is 600% with two types of maximum number of floors allowed i.e. 30 and 45 floors. MICE core allows developers to build the tallest building creating a landmark for the planning area. A setback of 3m on the ground level, shall provide an arcade along the park and make the commercial street vibrant.

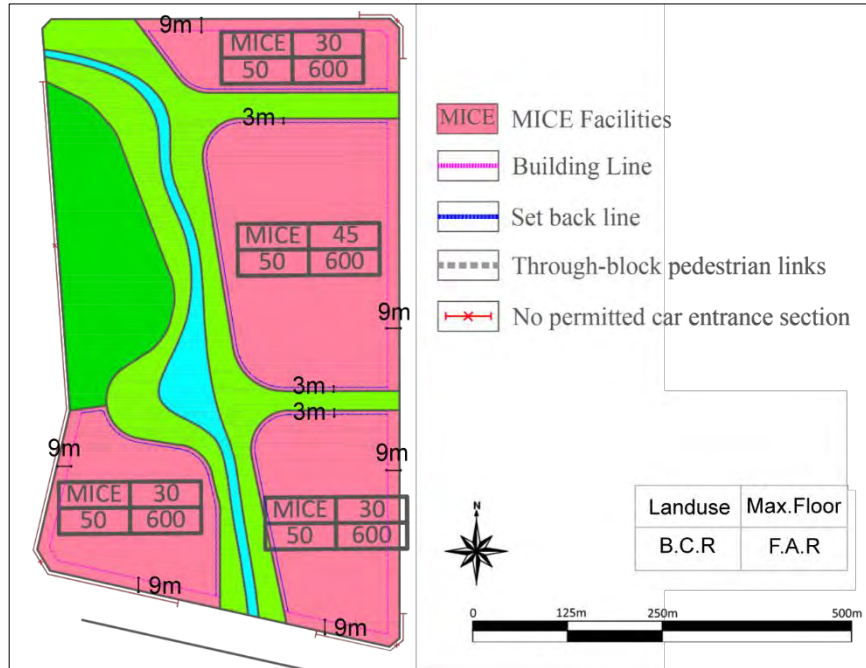
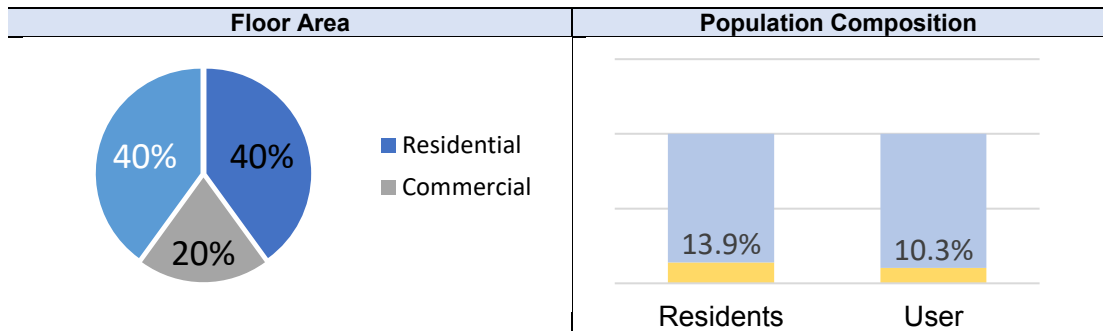


Figure 7-6 MICE Core Design Guideline

In terms of program mix, the residential, commercial and office areas occupy 40%, 20% and 40% of the total floor area respectively. The residents of the center core precinct will be 4,171 which is 13.9% of the total residents in the Railway City. The total number including residents and users in the center core precinct will be 24,855, which is 10.3% of the total population in Railway city.

Table 7-3 MICE Core Program/ Population



\*Note: Population ratio of each precinct per entire Railway city shows the quantitative perception of each precinct in the Railway City. One is the ratio of precinct resident number per total residents' number in Railway city. The other represents the ratio of precinct total population per entire Railway City total population. Total population means residents plus user population.

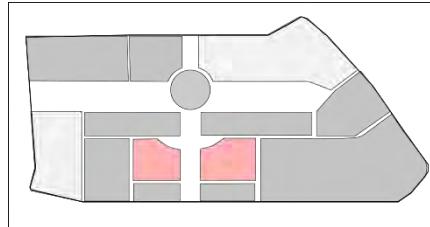
**Table 7-4 MICE Core Land Use and Population**

Land use	Area (m <sup>2</sup> )	F.A.R	Total Floor Area(m <sup>2</sup> )	Mixed Use Ratio			House hold (Unit)	Population		
				Residence	Commercial	Office		Residents	User	Total Population (Residents +User)
<b>Sub Total</b>	<b>123,270</b>	<b>-</b>	<b>443,220</b>	<b>40%</b>	<b>20%</b>	<b>40%</b>	<b>2,086</b>	<b>4,171</b>	<b>20,684</b>	<b>24,855</b>
MICE	73,870	600%	443,220	40%	20%	40%	2,086	4,171	20,684	24,855
ETC(Open Space)	49,400	-	-	-	-	-	-	-	-	-

\*Note: 1. Household size-unit size: 2.0- Studio type (85 m<sup>2</sup>), 3.2- family type (110 m<sup>2</sup>).  
 2. User population: 10 m<sup>2</sup>/ person (Commercial), 15 m<sup>2</sup>/person (Office) (National Planning and Building Regulations, 2009)

### 7.3.2 Center Core

#### Precinct Vision: 24-hour city by dynamic function mix



#### Location character and main functions

The Center Core occupies the central location of the planning area, next to the central square. A High density mixed used development is suitable due to the land value and proximity to the central station. When compared to the Street commercial area, the development scale shall be bigger and denser. In addition, this area has potential to generate the future development for the southern industrial area, which has great potential for urban growth.

#### Spatial scheme

The retail uses are proposed on the lower floors especially on the ground floor, to enhance urban vitality and liveliness. On top of the retail floor, offices and housing uses can ensure a 24 hours' liveliness in the core area.

The Netherlands cases of Rotterdam "Lijnbaan"<sup>35</sup>, domestic cases of Yaya Center and the Village Market shows a successful model of inner city redevelopment, with a linear pedestrian commercial space complemented with mixed use developments. These examples also have a similar vertical mixed use in one sizable urban plot, with the lower floor hosting the commercial use and the upper floors hosting residential or office uses.

<sup>35</sup> The Lijnbaan is the main shopping street in Rotterdam, the Netherlands. It was opened in 1953, as the main pedestrian street in the new shopping district, after the old shopping district was completely destroyed during the bombing of Rotterdam by the German. It was designed by the firm Van den Broek & Bakema, the Netherlands. The Consultant would like to suggest this example because it has proved being a successful model of urban core making in a long-time history of urban planning. On top of Bakema's original design, other newly development has occurred such as Beurs Street near to Lijnbahn.

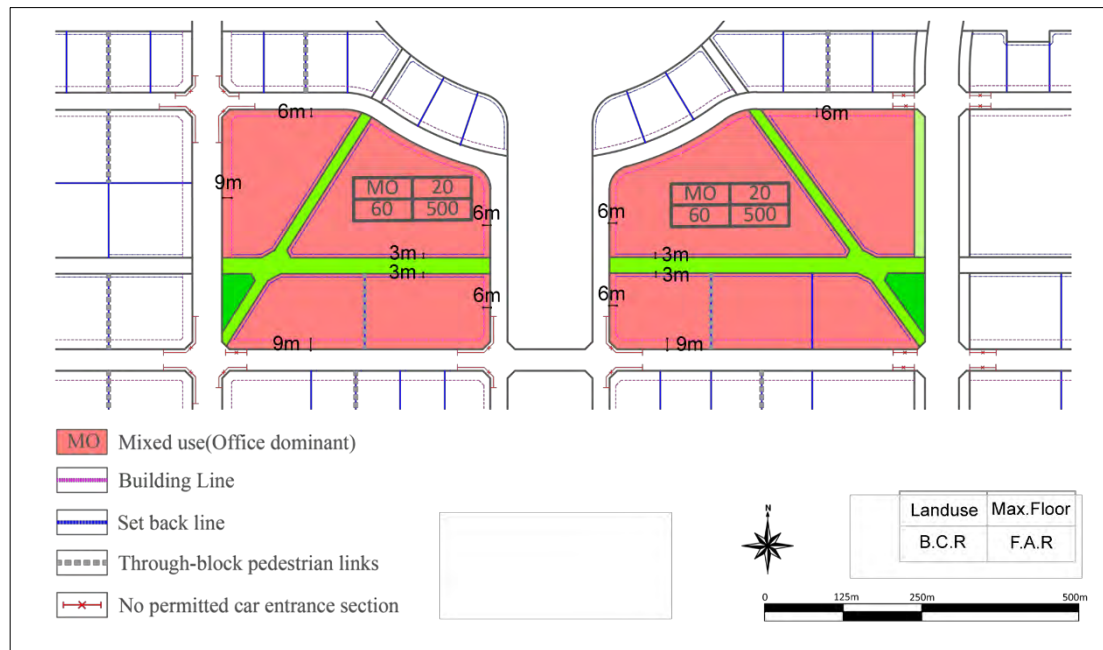


**Figure 7-7 Image of Rotterdam Lijnbaan**

Source: Google image

### Design Guidelines

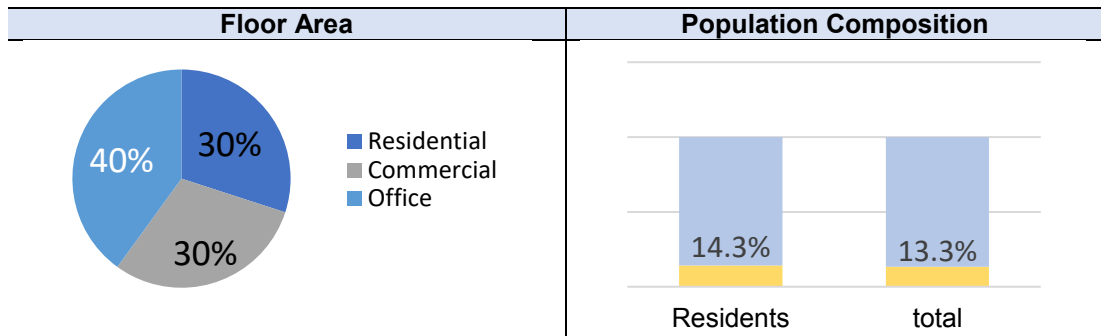
The Center core precinct is a mixed-use area. The B.C.R is 60% and F.A.R is 500%, and the maximum number of floors is limited to 20 floors. In addition, the number of buildings on the pedestrian road should have a 3m set back at the ground floor level for smooth pedestrian movement to enhance the economic activities and protect pedestrians from harsh weather conditions.



**Figure 7-8 Center Core Design Guideline**

In terms of program mix, the residential, commercial and office areas occupy 30%, 30% and 40% of the total floor area respectively. The residents of the center core precinct will be 4,268 which is 14.3% of the total residents in the Railway City. The total number including residents and users in the center core precinct will be 31,981 which is 13.3% of total population in Railway city.

**Table 7-5 Center Core Program/ Population**



\*Note: Population ratio of each precinct per entire Railway city shows the quantitative perception of each precinct in the Railway City. One is the ratio of precinct resident number per total residents' number in the Railway City. The other represents the ratio of precinct total population per entire Railway city total population. Total population means residents plus user population.

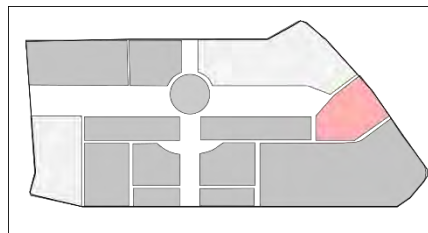
**Table 7-6 Center Core Land Use/ Population**

Land use	Area (m <sup>2</sup> )	F.A.R	Total Floor Area(m <sup>2</sup> )	Mixed Use Ratio			House hold (Unit)	Population		
				Residence	Commercial	Office		Residents	User	Total Population (Residents +User)
<b>Sub Total</b>	<b>114,620</b>	-	<b>489,050</b>	<b>30%</b>	<b>30%</b>	<b>40%</b>	<b>1,334</b>	<b>4,268</b>	<b>27,713</b>	<b>31,981</b>
Mixed use (Office Dominant)	97,810	500%	489,050	30%	30%	40%	1,334	4,268	27,713	31,981
ETC(Open Space)	27,960	-	-	-	-	-	-	-	-	-

\*Note: 1. Household size-unit size: 2.0- Studio type (85 m<sup>2</sup>), 3.2- family type (110 m<sup>2</sup>).  
 2. User population: 10 m<sup>2</sup>/ person (Commercial), 15 m<sup>2</sup>/person (Office) (National Planning and Building Regulations, 2009)

### 7.3.3 East Core

#### Precinct Vision: Public and commercial core with residential and surroundings



#### Location character and main functions

The East core is located in a strategic location between the Eastlands area and the Railway City. Therefore, the area has a “gateway” character for the both areas, resulting in high traffic flow from the East and to the West through this area.

The Muthurwa area accommodates a market hence the area has many commercial activities. The Eastlands area is a predominantly low-cost housing area. The ongoing Viaduct project by JICA will see the Wakulima Market relocated to the Muthurwa area. There shall be heavy pedestrian traffic and hence it is prudent to have a pedestrian link from the new Muthurwa area and Machakos Termini to the Upper hill area.

Relocation of Wakulima Market gives an opportunity for sound intervention of merchandise re-allocation in Wakulima and Muthurwa Markets. Currently both markets deal with raw, grocery, and agricultural product together. Muthurwa Market also deals with lots of daily commodities including cloth, textile, and stationary etc. This creates confusion in way finding and also creates circulation conflicts amongst the different merchants. The Plan proposes that functional re-allocation as new Wakulima Market for food-oriented-merchandise and current Muthurwa Market for daily commodities.

A wholesale market for dealing with groceries and food is currently in operation. This market emits bad odors and produces garbage that pollutes surface water. The area is not suitable for wholesale market for the future Nairobi CBD<sup>36</sup>. Instead of a wholesale function of food, the new Wakulima Market area can accommodate new culture of gastronomy such as world food court which can sustain the food-oriented-locational history. London's Covent Garden is one of the examples of gastronomical identity transition from wholesale market. "Wakulima garden" concept also can be realized.



**Figure 7-9 Images of Covent Garden (London)**

The Plan proposes a mix of both public and private developments. Public uses such as administration offices, police station and fire station to be located adjacent to Muthurwa to provide quick public service delivery. The public facility will also be easily accessible from the surrounding housing blocks. A commercial development will provide commercial services to the residents of the east core within a walking distance. The figure below illustrates the core function diagram.



**Figure 7-10 East Core Location Map**

<sup>36</sup>Thereby the NCCG also has an intention to move the wholesale market function to the outside of CBD.

### Spatial scheme

The East core occupies the eastern side of the site, bordered by Eastlands. The NMT walkway crosses the Railway track through a bridge extending the NMT lane to the Eastlands area as well as to the Nairobi river area and Gikomba market. The extended pedestrian way is the entrance route into The Railway City from the Eastlands side.

Next to the railway track, on the railway south side, the plan locates / public functions in a multi-purpose administrative building, a fire station, a police station and public park. The railway north side comprises two sizable urban plots, one for the public anchor and the other for mix-used housing development. JICA’s plan proposed the new Wakulima Market in the Muthurwa area. The Plan therefore, reflects the idea of the new Wakulima Market serving as the main public anchor program in East core area.

The Plan proposes that the multi-purpose administrative building could accommodate many potential services such as provincial office, small library, child care unit, multi sports center, elderly center, youth center, cultural center etc. It could offer the public efficient service delivery within close walking distance from the railway station, the residential and neighboring areas.



Figure 7-11 Multi-Use Public Service Center Example (South Korea)

### Design Guidelines

The East core precinct consists of mixed-use developments (Commercial dominant) and public purpose area. For the whole area, the B.C.R is 70% and F.A.R is 250%, with the maximum number of floors limited to 8 floors.

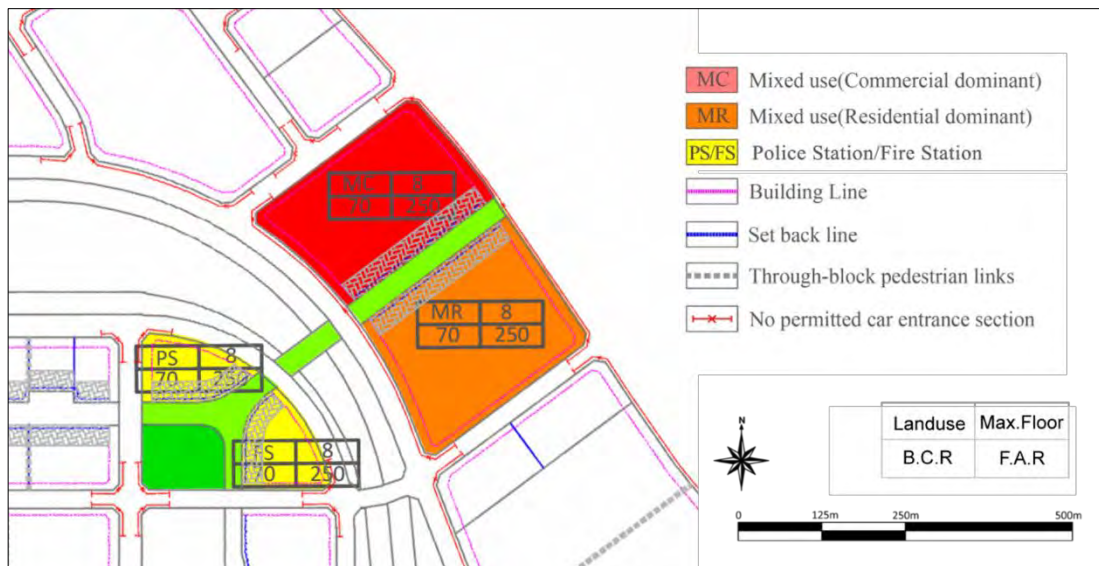
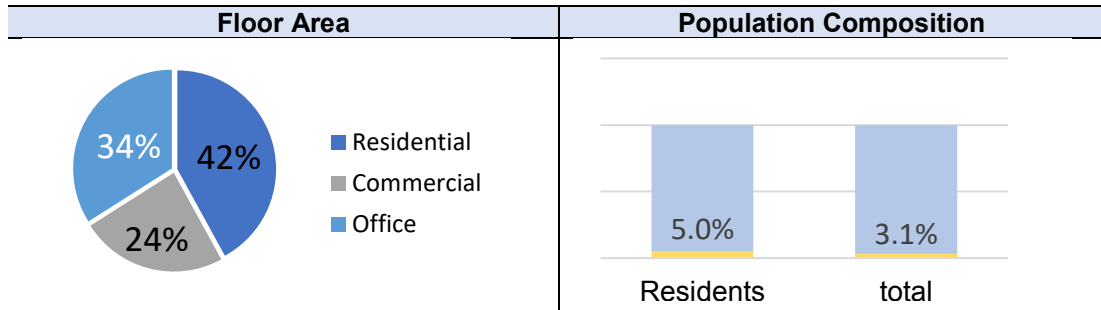


Figure 7-12 East Core Design Guideline

In terms of program mix, the residential, office and commercial uses occupy 42%, 24%, 34% of the total floor area respectively. The residents of the east core precinct will be 1,503, which is 5.0% of the total residents in Railway city. The total number including residents and users in the east core precinct will be 7,461, which is 3.1% of the total population of the Railway City.

**Table 7-7 East Core Program/ Population**



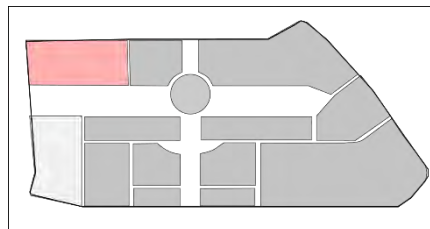
**Table 7-8 East Core Land Use/ Population**

Land use	Area (m <sup>2</sup> )	F.A.R	Total Floor Area (m <sup>2</sup> )	Mixed Use Ratio			House hold (Unit)	Population		
				Residence	Commercial	Office		Residents	User	Total Population (Residents +User)
<b>Sub Total</b>	<b>63,190</b>	<b>250%</b>	<b>127,725</b>	<b>42%</b>	<b>24%</b>	<b>34%</b>	<b>512</b>	<b>1,503</b>	<b>5,958</b>	<b>7,461</b>
Mixed use (Commercial Dominant)	19,360	250%	48,400	20%	40%	40%	114	228	3,227	3,455
Mixed use (Residential Dominant)	21,920	250%	54,800	80%	20%	-	398	1,275	1,096	2,371
Public purpose (PS/FS, Gov)	9,810	250%	24,525	-	-	100%	-	-	1,635	1,635
ETC (Open Space)	12,100	-	-	-	-	-	-	-	-	-

\*Note: 1. Household size-unit size: 2.0- Studio type (85 m<sup>2</sup>), 3.2- family type (110 m<sup>2</sup>).  
 2. User population: 10 m<sup>2</sup>/ person (Commercial), 15 m<sup>2</sup>/person (Office) (National Planning and Building Regulations, 2009)

**7.3.4 Government Office Precinct**

**Precinct Vision: New public office area with TUK**



**Location character and main functions**

The Upper hill area and the existing CBD host government buildings from the past. Adapting to the needs of the expanding CBD in future in Railway city, 12 acres' land was requested by the Presidential Delivery Unit for location of government offices.

TUK currently accommodates 15,000 students with multi faculties of applied science and technology. In future, it is anticipated that the student number will reach 25,000. The student

population will influence the footfall within the development and hence the university will have a massive impact on the project site.

An R&D oriented development for synergy with the university is suggested for this area. An industrial park developer with a good development track record in Kenya can invest in this zone.

### Spatial scheme

The area near the intersection of Uhuru Highway and Haile Selassie Road is suggested to be a government precinct due to the proximity to Upper hill and existing CBD government offices locations.

Southern area of TUK is suggested to be a R&D zone, with the clustering creating synergy with the knowledge industry.



Figure 7-13 Example Image of the Government Office Precinct

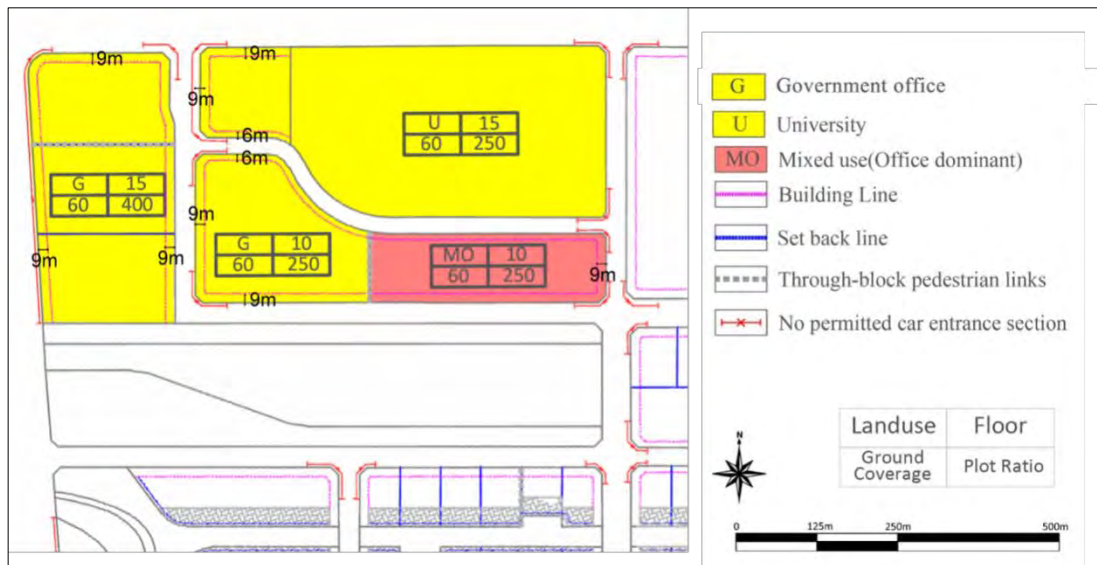


Figure 7-14 Government Office Precinct Design Guideline

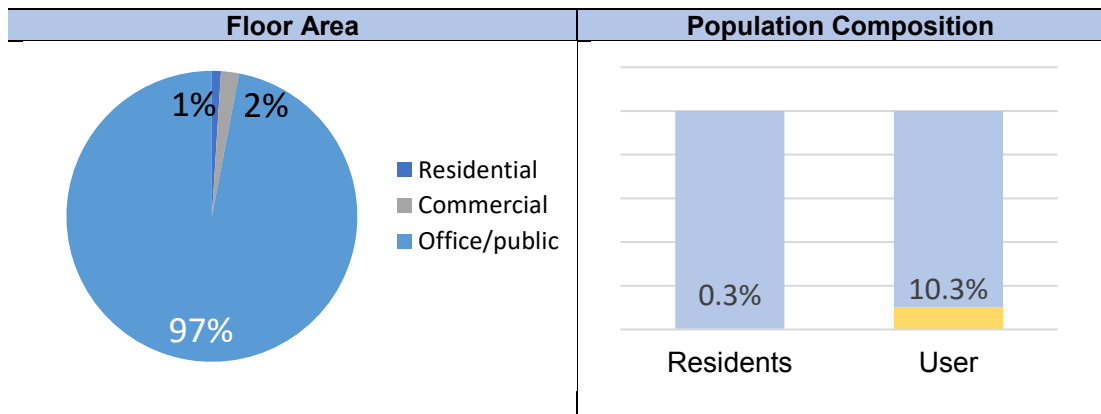
### Design Guidelines

The government office lot is program for pure office function. It has a B.C.R of 60% and a F.A.R of 250% and 400%, with the maximum number of floors limited to 10 and 15 floors each. The public program area (University) has a B.C.R of 60% and a F.A.R of 250%, with the maximum number of floors limited to 15 floors.

In terms of program mix, the residential, commercial and office areas occupy 1%, 2% and 97% of the total floor are respectively. The residents are 91, which is 0.3% of the total residents in

the Railway City. The total number including residents and users in the precinct is 24,879, which is 10.3% of the total population in Railway City.

**Table 7-9 Government Office Program/ Population**



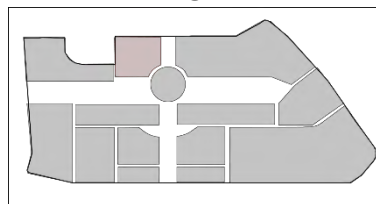
**Table 7-10 Government Office Land Use/Population**

Land use	Area (m <sup>2</sup> )	F.A.R	Total Floor Area(m <sup>2</sup> )	Mixed Use Ratio			House hold (Unit)	Population		
				Residence	Commercial	Office		Residents	User	Total Population (Residents +User)
<b>Sub Total</b>	<b>127,510</b>	-	<b>371,815</b>	<b>1%</b>	<b>2%</b>	<b>97%</b>	<b>45</b>	<b>91</b>	<b>24,788</b>	<b>24,879</b>
Government Office	35,360	400%	141,440	-	-	100%	-	-	9,429	9,429
Government Office	27,800	250%	69,500	-	-	100%	-	-	4,633	4,633
Mixed use (Office Dominant)	15,450	250%	38,625	10%	20%	70%	45	91	2,575	2,666
University(TUK)	48,900	250%	122,250	-	-	100%	-	-	8,150	8,150

\*Note: 1. Household size-unit size: 2.0- Studio type (85 m<sup>2</sup>), 3.2- family type (110 m<sup>2</sup>).  
 2. User population: 10 m<sup>2</sup>/ person (Commercial), 15 m<sup>2</sup>/person (Office/TUK Expansion) (National Planning and Building Regulations, 2009)

### 7.3.5 Kenya Railways

#### Precinct Vision: From Historical Heritage to the future public landmark



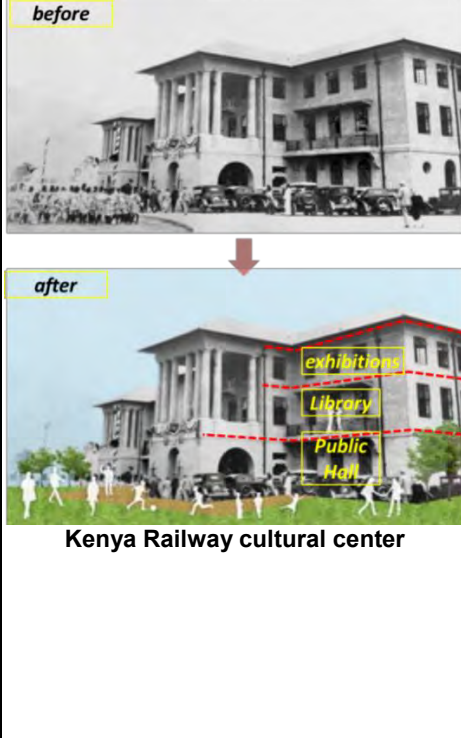
#### Location Character and Main Functions

The area is occupied by the Kenya Railway Headquarters covering 6.3ha. The Haile Selassie and Moi Avenue crossing is located at the northeast corner. Kenya Railway headquarters and supportive buildings such as KR police, small offices have been located next to the station since the colonial period.

By implementing a new railway station, the KR zone can be open to the public. Functional restructuring is suggested. The existing station building needs to be relocated to the KR zone then the new station building located in its place. The old station building can be refurbished

into the of Railway museum, taking the role of the one currently located next to Uhuru highway<sup>37</sup>.

Another proposal is that the current headquarter building can open to the public as new “Kenya Railway cultural center”. Public tenants could be accommodated in future e.g. a library, a cultural hall, an event hall, etc.

 <p><b>Kenya Railway cultural center</b></p>	<p>*Project type: Historic building rehabilitation</p> <p>*Main direction: Program modification and refurbishment of building in and outdoor area</p> <p>*Program Kenya Headquarter office (Current) → Kenya Railway Cultural center (future)</p> <p>*Directions                  . Enhancing historical contents of Kenya Railway and country building                  . Provision of diverse social program to the public encompassing Nairobi metro scale and even bigger                  . Potential program: Public hall, Library, Exhibition, sky lounge and show room</p> <p>*Suggestions                  *Early Consensus for program determination: the project shall be initiated by specific discussions between historian, social groups and Kenya Railway board.                  *Detail survey: Before the project implementation, detail survey of the building should be conducted. Any meaningful historic remnants and structural weak point should be captured, and then appropriate action should be taken into account.</p>
--	--

**Figure 7-15 Example Image of Kenya Railway Cultural Center**

### Spatial scheme

The current headquarters building transforms into “Kenya Railway Cultural center” “The New Kenya Railway Headquarters site could be located in the South-East side of the zone developed as high-rise building.

The existing central station building is the most significant historic legacy in existing Kenya Railway facilities. Many workshops and consultations concluded that due to the lengthy nature of the structure, the entire building need not be preserved but partial preservation approach of structure should be applied. The ticket office and guest lounge could continue to serve the same function. The area around the existing station building could be designed as “Kenya Railway garden” dotted with small outdoor activities and exhibitions. The current Railway museum’s locomotive can be relocated here to add to the strong historic sense of the place.

<sup>37</sup>Current Railway Museum is an old depot building in the colonial times. As the result of the workshop, the Consultant came to recognize that the building has little historical meaning, so it could be demolished and transformed to the new urban function.



Figure 7-16 Kenya Railways Precinct Exemplary Image

**Design Guideline**

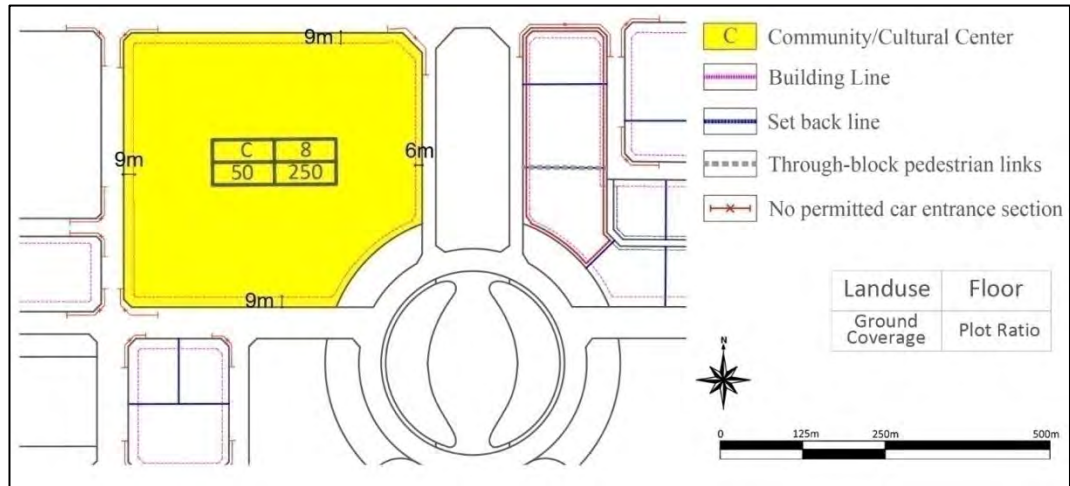
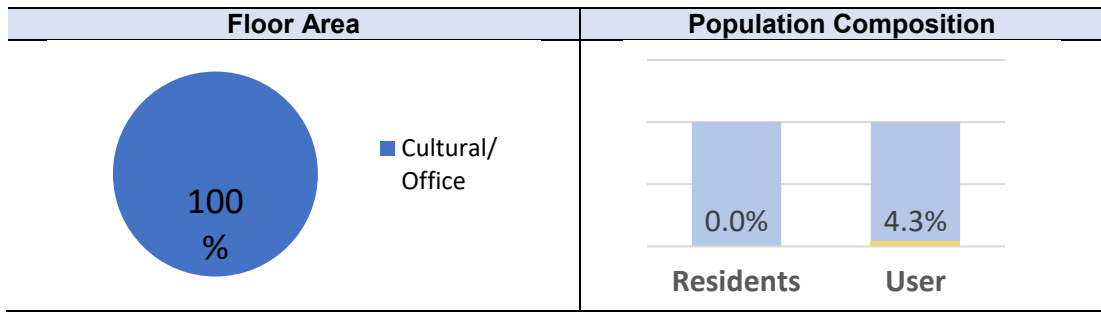


Figure 7-17 Kenya Railway Precinct Guideline

The Kenya Railway precinct is proposed to be a public open area. The B.C.R is 50% and F.A.R is 250%, with the maximum number of floors limited to 8 floors.

The public area occupied 100% of the total floor area. The users are 10,243, which is 4.3% of the total railway city population.

**Table 7-11 Kenya Railway Precinct Program/ Population**



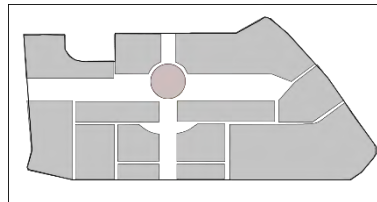
**Table 7-12 Kenya Railway Precinct Land Use/ Population**

Land use	Area (m <sup>2</sup> )	F.A.R	Total Floor Area(m <sup>2</sup> )	Mixed Use Ratio			House hold (Unit)	Population		
				Residence	Commercial	Office		Residents	User	Total Population (Residents +User)
<b>Sub Total</b>	<b>61,460</b>	<b>-</b>	<b>153,650</b>	<b>-</b>	<b>-</b>	<b>100%</b>	<b>-</b>	<b>-</b>	<b>10,243</b>	<b>10,243</b>
Cultural/office	61,460	250%	153,650	-	-	100%	-	-	10,243	10,243

\*Note: User population: 15 m<sup>2</sup>/person (Office/Cultural Center) (National Planning and Building Regulations, 2009)

### 7.3.6 New Central Station Precinct

#### Precinct Vision: Truly Global African Gateway

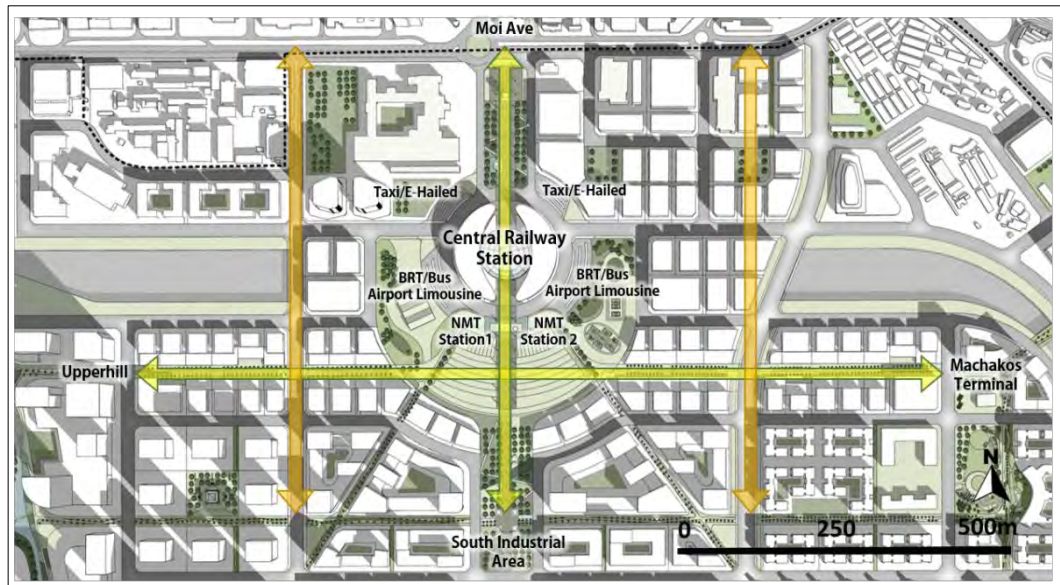


#### Location Character and Main Functions

The New Central station is located in the middle of The Railway City. The building faces the wide Central Square, so it will dominate the urban scenery. Functionally, the building provides the new transport hub, serving the demand of diverse urban transport modes like commuter trains, BRT, city buses, airport limousines, e-hailed vehicles and private cars. Priority shall be given to public transportation plus private transport for the elderly, disabled people and people with excess baggage.

#### Spatial scheme

The area should have a one-way circulation in a clock wise direction. Three access routes are available, from Haile Selassie Avenue, Enterprise Road and Workshop road. As a transit center with a “Kiss and Ride” concept, 3 pairs of different transportation modes will be accommodated. One is for BRT/Public Bus/ Airport Limousine, the second caters for small vehicles like Taxis, e-hailed service and PSV, and a third is an NMT station. A direct dropping zone for the elderly and person with baggage is allocated. Pedestrians can easily access the station area from the Moi Avenue to the south and vice versa.



**Figure 7-18 Network Diagram of the NCS Precinct**

In order to integrate with the NMT vehicles (bicycles and other NMT mode such as Segway or other state of art personal modes in future), the transit center connects the motor vehicle to the NMT station with a short walking distance in between. Ease of transfer to ride on the NMT modes will promote the NMT usage within Railway City whose topography (generally flat) is suitable for NMT modes.

The building has an open structure from the North (Moi Avenue side) and also from the South (the Industrial area side). It provides an image of new urban “gateway” to the area. The dome square within the building is the central meeting place for the station. It is covered by a glass roof to provide sunlight and rain shelter.

The station building has 5 sectional divisions. An underground structure has the lowered railway track and platform, transit parking and a water reservoir. The transit parking is located on the upper side of the water reservoir. It’s provides parking for the commuters and daily passengers of the new train station. The floor area is 16,000 m<sup>2</sup>, accommodating approximately 400 vehicles.

The ground floor hosts the station and the dome square. Passengers can access the underground railway platform using both escalators and lifts. The station comprises a tickets’ office, a waiting area and a small fast food unit. The dome square is a roofed outdoor space, which provides a circulation area for access to the 1st, 2nd, 3rd floor by an escalator or lift to upper retail and restaurant area.

1st, 2nd and 3rd floors are composed of restaurants and retail areas. Many examples of station development in developed countries show the commercial area like gastronomy and department stores attached to the station building complex. The retail is a catalyst for economic viability for the station developer/ operator.

The 4th floor is a rental space with offices and meeting rooms for small MICE functions. This will tap into passengers looking for a convenient meeting place not too far from the CBD.

The top floor is designed as a restaurant with sky lobby, which has spectacular views towards the old and the new city. The figures below show outline floor plans of the station building.

The existing station building is most significant structure among all the historic buildings in colonial times. Preservation of the entire building is ideal, but the constraints between old and

new station building structure make it impossible. Through many workshops and discussions, it was concluded on partial building preservation of the long structure. As regards the outlook/façade of the station, the new grand station building facade embraces the old station building structure.

The figure below illustrates the plan.

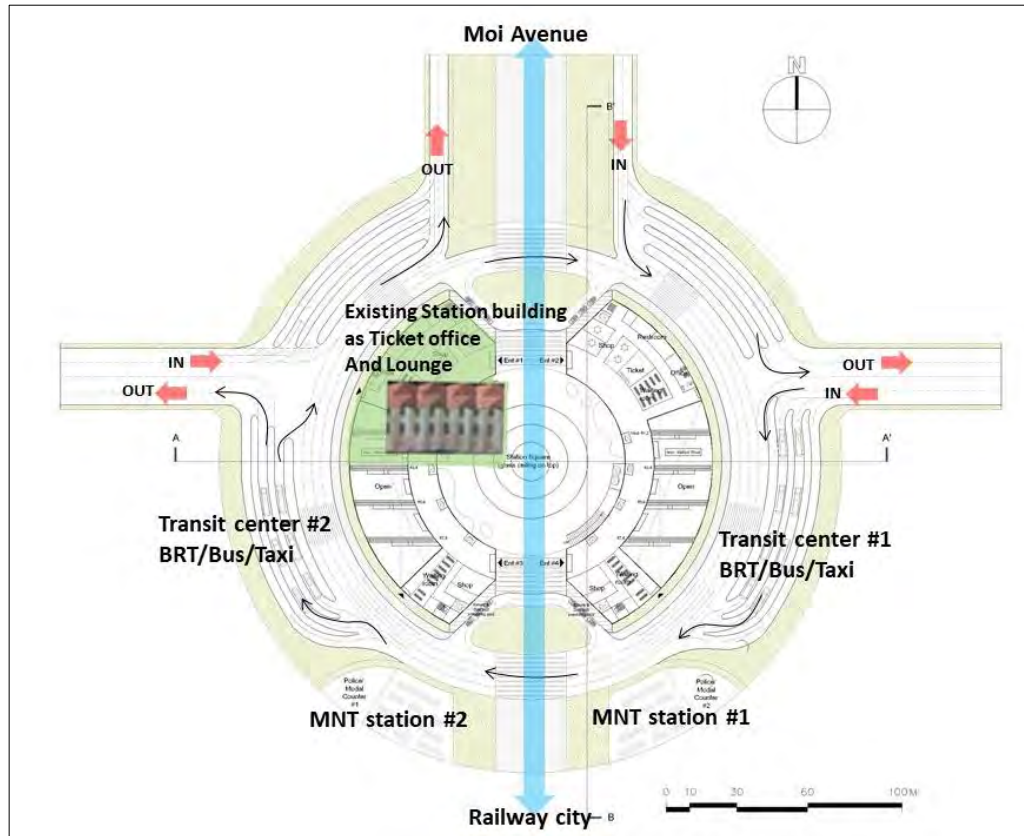


Figure 7-19 Architecture Drawing of New Central Station (Plan)

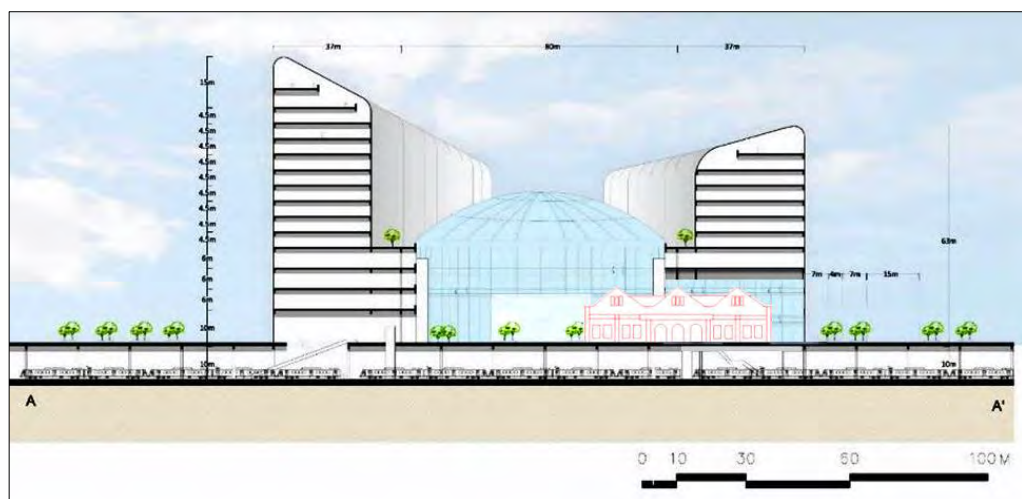


Figure 7-20 Architecture Drawing of New Central Station (Section-1)

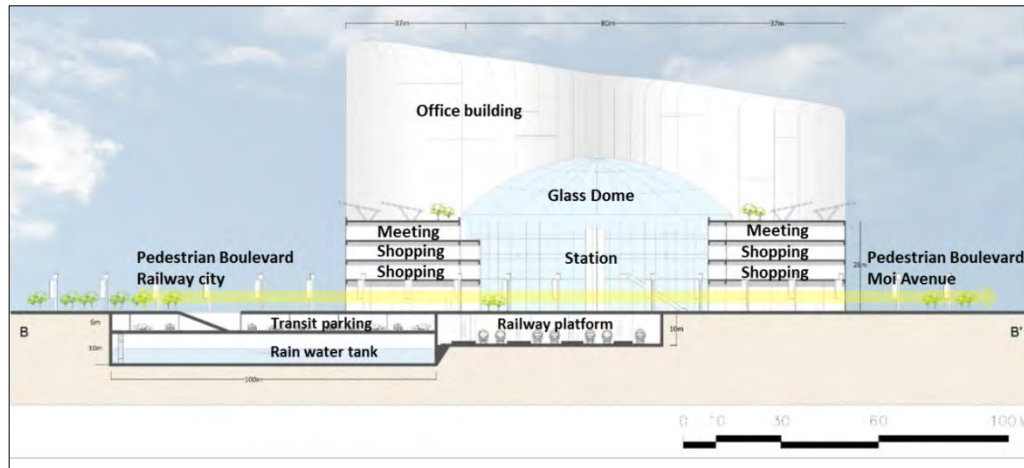


Figure 7-21 Architecture Drawing of New Central station (Section-2)

### Design Guideline

The station area consists of a station and transportation facilities. The B.C.R (Building Coverage) is 60% and the F.A.R (Plot Ratio) is 400%, with the maximum number of floors limited to 15 floors.

In terms of program mix, the commercial and office areas occupy 30% and 70% of the total floor area respectively. The users (limiting to only the building rental space users) are 6,477, which is 2.7% of the total population in Railway City.

Table 7-13 New Central Station Program/ Population

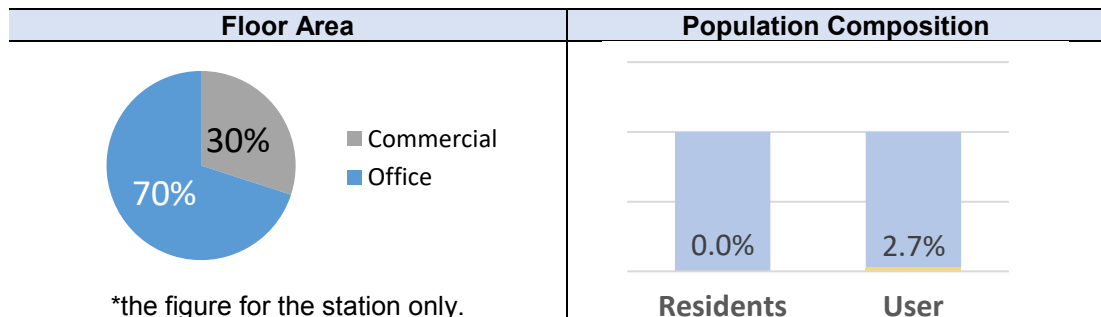


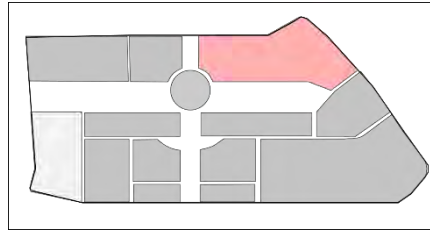
Table 7-14 New Central Railway Station Land Use/ Population

Land use	Area (m <sup>2</sup> )	F.A.R	Total Floor Area (m <sup>2</sup> )	Mixed Use Ratio			House hold (Unit)	Population		
				Residence	Commercial	Office		Residents	User	Total Population (Residents +User)
<b>Sub Total</b>	<b>38,540</b>	-	<b>84,480</b>	-	<b>30%</b>	<b>70%</b>	-	-	<b>6,477</b>	<b>6,477</b>
Station	21,120	400%	84,480	-	30%	70%	-	-	6,477	6,477
Transportation Facilities	15,400	-	-	-	-	-	-	-	-	-
ETC (Open Space)	2,010	-	-	-	-	-	-	-	-	-

\*Note: User population: 10 m<sup>2</sup>/ person (Commercial), 15 m<sup>2</sup>/person (Office/public purpose) (National Planning and Building Regulations, 2009)

### 7.3.7 Station Front Commercial

**Precinct Vision: Active commercial area with historical asset**



#### Location character and main functions.

This area is a vibrant commercial area with mixed use programs such as offices and services. Most of the land here is privately owned, so rapid transformation of the area is unlikely to happen. Historical buildings such as the Easy Couch building and the Wakulima Market Structure could be rehabilitated and preserved to maintain the place identity.



**Figure 7-22 Station Front Commercial Precinct Location**

#### Spatial scheme

As the majority of land ownership is private, developing the entire block will be complicated. Therefore, the Plan proposes minimum intervention of an essential road with utility delivery. In the long term, the market owner and developer could initiate their own development.

A trial of relocation of the Wakulima Market to Muthurwa area by NCCG can help pave the way for introducing a new function. Subsequently, the Plan proposes a new urban park in the original Wakulima Market area. As described in 5.3.3 East Core, merchandise re-allocation of Muthurwa is suggested so that the market handles daily commodities only, excluding the wholesale food and grocery market function. It can generate modern style shops on ground floor and on upper floors, urban services in office program could be accommodated.

#### Design Guidelines

This precinct consists of mixed-use (Commercial dominant) and public purpose area. The commercial area's B.C.R is 70%, F.A.R of 400%, with the maximum number of floors limited to 10 floors. The public purpose area's B.C.R is 50%, F.A.R is 250%, with the maximum number of floors limited to 10 floors. In addition, a pedestrian route passing through the center of the block was proposed with a 3m set back line and pocket parks located along the pedestrian route to facilitate the entry of the floating population.

As most of the land is privately owned, the guidelines suggest a certain new direction with actual development to be accomplished in the long term. For example, the shop owners and operators at Muthurwa Market, should determine on the market development. There are also plans to relocate the Muthurwa Terminal; however, there is no definite time projection for this.

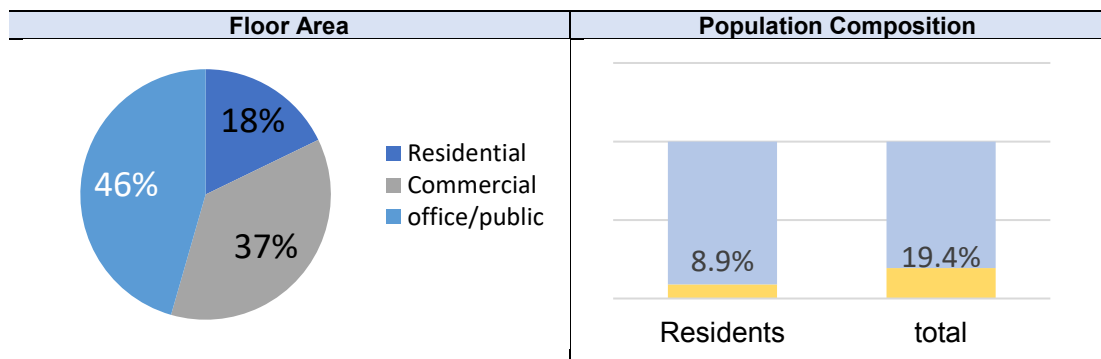
The existing sub-station will be retained for same use. Next to it, one public parking area is proposed for commercial users in future. Next to the south of new Wakulima Park, a public urban plot could host a public anchor program such as new hospital.



**Figure 7-23 Station Front Commercial Precinct Design Guideline**

In terms of program mix, the residential, commercial and office areas occupy 18%, 37% and 46% of the total floor area respectively. The residents of the railway commercial precinct are 2,666, which is 8.9% of the total residents of the Railway City. The total number including residents and users in this station front commercial precinct is 46,635, which is 19.4% of the total population in the Railway City.

**Table 7-15 Station Front Commercial Precinct Program/ Population**



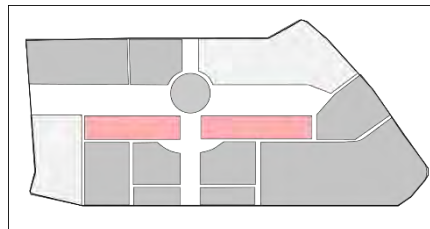
**Table 7-16 Station Front Commercial Precinct Land Use/ Population**

Land use	Area (m <sup>2</sup> )	F.A.R	Total Floor Area (m <sup>2</sup> )	Mixed Use Ratio			House hold (Unit)	Population		
				Residence	Commercial	Office		Residents	User	Total Population (Residents +User)
<b>Sub Total</b>	<b>188,990</b>	<b>-</b>	<b>664,815</b>	<b>18%</b>	<b>37%</b>	<b>46%</b>	<b>1,333</b>	<b>2,666</b>	<b>43,969</b>	<b>46,635</b>
Mixed use (Commercial)	141,650	400%	566,600	20%	40%	40%	1,333	2,666	37,773	40,440
Public purpose (Community)	3,720	250%	9,300	-	-	100%	-	-	620	620
Public purpose (Hospital)	12,870	400%	51,480	-	-	100%	-	-	5,148	5,148
Sub-Station	6,420	250%	16,050	-	-	-	-	-	-	-
Parking lot (Parking building)	2,190	400%	8,760	-	20%	-	-	-	175	175
Parking lot(Parking building-Muthurwa)	5,050	250%	12,625	-	20%	-	-	-	253	253
ETC(Open Space)	17,090	-	-	-	-	-	-	-	-	-

\*Note: 1. Household size-unit size: 2.0- Studio type (85 m<sup>2</sup>), 3.2- family type (110 m<sup>2</sup>).  
 2. User population: 10 m<sup>2</sup>/ person (Commercial/Hospital), 15 m<sup>2</sup>/person (Office/public purpose), (National Planning and Building Regulations, 2009)

**7.3.8 Street Commercial**

**Precinct Vision: Safe pedestrian area with diverse activity**



**Location character and main functions**

The Street commercial area is located next to the station and the station square. This area will have restaurants and shops stocking frequently used household commodities for the station users. As the main pedestrian network, the street commercial space will provide a link between the East and the West, from Eastlands to Upper hill.

In addition, it could serve as an alternative pedestrian way for Haile Selassie Avenue. Combining the main pedestrian way with commercial program, enhances pedestrian safety and urban liveliness. The small urban plot shops and restaurants will thrive, with support from the office and housing functions.

**Spatial scheme**

Small urban plots, with a plot size of 40 x 60m are proposed. The plot size is based on the existing CBD's plot size so as to create the perception of an extended CBD. It has setback of 3m from the street, offering a sheltered avenue for pedestrians and creating a commercial friendly environment.



Figure 7-24 Image of Existing CBD Street (left), Plot Sampling (right)

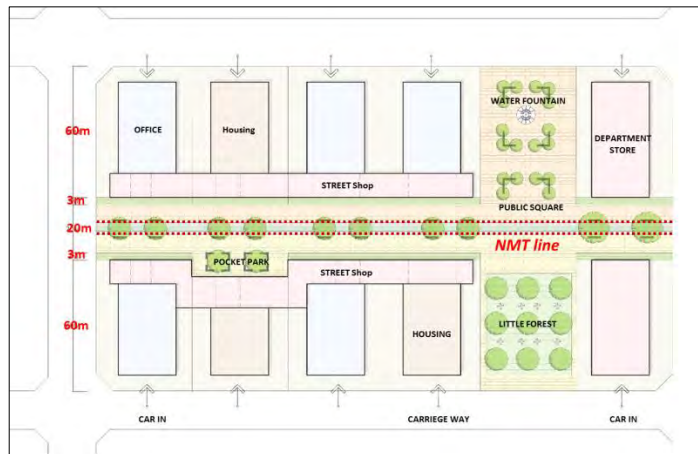


Figure 7-25 Location Diagram of Street Commercial, Green Pocket

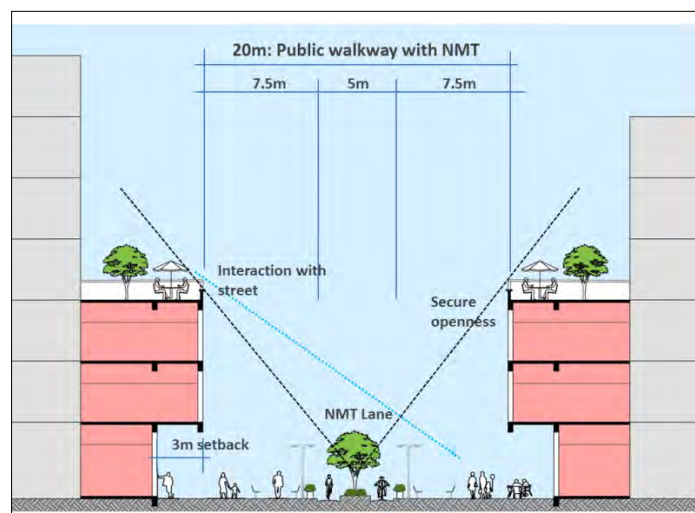
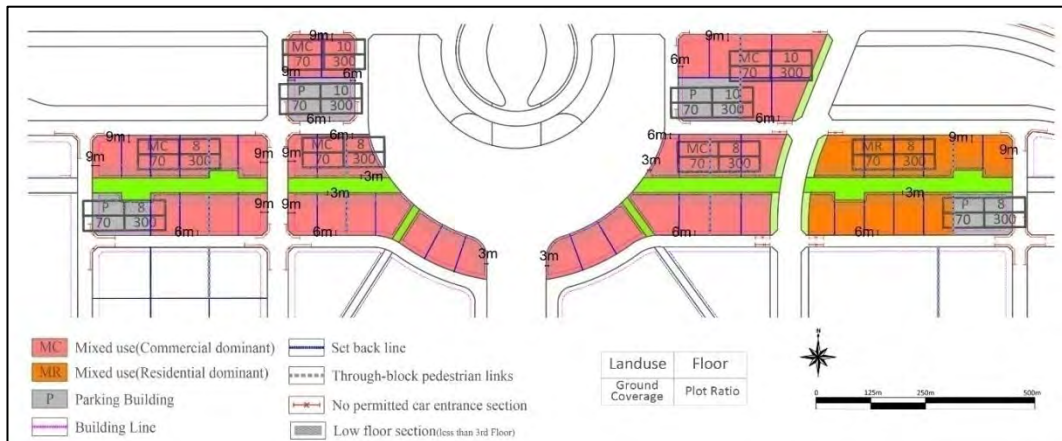


Figure 7-26 Street Commercial Area Exemplary Section

The NMT lane runs in the middle of main pedestrian way. Even though it is located in the middle, the speed of the NMT vehicle shall be limited as every urban block is 300-400m long hence the NMT traffic should be calmed by these intervals. A green space is proposed at the center of the NMT lane dividing the NMT into two ways.

### Design Guidelines

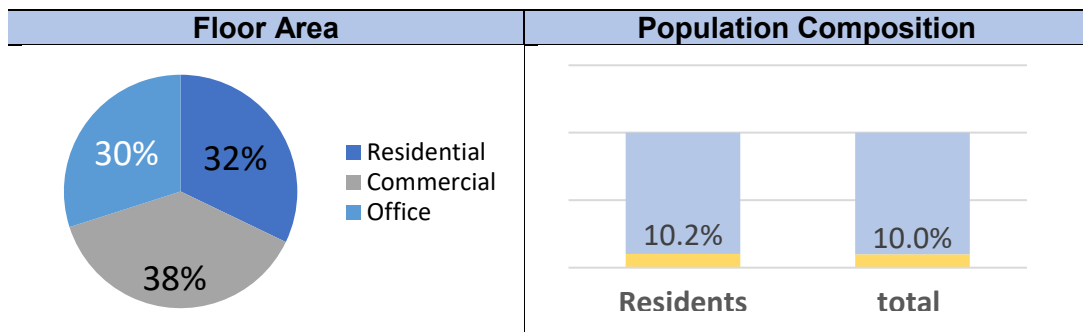
The Street commercial precinct consists of two types of mixed-use, commercial and residential dominant. The B.C.R is 70% while the F.A.R is 300%, with the maximum number of floors limited to 8 floors. In addition, the height of buildings on the pedestrian way must be limited to three floors or less, so as to blend well with the pedestrian street and create a good visual environment.



**Figure 7-27 Street Commercial Precinct Design Guideline**

In terms of program mix, residential, commercial and office areas occupy, 32%, 38% and 30% of the total floor area respectively. The residents of the street commercial precinct will be 3,062, which is 10.2% of the total residents in Railway city. The total number including residents and users in the street commercial precinct will be 24,097, which is 10.0% of the total population in The Railway City.

**Table 7-17 Street Commercial Precinct Program/Population**



\*Note: Population ratio of each precinct per entire Railway city shows the quantitative perception of each precinct in the Railway City. One is the ratio of precinct resident number per total residents' number in the Railway City. The other represents the ratio of precinct total population per entire Railway City total population. Total population means residents plus user population.

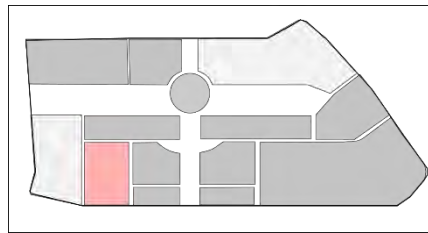
**Table 7-18 Street Commercial Precinct Land Use / Population**

Land use	Area (m <sup>2</sup> )	F.A.R	Total Floor Area (m <sup>2</sup> )	Mixed Use Ratio			House hold (Unit)	Population		
				Residence	Commercial	Office		Residents	User	Total Population (Residents +User)
<b>Sub Total</b>	<b>159,300</b>	<b>-</b>	<b>408,060</b>	<b>32%</b>	<b>38%</b>	<b>30%</b>	<b>1,200</b>	<b>3,062</b>	<b>21,034</b>	<b>24,097</b>
Mixed use (Commercial Dominant)	91,950	300%	275,850	20%	40%	40%	649	1,298	18,390	19,688
Mixed use (Residential Dominant)	25,270	300%	75,810	80%	20%	0%	551	1,764	1,516	3,281
Parking lot(Parking building)	18,800	300%	56,400	-	20%	0%	-	-	1,128	1,128
ETC(Open Space)	23,280	-	-	-	-	-	-	-	-	-

\*Note: 1. Household size-unit size: 2.0- Studio type (85 m<sup>2</sup>), 3.2- family type (110 m<sup>2</sup>).  
 2. User population: 10 m<sup>2</sup>/ person (Commercial), 15 m<sup>2</sup>/person (Office) (National Planning and Building Regulations, 2009)

### 7.3.9 International Office zone

#### Precinct Vision: Global Economic Hub in The Railway City



#### Location character and main functions

Next to the MICE core, the zone is dominated by office developments. A group of high-rise office buildings will imply a new economic center. This office zone will be located between the MICE core and Center core. “FIRE” (Finance, Insurance, Real Estate) service sector will be suitable for this zone. The zone can house local and international top tier companies and agencies.

#### Spatial Scheme

Standardized grid shape urban plots are recommended in the Grade-A office building zone. Each office building is planned to have a restaurant and small retail space on the lower floor. The figure below shows an image of a high-grade office zone Seoul. The continuous NMT lane in the planning area also provides easy access to every office parcel.

There exists a Kenya Power and Lighting Company substation at the center the area, which shall be retained.

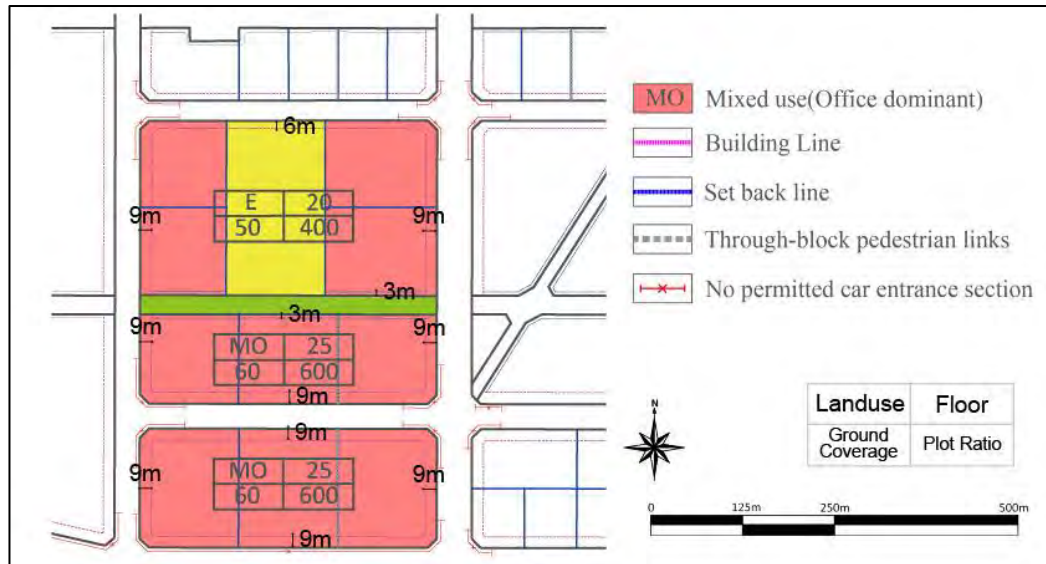


**Figure 7-28 Image of Business District (South Korea)**

Source: google image

**Design Guideline**

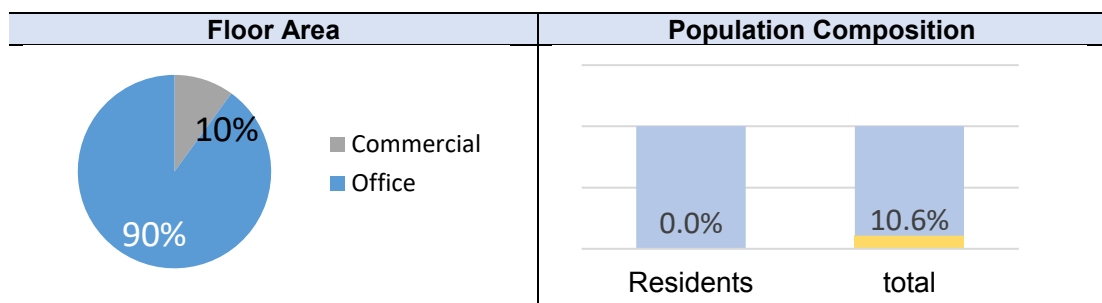
The International office precinct is a mixed-use (Office dominant) area. The B.C.R is 60% and the F.A.R is 600%, with the maximum number of floors limited to 25 floors.



**Figure 7-29 International Office Precinct Design Guideline**

In terms of program mix, the office and commercial uses occupy 90% and 10% of the total floor area respectively. There are no residents in this precinct, but the user population reaches 25,477, which is 10.6% of total population in the Railway City.

**Table 7-19 International Office Precinct Program/ Population**



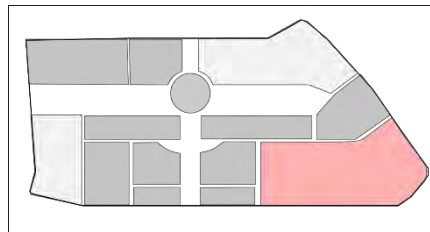
**Table 7-20 International Office Precinct Land Use/ Population**

Land use	Area (m <sup>2</sup> )	F.A.R	Total Floor Area (m <sup>2</sup> )	Mixed Use Ratio			House hold (Unit)	Population		
				Residence	Commercial	Office		Residents	User	Total Population (Residents +User)
<b>Sub Total</b>	<b>75,140</b>	-	<b>407,680</b>	-	10%	90%	-	-	<b>25,477</b>	<b>25,477</b>
Mixed use (Office Dominant)	60,660	600%	363,960	-	10%	90%	-	-	25,477	25,477
Sub-Station (KPLC)	10,930	400%	43,720	-	-	-	-	-	-	-
ETC(Open Space)	3,550		-	-	-	-	-	-	-	-
ETC(Open Space)	23,280	-	-	-	-	-	-	-	-	-

\*Note: User population: 10 m<sup>2</sup>/ person (Commercial), 15 m<sup>2</sup>/person (Office) (National Planning and Building Regulations, 2009)

### 7.3.10 Housing

#### Precinct Vision: Diverse type housing with a safe school zone



#### Location character and main functions

The housing area occupies the eastern part of the site, adjacent to the center and east core. Locating a school within the housing development is ideal as it ensures ease of access by the residents' children.

#### Spatial scheme

The pedestrian walkway (NMT loop) runs, between the housing blocks ensuring smooth pedestrian traffic flow and reducing the motorized traffic. Diverse housing types should easily access the pedestrian way to encourage a social mix.

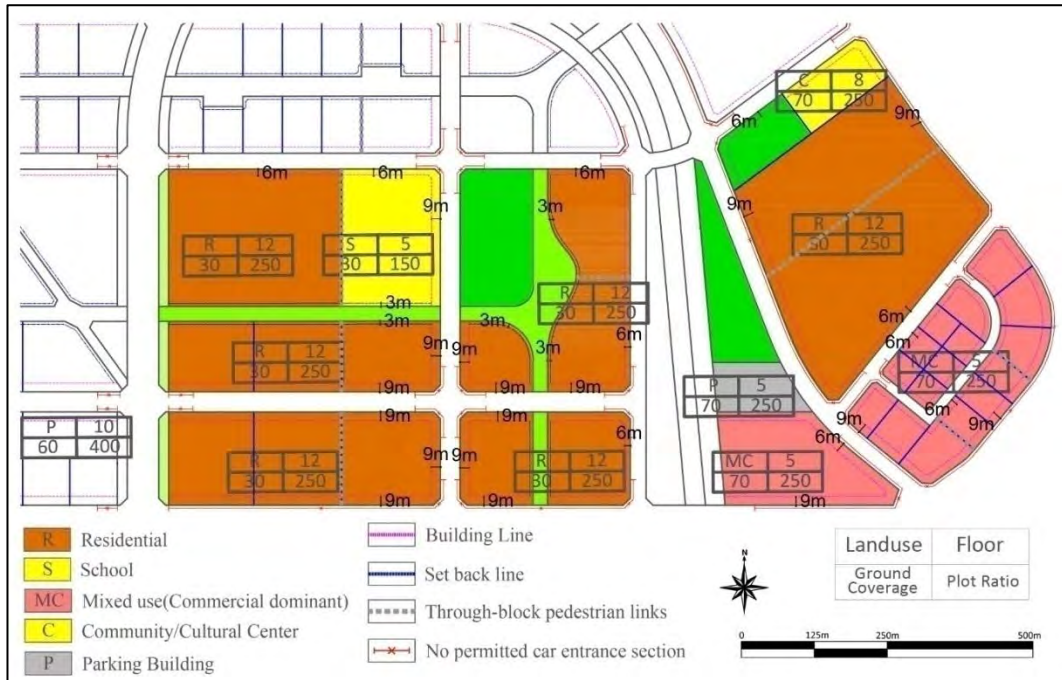
The social and low-cost housing blocks are located near the railway track and Muthurwa area, and the existing railway pension housing scheme will be accommodated within this area. To achieve a quality urban environment and also to be in with aviation regulations (due to proximity to the Moi airbase), the building height is limited to 12 floors with a 600 people/ha density proposed.

The middle-class housing area is located near the school. Recently completed similar projects have 2 story buildings on 0.3-3. A diverse apartment mix is proposed from mid - mid-low-class house types. The overall middle-class housing density is 300~500 persons/ha, and maximum building heights limited to 12 floors.

The Plan proposes that upper-class housing can be located in the MICE core and Center core area. This location takes advantage of the panoramic view towards Upper hill and the existing CBD. To avoid dominance by one developer the maximum area to be allocated to one developer could be defined. A maximum of 1,000 units is proposed, however this could be adjusted in line with future market conditions. As the precinct is adjacent to the Jua Kali area, which is a prominent area of light industries, the east corner of the precinct is a dedicated

commercial area. The public purpose urban plot in this zone is for a community center serving the eastern part residents and the adjacent areas.

**Design Guideline**

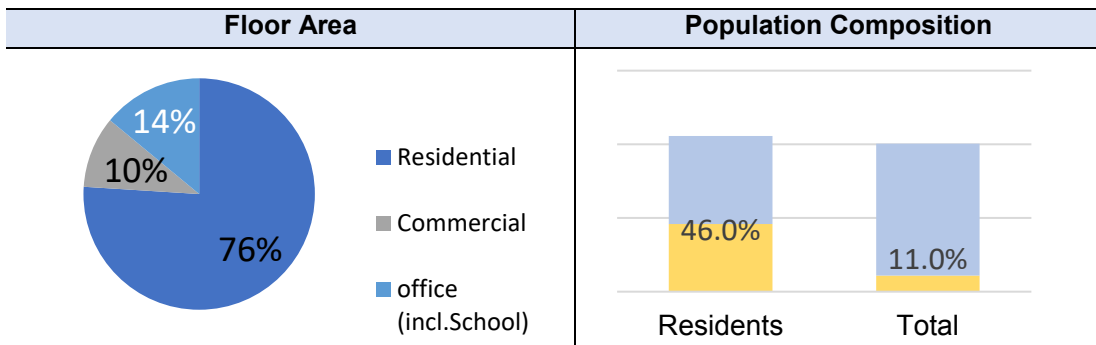


**Figure 7-30 Housing Precinct Design Guideline**

The housing precinct consists of a Housing and a Public purpose area. The residential area B.C.R is 30% and the F.A.R is 250%, with the maximum number of floors limited to 12 floors. The public purpose area B.C.R is 30% and the F.A.R is 250%, with the maximum number of floors limited to 5 floors. The public purpose area shall provide schools within the residential complex enhancing residents’ convenience. Majority of the complexes and schools will be connected via a pedestrian way. The East corner side commercial area B.C.R is 70% and F.A.R is 250%, with the maximum height set at 5 floors.

In terms of program mix, the residential, commercial and office (including schools) areas occupy 76%, 10% and 14% of the total floor area respectively. The residents of the housing precinct are 13,776, which is 46.0% of the total residents of the Railway City. The total number including residents and users in this precinct is 26,515, which amounts to 11% of total population in the Railway City.

**Table 7-21 Housing Precinct Program/ Population**



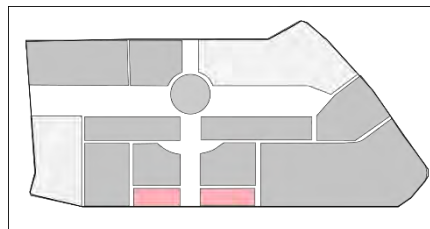
**Table 7-22 Housing Precinct Land Use/ Population**

Land use	Area (m <sup>2</sup> )	F.A.R	Total Floor Area(m <sup>2</sup> )	Mixed Use Ratio			House hold (Unit)	Population		
				Residence	Commercial	Office		Residents	User	Total Population (Residents +User)
<b>Sub Total</b>	<b>250,410</b>	<b>-</b>	<b>517,990</b>	<b>76%</b>	<b>10%</b>	<b>14%</b>	<b>4,390</b>	<b>13,776</b>	<b>12,739</b>	<b>26,515</b>
Residential	106,350	250%	265,875	97%	3%	-	2,345	7,503	798	8,300
Residential(Affordable with Social Housing)	45,000	250%	112,500	97%	3%	-	1,819	5,820	338	6,158
Mixed use(Commercial Dominant)	38,560	250%	96,400	20%	40%	40%	227	454	6,427	6,880
Public purpose (Community center)	4,890	250%	12,225	-	-	100%	-	-	815	815
School	13,860	150%	20,790	-	-	100%	-	-	4,158	4,158
Parking lot(Parking building)	4,080	250%	10,200	-	20%	-	-	-	204	204
ETC(Open Space)	37,670	-	-	-	-	-	-	-	-	-

\*Note: 1. Household size-unit size: 2.0- Studio type (85 m<sup>2</sup>), 3.2- family type (110 m<sup>2</sup>), 3.2- Social housing type (60 m<sup>2</sup>)  
 2. User population: 10 m<sup>2</sup>/ person (Commercial), 15 m<sup>2</sup>/person (Office/public purpose), 5 m<sup>2</sup>/person (School) (National Planning and Building Regulations, 2009)

### 7.3.11 Hi-Tech Industry Precinct

#### Precinct Vision: New industrial and Technology Park



#### Location character and main functions

This precinct borders the industrial area, and it was the original workshop area for the station. Currently, the train’s workshop and diverse types of business are located here. Business outsourcing, automobile repair, small logistics, and steel and hardware supply are the main types of businesses located here. All plots are privately owned; hence re-development will take time.

Adapting to the current diverse industrial uses, the area is suitable for Hi-tech industrial use, for small and medium enterprises. One of the main challenges is that the plot width is narrow relative to the depth of the plot, so there is need for guided plot amalgamation into larger blocks.

#### Spatial scheme

Standardized plot development is proposed for any future developments. An urban park is located at the center providing a green space for the zone’s workers.

Korea successfully transformed from the old chimney style industries into modern industries as shown below. The new industrial developments optimized land use and created a decent working environment.

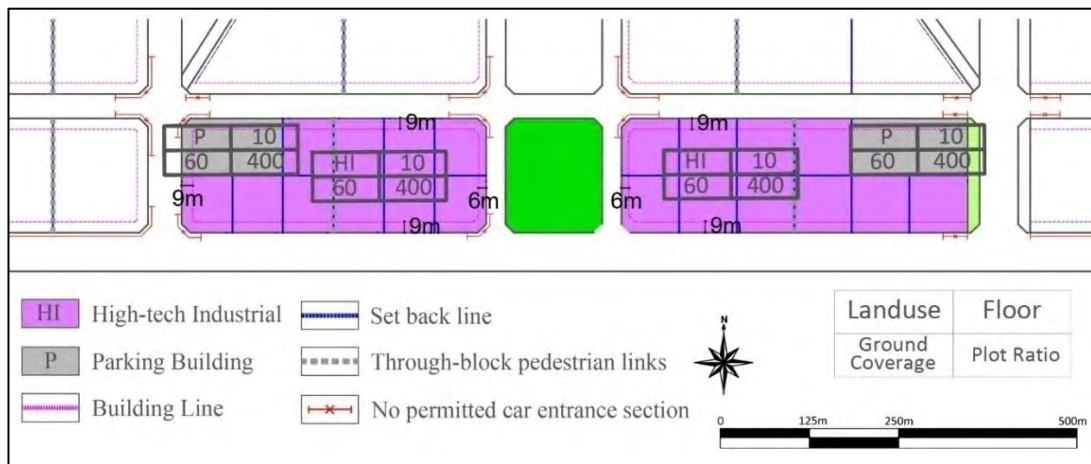


**Figure 7-31 Image of Industrial Area Transition**

Note: old industry area (left), new industrial park (right), South Korea

**Design Guidelines**

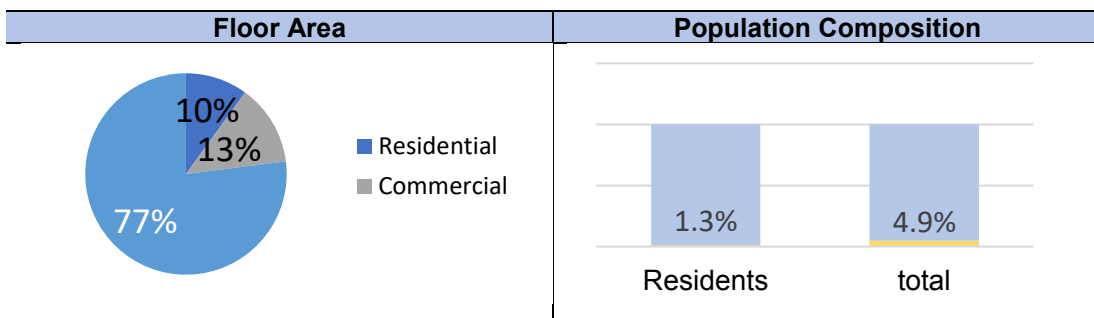
The precinct is mainly composed of industrial functions. B.C.R is 60% and F.A.R is 400%, and maximum number of floors is limited to 10 floors. A public parking is located in the eastern and western sides of the precinct.



**Figure 7-32 High Tech Industry Precinct Design Guideline**

In terms of program mix, the residential, commercial, and office areas occupy 77%, 13%, and 10% respectively. The residents of the hi-tech industry precinct are 398 which is 1.3% of the total residents in the Railway City. The total number including residents and users in the high-tech industrial precinct is 11,773 which is 4.9% of the total population in the Railway City.

**Table 7-23 High-Tech Industry Precinct Program/ Population**



**Table 7-24 High Tech Industry Precinct Land Use/Population**

Land use	Area	F.A.R	Total	Mixed Use Ratio	House	Population
----------	------	-------	-------	-----------------	-------	------------

	(m <sup>2</sup> )		Floor Area(m <sup>2</sup> )				hold (Unit)	Residents	User	Total Population (Residents +User)
				Residence	Commercial	Office				
<b>Sub Total</b>	<b>51,570</b>	-	<b>202,680</b>	<b>10%</b>	<b>13%</b>	<b>77%</b>	<b>199</b>	<b>398</b>	<b>11,375</b>	<b>11,773</b>
Hi-tech Industrial	42,240	400%	168,960	10%	10%	80%	199	398	10,701	11,099
Parking lot	8,430	400%	33,720	-	20%	-	-	-	674	674
ETC(Open Space)	900	-	-	-	-	-	-	-	-	-

\*Note: 1. Household size-unit size: 2.0-Studio type (85 m<sup>2</sup>), 3.2- family type (110 m<sup>2</sup>).  
 2. User population: 10 m<sup>2</sup>/ person (Commercial), 15 m<sup>2</sup>/person (Office/public purpose) (National Planning and Building Regulations, 2009)

### 7.4 Recreational facilities

In the Physical Planning Handbook, public open space is classified as a recreational facility. The main public open spaces within Railway city, are as follows;

- Central Square and Park
- Ngong River basin
- East Community Park
- Wakulima Park

In relation to its neighborhood, the Railway City’s open spaces flow out in all directions. For western side, Uhuru Park is connected, while for Eastern side, Nairobi River can be accessed from the Railway City. Towards the south, the Ngong River area is linked to the site. Finally, on the southern east side of the NMT Loop connects the old railway track area to areas outside the site.

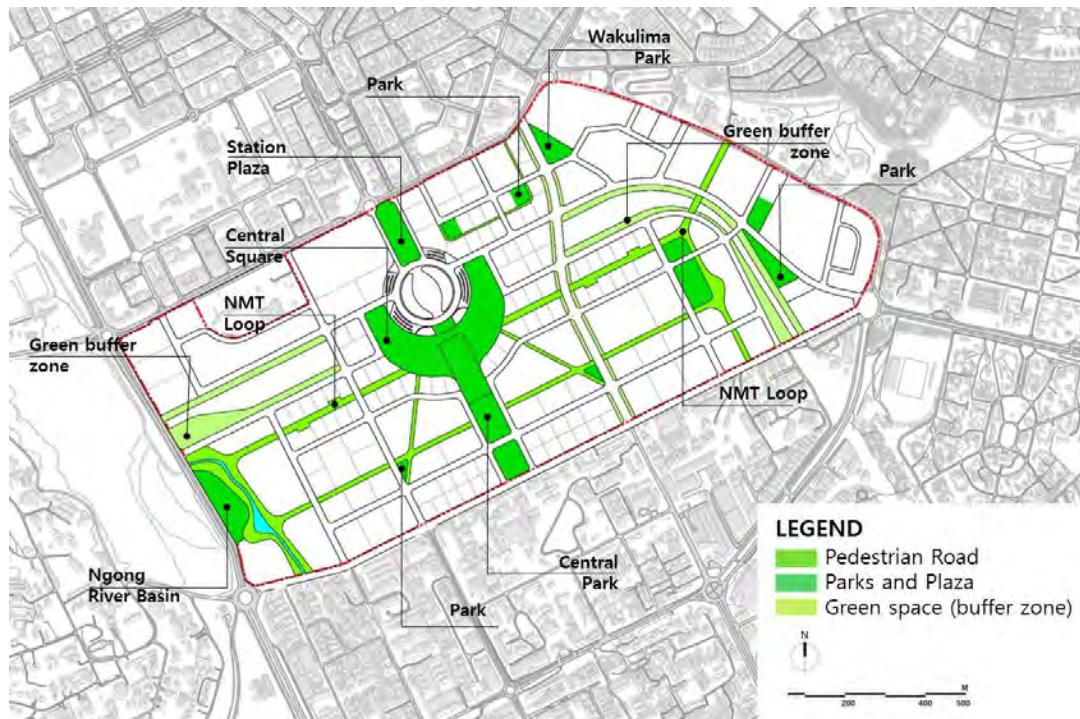


Figure 7-33 Location of Open Space in the Plan

### 7.4.1 Central Square and Park

#### Location character and main functions

A Central station is normally equipped with sizable public open space for the station users. It also functions as one of the symbolic public spaces in the host city.

The Central Square and the park are the core structures of the public space both The Railway City, and the future Nairobi Metropolitan. From Moi Avenue, pedestrian traffic flows to the south industrial area and vice versa through this Central square and park areas. The central square is a symbolic fan-shape open space where all pedestrian traffic is gathered and dispersed.



Figure 7-34 Image of Cologne Hauptbahnhof, Germany

#### Spatial Scheme

The Central square and parks is divided into 4 different areas.

- The Station Plaza (adjacent to Moi avenue)
- Dome Square (within the station),
- Central square, and
- Central park.

The Station plaza, the Dome square and the Central square will have diverse urban activities. On the other hand, the Central park provides a calming and resting green space for the users of the center core, the street commercials and the office areas. An outline drawing is shown below.

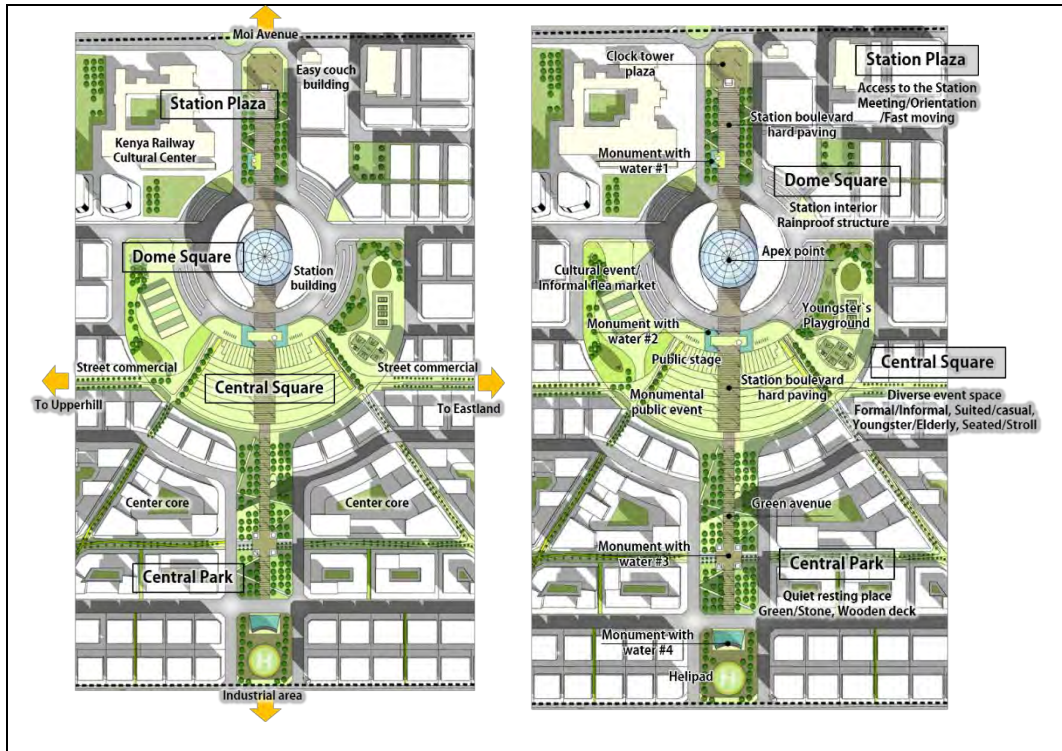


Figure 7-35 Drawing of Central Square and Parks

Station Plaza is the first open space connecting to the existing CBD through Moi Avenue. The place provides an actual access and direction towards the station. The key elements of the Station plaza are;

- Clock tower
- Hard paving for station user, commuter
- Soft paving with green space with tall avenue trees to creating a visual corridor
- Tourist information center
- Monuments (with water features) providing seating space and enhancing the place memory.

Detailed design of the above elements will be achieved in the next stage, and it will be done in liaison respective project management/ implementation units in order to portray both a Kenyan culture and a global atmosphere.



Figure 7-36 Image of Clock Tower, Outdoor Tourist Information Center (South Korea)

Source: Google search

Dome Square is the outdoor area of the station building with glass roof structure. Facing the station ground floor and with commercial shopping, restaurants in upper level, the place is the most vibrant place within the planning area. By having a circular shape dome structure, it provides a rich sun lighting effect and strong place identity. Generally, hard paving is proposed for the heavy pedestrian traffic area with soft landscaping (shrubs or short plants) proposed where the squared adjuncts the building structure. The image below shows the dome structure in Korea's mix use development



**Figure 7-37 Image of the Dome Square (South Korea)**

Central Square is located just in front of the station building. The place functions as an actual melting point of movements in all directions such as east-west flow from Upper hill to Eastlands through the Street commercial and north-south flow from Moi avenue to industrial area (and vice versa), for both pedestrian and NMT traffic. In addition, the place provides a symbolic and representative open space image of the new city and for the larger Nairobi CBD.

All areas of the square function as an open space for everyone. However, in terms of location character, the square comprises 3 sub-open spaces. One at the center, "monumental square" which is an ideal space for a national/public event. The form of the public stage and seating area could be designed to create an open theater illusion. This space is not only for the National events, but can also host cultural events like outdoor Cinemas, Plays or Orchestra. If the theater design is achieved, it will seat an audience of 6,000 people.



**Figure 7-38 Outdoor Theater Image (South Korea)**

Paving of the area could be characterized by soft-hard areas mix for the "audience area" and hard paving for the "stage area".

Central Square West is adjacent to the Kenya Railway zone which is a future cultural hub in Nairobi, with cultural formal/ informal events likely to be held here. Flea markets, outdoor bazaar, small and medium exhibitions, various mercantile convention could be accommodated in the area.

Central Square East is near the housing zone and the old commercial areas like the railway front commercial zone. Adapting to the neighborhood's needs, a children's playground is suggested. Using an estimated area of 8,000 m<sup>2</sup>, many small and specialized parks could be realized including a children's park and, diverse sports parks.



**Figure 7-39 14 Image of Urban Events**

Note: Outdoor Convention, Street Pool, Flea Market, and Extreme Sport in the Public Space (by clockwise) Source: Google

The surface finish is a hard-soft mix, however, since the ground is on a manmade platform, planting of large plants needs to be avoided due to the shallow soil available. Grass and similar ground cover that do well in shallow soils are recommended.

Central Park is located next to the Central square between the Center Core zone and the industrial area. Contrary to the other center open space, it is a calming area with more greenery and passive-recreation oriented landscape architecture. With exception of the boulevard accessing the station, all the other areas are soft landscaped.

Appropriate Monument Structures could be located along the Central square and park. The proposed location is 900m from the station plaza up to the center park's end. The Plan proposes location of three to four monuments along the pedestrian circulation routes. The monument's vistas within the corridor could be used to display Kenya's historical information to achieve Kenyan-ness and place identity. Candidate monuments could be selected and located after the discussion/ consultation process at the detail design/ implementation stage.

## 7.4.2 Ngong River Basin

### Location character and main functions

The Ngong River is the only river flowing through the Railway City. Even though the current water quality is not good, in future the river should serve as an ecological spine for both railway city and the larger Nairobi City. The Main function of the open space in the MICE Core, is to cater for a MICE-oriented open event, such as outdoor banquet, high level performances and related boutique exhibition. The future developer should not have development rights of entire super block in West Core, as the Ngong river Basin should be accessible to the public.

Another important aspect of the area is linking the existing Kenya Railway golf course to the site. The golf facility fits well with the MICE function, so the linkage is synergetic to the MICE core. An outline drawing is shown below.

### Spatial scheme

Along the Ngong river, soft landscaping is suggested. The area can have pergolas benches near the river area enhancing the atmosphere and use. A water retention area could be considered based on the results of hydraulic studies in the detail design stage. This could provide a more diverse ecological footprint.

The NMT Loop along the Ngong river basin, shall have hard paving for the pedestrian walkway and bicycle way continued from the Street Commercial. It could also be extended to Uhuru park and enhance the green areas and NMT network for the future Nairobi CBD.

The main outdoor area could accommodate multiple event spaces adapted for the diverse needs of MICE. An event space could be equipped with permanent roof structures, which can provide sun shading and rain shelter. The event space should have hard paving and the rest area soft landscaped. The border area of main outdoor area and Ngong river, shall have tall trees with benches located at the public waterfront resting place. From the NMT loop, one pedestrian bridge could cross the river. This bridge should be an artistic light structure to increase the aesthetics of the area. Further, the bridge could be connected to the linkage point of the KR golf course, providing easy access between the two MICE facilities.



Figure 7-40 Image of MICE Event

Note: Space/Artistic Bridge and Water (Left), Exemplary Drawing of the Ngong River Basin (Right)

### 7.4.3 East Community Park

#### Location character and main functions

The East Community Park is in the middle of diverse neighborhoods i.e. public building, housing, schools and street commercial. The space is divided in two by the road. The Northern park has flows into three directions towards the Eastlands, Street commercial and the housing area. Functionally, the place shall be used for social meetings and as a resting place for pedestrians. The Sikh Temple which is a 19<sup>th</sup> century heritage shall be preserved within this park.

The Southern park is a neighborhood park and is located in the middle of the school and the residential area. Small sports installments for the elderly and a soft playground for the youth is proposed. The two parks are adjacent to the NMT Loop, ensuring easy accessibility to the park.

#### Spatial scheme

The Northern park is a square shaped with small green areas. The access should be smooth and visually open from all directions. The Sikh Temple is located in the area, and will be open to the public. It will integrate Indian culture into the space.

The Southern park comprises of two areas for the elderly and the youth. One is a small sports area and the other is a playground. The remaining area is paved with green area breaks. Tall trees will be planted along the border of the park.

### 7.4.4 Wakulima Park

#### Location character and main functions

The park is located in the current Wakulima Market area, based on the assumption that the market shall be relocated to the East core area in Railway city. The surrounding area has heavy commercial activities and transactions and this will continue in the future. The Eastlands master plan also shows that the area is the heart of the commercial functions and therefore a public park will be essential.

#### Spatial scheme

The park has a magnificent physical structure and provides sun shading to the grocery seller. In addition to the functional aspect, it increases the visual aesthetics of the area. 10m x 10m is the base module of each structure. With exception of the area to be demolished for the alignment of the new road, most of structure will be reused. Beneath the structure, green areas could be located. The figure below shows the original and future image of Wakulima Park.

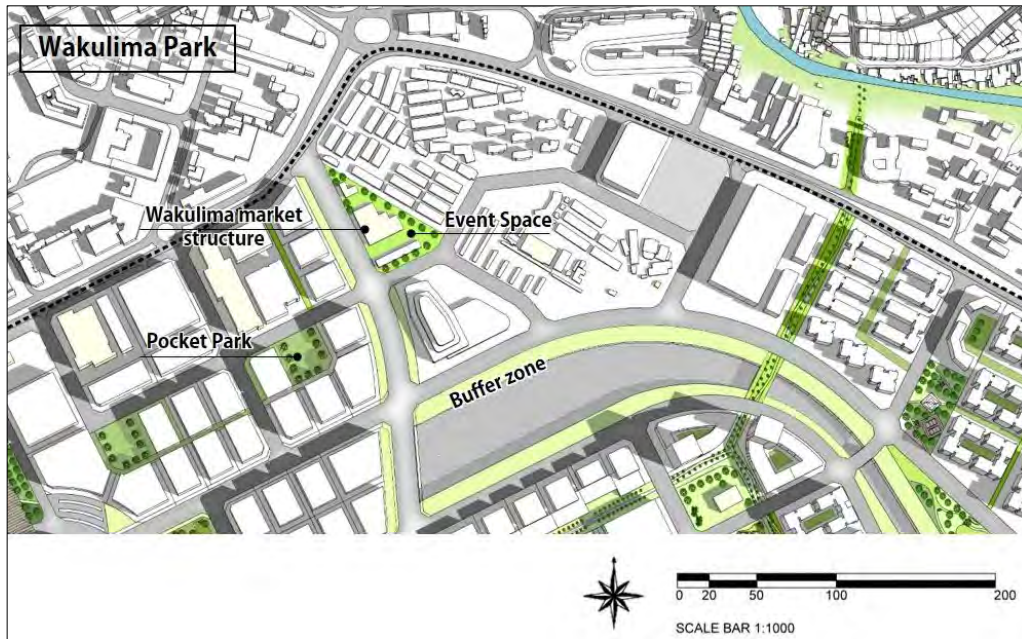


Figure 7-41 Wakulima Park

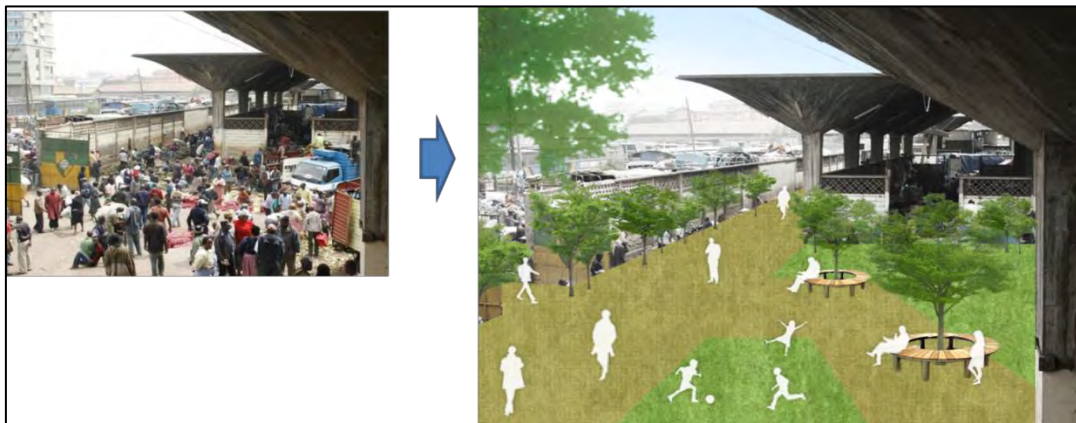


Figure 7-42 Images of Wakulima Park

### 7.4.5 Park linkage to surroundings

Railway City has park linkage elements on all four sides. The table below shows the linkages - each element- and how to link (suggestion).

Table 7-25 Park Linkage to the Surroundings (Proposal)

Linkages	From the Railway City	Linkage element (context)	How to link (Suggestion)
NW Park linkage	Ngong river basin	To Uhuru park	Along the Uhuru highway sidewalk
SW park linkage	Ngong river basin	Ngong river	Along the Ngong river area (Industrial area)
NE park linkage	NMT Loop (Street commercial,	To Nairobi river	Along the pathway next to NACICO plaza
SE park linkage	NMT Loop (residential area)	Along the old railway track	Along green way using the old railway track

### 7.4.6 Railway buffer green

The entire section of the railway track has a green buffer zone. Before the fixation of the railway tracks, a 20m buffer width is suggested. Once the tracks are fixed the buffer zone shall be redefined. Dense planting combined with a slope structure will restrict public access to the railway track.

## 7.5 Historic Buildings, Structures and Areas

The Railway City area is historically significant as the station area was the origin of Nairobi. Many of the buildings constructed during the colonial era have historical value and should be preserved, rehabilitated or re-used. The figure below shows the historical buildings and physical structures of the Plan. To determine the historical assets, multiple discussion and workshops<sup>38</sup> contributed to the list generated.



**Figure 7-43 Historical Buildings and Structures in the Planning Area**

The following options are proposed for the historical building in the Railway City;

<sup>38</sup> Regarding the selection, Kenya Railway requested the team for 3 buildings as historical building. Kenya Railway Headquarter, Easy Couch, and Railway station building. Thereafter, by some major workshop, such as 1st interim stage Thematic group workshop (9th Mar 2018), First county Level workshop (22nd Mar 2018), Second interim stage thematic group workshop (3rd Oct 2018), the team obtained more wish list of historical buildings and structures and also sorted out the idea of The Consultant and back hearings from the diverse participants. Originally, the National Museum of Kenya which governed the role of conservation of historic buildings in Kenya. They have a criterion that sets out broad terms of listing. The criteria are six-fold. 1. Architectural merit, 2. Historical significance, 3. Age of the building, 4. Location, 5. Condition of the building, and 6. Ownership.

- Preservation: Keep the physical current conditions and usage and restore the damaged parts - Easy coach building, Muthurwa hall, Sikh temple, Existing station building (partial)
- Rehabilitation: Keep the physical conditions but change the use
  - Kenya Railway Headquarters → Kenya Railway cultural center
- Reconfiguration: Modify some parts and change use
  - Old coffee mill building → Kenya coffee hall, Wakulima Market structure → Wakulima Park structure. The table below table indicates the current and future uses.

**Table 7-26 Historical Buildings Current and Future Use**

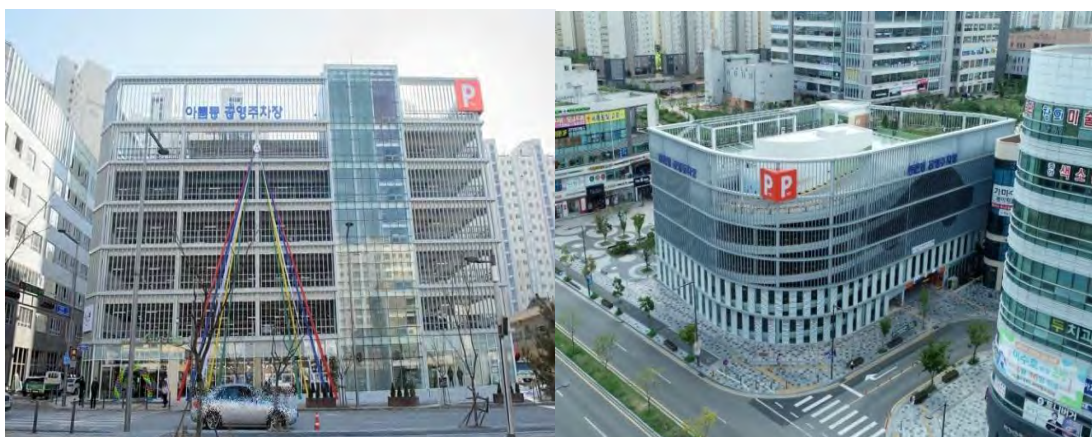
	Current use	Future use
Kenya Railway Headquarters	Office	Cultural center
Kenya Railway station (Current)	Same	Same (partially preserved)
Easy coach building	Office	Cultural facility
Muthurwa Hall	Public hall	Same
Wakulima market structure	Structure in the market	Structure in the Park
Kawa House	Office, commercial	Commercial for Kenya coffee
Sikh temple	temple	same

## 7.6 Vehicle Movement, NMT Network

### 7.6.1 Vehicle Movement Network

The vehicle network provides the linkage for the unconnected surrounding areas and the internal circulation within Railway City. Railway city’s proposed road network is comprised of the following functional hierarchy.

Outer linkages have two perpendicular roads i.e. Enterprise road and Workshop road extensions to the Haile Selassie Avenue and one parallel road Bunyala and commercial road extension. Other roads are the perimeter road and the internal circulation road. Land for parking is allocated to provide the city’s visitors with convenience. Every parking lot will be developed with a mixed-use concept. It could be combined with small and convenient daily commercial spaces or other public services on ground floors. The figures below show similar examples in Korea.



**Figure 7-44 Examples of Parking Lot Development with Mixed Use Program (South Korea)**

## 7.6.2 NMT Network

NMT<sup>39</sup> network is the spine structure of transportation within The Railway City. It provides actual end-to end access in main urban blocks. The MNT loop structure connects the main functional areas like the 3 core areas, offices, commercial and housing area, which could reduce the motorized traffic volume in Railway City.

Among the many modes of NMT, the bicycle lane should be secured independently from others. In addition to the NMT Loop, other bicycle lanes are included in the road sections with every arterial road having a bicycle lane. The width of a one lane bicycle way is 1.2m. In the NMT loop, bicycle lanes occupy the middle and are separated by a landscaped area. In the street commercial area which has heavy pedestrian traffic, the NMT lane is straight so as to have clear division between pedestrian and bicycle traffic. The other sections of the NMT loop are not straight, but have a slightly curved form for the purpose of reducing the speed of the vehicle. The typical NMT plan and section is as shown below.

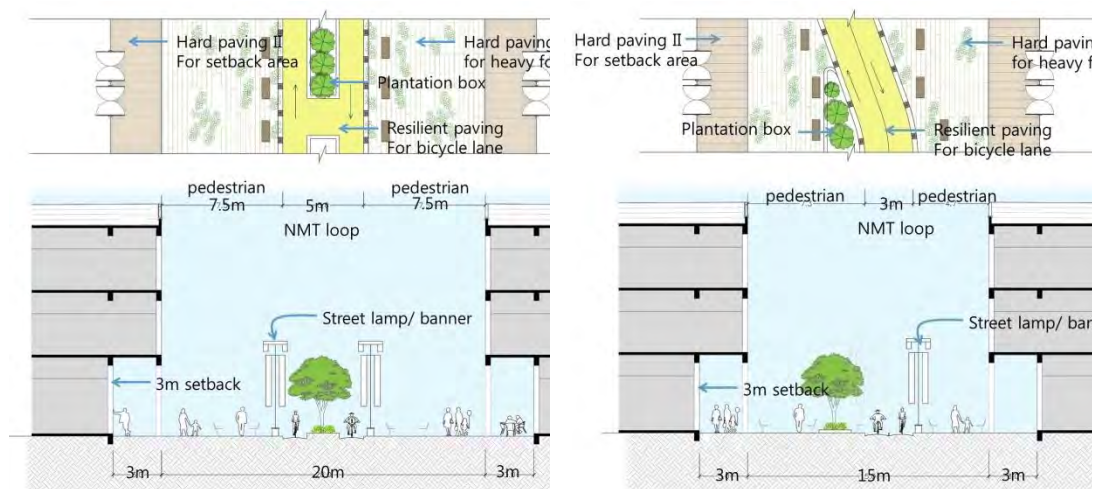


Figure 7-45 NMT Loop Typical Form

At the front of the station, a bicycle parking area is proposed for the convenience of the user. It could be operated by a public company such as a subsidiary of the Ministry of Transport or NCCG or by a private enterprise. In this master plan, the land usage is limited to the ground level, but in future multi-floor parking facilities could be achieved. In addition, public display of the bicycle itself can promote the public's perception of non-motorized transport. The pictures below show a Netherlands station area bicycle parking.

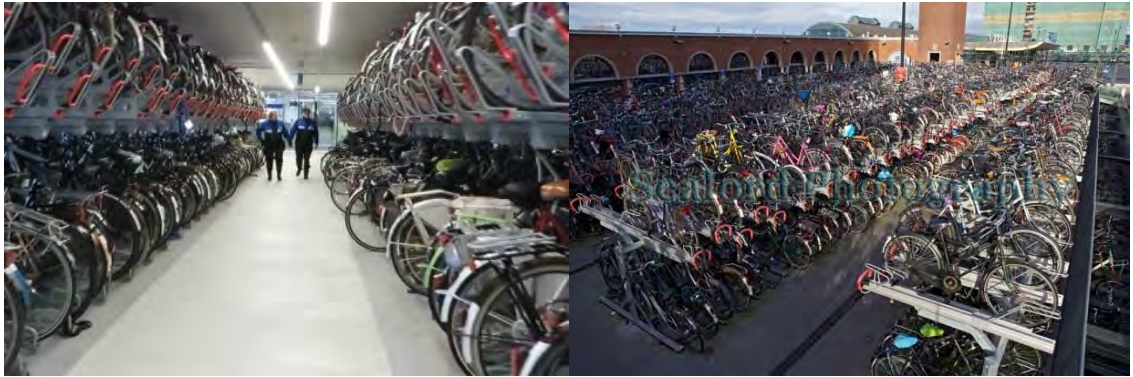
### Universal design approach

Universal Design is guided by the Bill of Rights of the Constitution of Kenya, Article 39, which guarantees all Kenyan citizens the right of the movement. Providing universal access is in line with the provisions of Articles 27, which guarantees "equality and freedom from discrimination."

Footpath as NMT network should be aligned the same level at property entrance and small side streets, with ramps for vehicles, in order to improve convenience for pedestrians and maintain universal access.

<sup>39</sup>In Railway City, Walking is the most familiar form of Non-Motorized-Transport(NMT). Other common form of NMT includes bicycles, human portorage, handcarts, wheelbarrows and other human powered vehicles. Referred to World Bank, Paul, Susan, Jerry.,1994, Non-Motorized Transport: Confronting poverty through affordable mobility.

Footbridges are often inaccessible and increase barriers to persons with disabilities, people carrying luggage, and parents with strollers. Extensive ramping maybe installed to accommodate wheelchairs and bicyclists, but long crossing distances and steep slopes still discourage use<sup>40</sup>.



**Figure 7-46 Image of Indoor Bicycle Park**

Note: Delft Station, Netherlands (left), Nijmegen Station, Netherlands (right))

## 7.7 Guide for the Private Realm

In this section, the common aspect of the private realm is articulated. These are

- Plot Interfaces,
- Plot merge/ subdivision,
- General Architectural Guideline and
- Green building design guideline.

The specific guidelines for the 9 zones are also discussed.

### 7.7.1 Common Aspect of Private Realm

#### Plot Interfaces

Within Railway city, there are five forms of plot interface. These are

- Between plot and road,
- Between plot and pedestrian way,
- Between plot and plot,
- Between-plot pedestrian links,
- No permitted car entrance section and
- Fence or another barrier of the plot.

#### Interface between Plot and Road (Building Line)

All buildings in the private realm shall be aligned with the Planning and Building Regulations 2009. According to the law clause BB17 Building lines,

- Where roads range between 6-18m in width the building line shall be 6m,

<sup>40</sup> GoK, 2019. *Street Design Manual for Kenyan Cities*

- For any road above 18m in width the building line shall be 9m

The above is applied in Railway city in the same manner.

### Interface between Plot and Pedestrian Way

All buildings faced with pedestrian way, mainly NMT Loop, are recommended to observe a 3m setback from the pedestrian way on the ground floor to cater for pedestrian safety, convenience, shelter from direct sunlight or rain, and to promote a commercial activities oriented urban fabric.

### Interface between Plot and Plot (Space around Domestic Buildings)

Railway city shall observe the Planning and Building Regulations 2009. According to the clause BB27 Space around Domestic Buildings, the open space within the site, at the rear and at the side, shall be such that no part of the building which bounds such open space at any level shall be within 1.5m.

#### 1) Between-Plot Pedestrian Links

Railway city aims at optimizing land use especially in road coverage (16%<sup>41</sup>). If an urban block length is over 200m, at least one pedestrian link of a width of at least 4m shall be provided between the plots, each plot donating at least 2m. The width should be determined by the planning authority such as the Nairobi planning committee in relation to the block depth<sup>42</sup>. To reduce crime, the area should have an active surveillance system.



Figure 7-47 Between-Plot Pedestrian Links, Example Image (South Korea)

#### 2) No Permitted Car Entrance Section

For the avoidance of carriage way crossing congestion, vehicles (cars) are not permitted to enter the site within 6m from the crossing point.

### Fence or Another Barrier on the Plot

It is recommended that the private realm of The Railway City be free of fences or physical barriers of the plot except the landscaped boundary. If necessary, see-through porous structure could be installed with the appropriate surveillance. This can be guided by guidelines provided by the planning committee. The figures below show examples of see-through and porous fence combined with landscaping.

<sup>41</sup>Including the pedestrian walkway, the percentage reaches 21%.

<sup>42</sup>For example, if the block depth is over 50m, the pedestrian link width is 8m by the guidance of planning committee.



**Figure 7-48 Examples of See-Through Fence with Plantation (South Korea)**

### **Plot Amalgamation/ Subdivision**

In principle, plot amalgamation is not allowed, however, if necessary, 2 adjoining plots could be amalgamated with authorization from the planning committee.

Plot subdivision is also not allowed. However, if necessary, one shall obtain a permit from the planning committee.

### **General Architectural Guideline**

The architectural design within Railway city must aim to create a sense of place, and finesse and bring the place to life.

#### **1) Material Standards**

All materials specified must be of a high standard to the satisfaction of The Railway City company.

#### **2) Champion the Local Context**

The developers and architects are required to acknowledge the local context and to respond to it in a contemporary and creative manner. For example, the architects should attempt to use the typical Nairobi stone on at least 10% surface of each façade. However, this is a recommendation and not an absolute requirement.

#### **3) A Diversity of Architectural Styles**

Diverse architectural styles and expressions are encouraged. Poor, indifferent, imitative, pastiche and retrogressive (imitative historic, such as gothic, baroque, Tuscan, etc.) architecture should not be allowed.

#### **4) Exterior Wall**

The exterior building material shall be used the same grade on the front, the side and the rear.

Outer wall material of the underground floor exposed to the ground should have similar finishes with the outer wall of the ground floor.

#### **5) Building Line, Set Back Lines, Building Height (maximum)**

These should be as per the planning guidelines.

#### **6) Building Length in Residential Area**

In order to have sufficient sunshine and an orderly skyline, building length shall be limited to a maximum of 60m<sup>43</sup>

<sup>43</sup>The concept is referred to the Korean District Planning Guideline 2018.

## 7) Composition of Elevations in Large Buildings

To reduce the visual overwhelming effect of large buildings, the monotonous elevation shall be avoided. In particular, the urban core area (MICE, Center and East) will accommodate the large buildings. In that case, the same architecture language on a building façade may not carry on for longer than 40m<sup>44</sup>. After a maximum of 40m there should be a substantial change on the building façade in terms of at least one of the following elements; 1) composition of the façade, 2) size, type, proportion or rhythm of the openings, 3) textures.

### 7.8 Lighting, Signage and Graphic Identity

In detail design stage, the supervisor shall elaborate further the lighting and signage with own graphic identity based on the Plan.

#### 7.8.1 Lighting

Well-designed street lighting enables motor vehicle drivers, cyclists, and pedestrians to move safely and comfortably by reducing the risk of traffic crashes and improving personal safety. The following mentions the design criteria of Kenyan standard<sup>45</sup>.

- The spacing between two light poles should be approximately three times the height of the fixture.
- Poles should be no higher than 12 m. Especially in residential areas, they should be significantly lower than 12 m to reduce undesirable illumination of private properties. Additional lighting should be provided at conflict points.
- The placement of street lighting should be coordinated with other street elements so that trees or advertisement hoardings do not impede proper illumination.

#### 7.8.2 Signage and Graphic Identity

New Central station and the surroundings are an important node areas within many journeys. Commuters change their form of transportation at this node and expect to do so with minimal difficulty. A clear “wayfinding” strategy is required to “make sense of” the circulation pattern. Signage is a key element to assist commuters in the station and surrounding area environment.

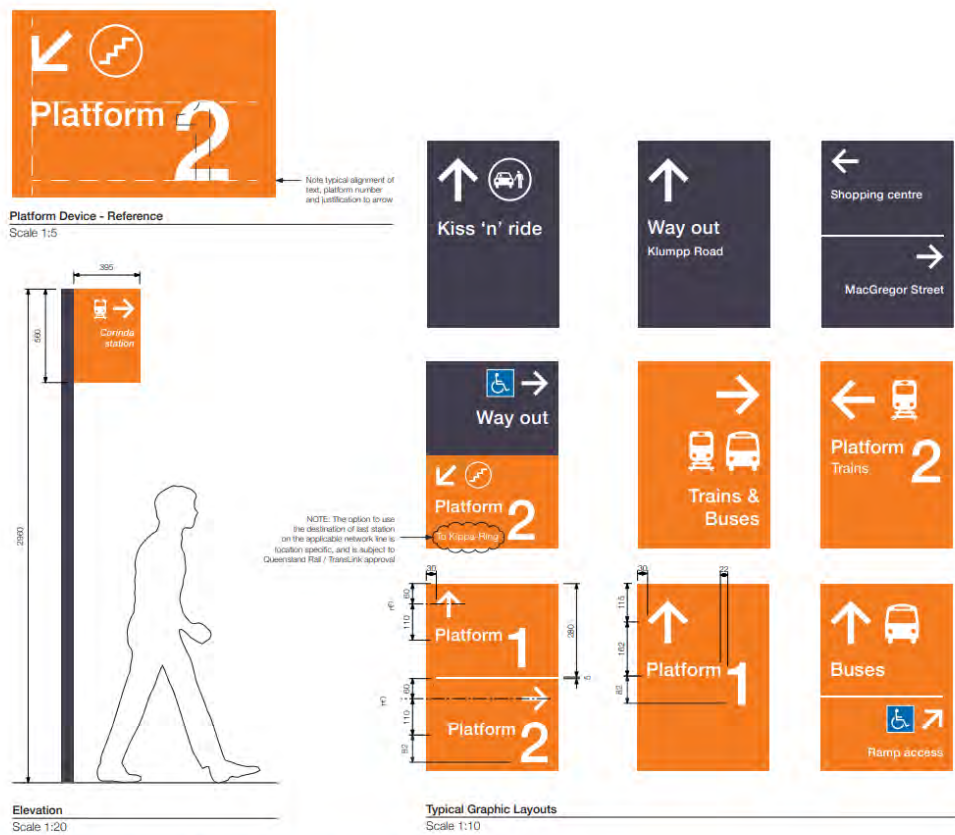
The overall approach is to provide an easily accessible train station environment through information and identification of facilities. Sign types are categorized as 4 types - Directional Signs (DS) Facility Identification and Regulatory Information (FI) Information System (IS) Primary Identification (PI). A summary of sign types are as follows:

- Station identification signs are located at the main approaches to the site. If a Commuter Car park (Park ‘n’ ride) facility exists, then it is identified at the main entrance.
- Information signs display a locality map and incorporate network map, station map and timetable. Each Platform is identified and incorporates timetable and route information.
- Kiss ‘n’ ride and Taxi zones, Bus stops shall be clearly signed.
- Identify accessible facilities. Accessible signs are to supplement high level signage.
- Regulatory information can be incorporated within existing sign types.

<sup>44</sup>The concept is referred to the Tatu City Guideline 2010.

<sup>45</sup>The concept is referred to the Street Design Manual Kenya, GoK, 2019

- Directional signs direct to station facilities, other public transport and to major destinations including but not limited to MICE core, Center core, and East core areas and another identified precinct in the Plan.
- Signs are to be located perpendicular to the flow of traffic (either vehicular or pedestrian).
- For strong identified signage, font styles and color selections shall be elaborated in the detail design stage and supervised by acting agency such as development authority
- Barrier free design shall be applied for any types of handicapped person.



Sample image of graphic signage

# Chapter 8. IMPLEMENTATION FRAMEWORK

This chapter covers the following aspects.

- Cost of Infrastructure
- Phasing plan
- Proposed governance and institutional framework
- Business plan
- Financial and economic analysis
- Communication strategy and activities

## 8.1 Cost of Infrastructure

Total cost of the project is estimated as Ksh 60,599,098,000 inclusive of taxes. The Main cost is the Railway infrastructure (laying the new track, superstructure, etc.) at 61.5%, followed by Water supply (9.9%), Road and Pavement (5.1%), and Earthwork (4.4%) in order.

**Table 8-1 Cost of Infrastructure Volume**

	<b>Sector</b>	<b>Amount (Ksh)</b>	<b>Percentage(%)</b>
	Earthwork	1,719,830,000	4.4%
	Road & Pavement	2,015,715,000	5.1%
	Railway Infrastructure	24,280,330,000	61.5%
	Water Supply	3,917,916,000	9.9%
	Storm water	201,572,000	0.5%
	Sewerage	238,522,000	0.6%
	Power Supply	1,596,250,000	4.0%
	Telecommunication	377,000,000	1.0%
	Landscape	264,800,000	0.7%
	Removal Cost	951,965,000	2.4%
	Affordable Housing	3,937,500,000	10.0%
(a)	Total Construction Cost	39,501,400,000	100.0%
(b)	Engineering Cost (a x 15%)	5,925,210,000	
(c)	Contingency Cost (a x b x 15%)	6,813,992,000	
(d)	Total Cost (a+b+c)	52,240,602,000	
(e)	TAX (VAT, d x 16%)	8,358,496,000	
	Total Construction Cost (Including Tax)	60,599,098,000	

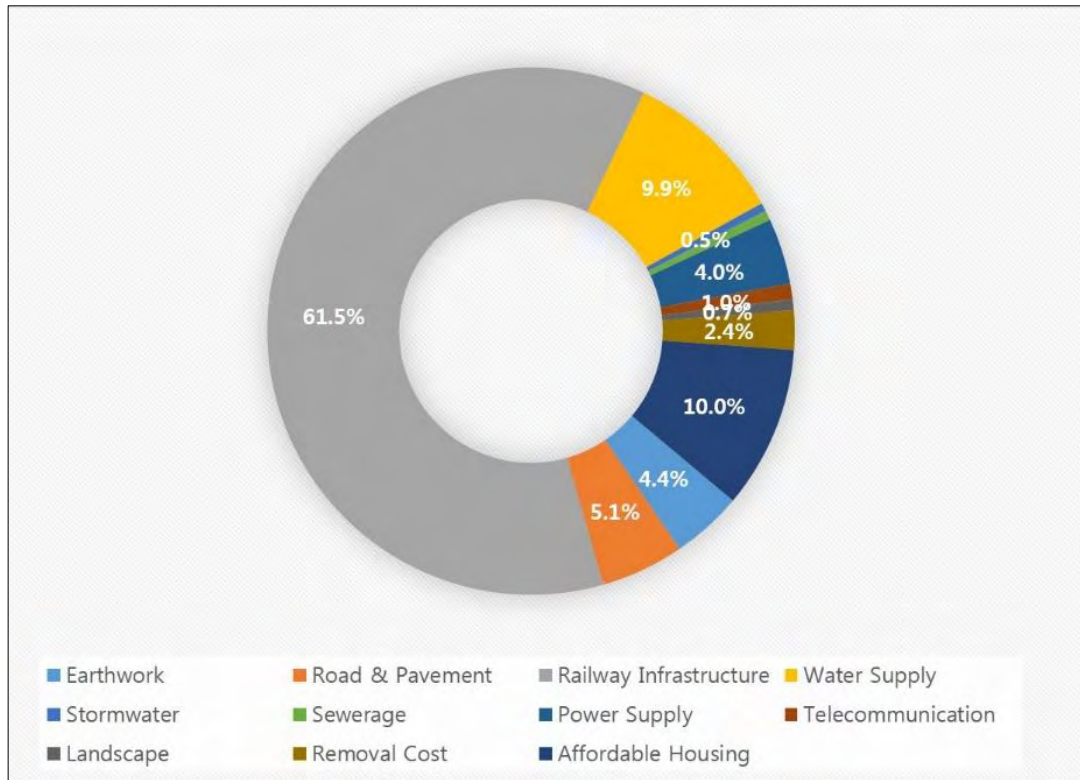


Figure 8-1 Cost of Infrastructure Ratio

## 8.2 Phasing Plan

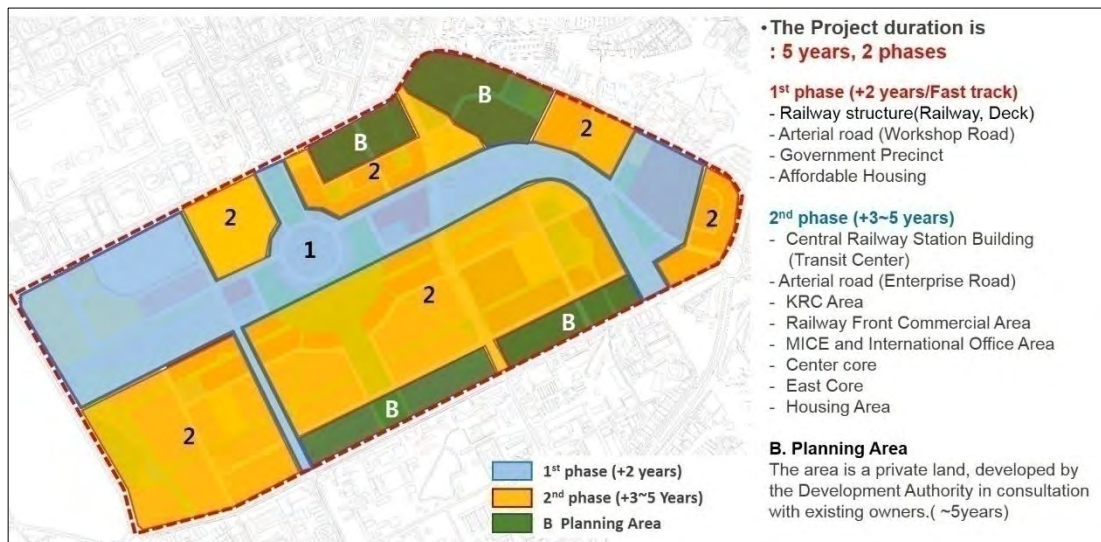


Figure 8-2 Phasing Plan

In regards to the **phasing plan**, the project area is divided into “Development Area” and “Planning Area” based on the land ownership status with the former owned by KR and the latter being non-KR land. The Development area is supposed to be developed and implemented by the Plan directly, but the Planning Area will be developed in consultation with the land owners as development guidelines for the Project

The development area proposes two phases within a 5-year period. The first criterion of phasing is the timeline required for the railway infrastructure development including the new station building which requires a 3-year period.

The 1st phase plans to implement the railway infrastructure and it includes the arterial roads such as Workshop road and the Government office with R&D. These public investments can be financed by a Government fund. By the of the second phase, the rest of the railway infrastructure will be completed. The KR zone, Station front commercial precinct also are planned to be completed. For investments, sale of land to private investors is proposed for the 3 precincts, Street Commercial, International Office, and Housing precinct.

### **8.2.1 Cost Breakdown by Phasing**

According to the Phasing Plan, each phasing cost is estimated as follows;

- Phase 1: Ksh 18,358,155,000
- Phase 2: Ksh 32,873,819,000
- Planning Area: Ksh 9,367,124,000

Detail Cost Breakdown is on the following table.

**Table 8-2 Cost Breakdown by Phasing Plan**

TYPE	Unit	Quantity	Unit Cost (KES)	Total	Phased Cost(KES)				
					Phase 1	Phase 2	Planning Area	Total	
Earthwork	Grading work	m <sup>2</sup>	1,719,830	1,000	1,719,830,000	632,730,000	452,080,000	635,020,000	
	<b>Subtotal</b>								<b>1,719,830,000</b>
Road & Pavement	32m width	km	1.34	200,000,000	268,675,000	268,675,000			
	28m width	km	1.28	200,000,000	256,025,000	256,025,000			
	20 width	km	6.26	90,000,000	563,557,500	437,557,500	99,000,000	27,000,000	
	16 width	km	4.98	90,000,000	448,222,500	149,407,500	149,407,500	149,407,500	
	12 width	km	0.59	90,000,000	53,088,750	53,088,750			
	10 width	km	0.36	90,000,000	32,546,250			32,546,250	
	Street Lighting	No	2,400.0	164,000.0	393,600,000	282,623,042	60,275,130	50,701,828	
<b>Subtotal</b>								<b>2,015,715,000</b>	
Railway Infrastructure (Lowered Tracks)	Earthworks	Ls		3,349,760,000	3,349,760,000	1,239,411,200	2,110,348,800		
	superstructure	Ls		13,442,800,000	13,442,800,000	4,973,836,000	8,468,964,000		
	track works	Ls		729,369,550	729,369,550		729,369,550		
	station building	m <sup>2</sup>	84,480	80,000	6,758,400,000		6,758,400,000		
<b>Subtotal</b>								<b>24,280,330,000</b>	
Water Supply	Distribution pipeline								
	OD 335 mm	m	1,400	6,717	9,403,800	9,403,800	-	-	
	OD 280 mm	m	1,061	5,490	5,824,890	5,824,890	-	-	
	OD 225 mm	m	1,645	4,600	7,567,000	3,026,800	2,270,100	2,270,100	
	OD 200 mm	m	1,821	3,030	5,517,630	4,932,840	409,353	175,437	
	OD 160 mm	m	2,809	2,790	7,837,110	4,171,050	2,566,242	1,099,818	
	OD 110 mm	m	5,021	1,945	9,765,845	5,799,990	2,776,099	1,189,757	
	Bore holes	No	4.0	8,000,000	32,000,000	24,000,000	5,600,000	2,400,000	
Underground water tank	m <sup>3</sup>	320,000	12,000	3,840,000,000	1,920,000,000	1,920,000,000			
<b>Subtotal</b>								<b>3,917,916,000</b>	
Storm water	Storm water Pipeline	Ls	1.00	201,571,500	201,571,500	100,785,750	100,785,750		
	<b>Subtotal</b>								<b>201,572,000</b>
Sewerage	Pipeline								
	DN 600	m	790	14,340	11,328,600	11,328,600			
	DN 450	m	455	13,800	6,279,000	6,279,000			

TYPE	Unit	Quantity	Unit Cost (KES)	Total	Phased Cost(KES)				
					Phase 1	Phase 2	Planning Area	Total	
Sewerage	DN 375	m	2,805	13,260	37,194,300	18,597,150	18,597,150		
	DN 225	m	9,877	8,780	86,720,060	43,360,030	43,360,030		
	WWTP	LS		87,000,000	87,000,000		43,500,000	43,500,000	
	RAP Activity	LS		10,000,000	10,000,000	5,000,000	3,000,000	2,000,000	
<b>Subtotal</b>									<b>238,522,000</b>
Main Power Supply Infrastructure	Ground substations of 2 x 23MVA, 66/11kV	No	3.0	495,000,000	1,485,000,000	990,000,000		495,000,000	
	66kV transmission Lines	LM	3,250.0	19,000	61,750,000	61,750,000			
	11kV transmission Lines	LM	11,000.0	4,500	49,500,000	27,225,000	9,900,000	12,375,000	
	<b>Subtotal</b>								
Power and Telecommunication Ducting	Power ducting reticulation	LM	14,500.0	18,500	268,250,000	147,537,500	53,650,000	67,062,500	
	Telecommunication ducting reticulation	LM	14,500.0	7,500	108,750,000	59,812,500	21,750,000	27,187,500	
	<b>Subtotal</b>								
Landscape	Green & Park area	m <sup>2</sup>	331,000	800	264,800,000	97,420,619	69,606,173	97,773,208	
	<b>Subtotal</b>								
Removal Cost	Marshalling yard	km	32.75	541,503	35,468,447	35,466,447			
	Building	m <sup>3</sup>	61,100	15,000	916,497,000	91,649,700	274,949,100	549,898,200	
	<b>Subtotal</b>								
Affordable Housing	Affordable Housing				3,937,500,000			3,937,500,000	<b>3,937,500,000</b>
<b>Subtotal</b>									
<b>Grand Total</b>	1. Total Construction Cost					11,966,726,000	21,428,732,000	6,105,940,000	<b>39,501,400,000</b>
	2. Engineering Cost (Planning, Design and construction Supervision)					1,795,008,900	3,214,309,800	915,891,000	5,925,210,000
	3. Contingency Cost								
	4. Contingency Cost (Construction Cost + Engineering Cost)*15%					2,064,261,000	3,696,457,000	1,053,275,000	6,813,992,000
	5. Total Cost (Not Including Tax)					15,825,996,000	28,339,499,000	8,075,106,000	52,240,602,000
TAX (VAT)					2,532,159,360	4,534,319,840	1,292,016,960	8,358,496,000	
5. Total Construction Cost (Including Tax)					18,358,155,000	32,873,819,000	9,367,123,000	<b>60,599,098,000</b>	

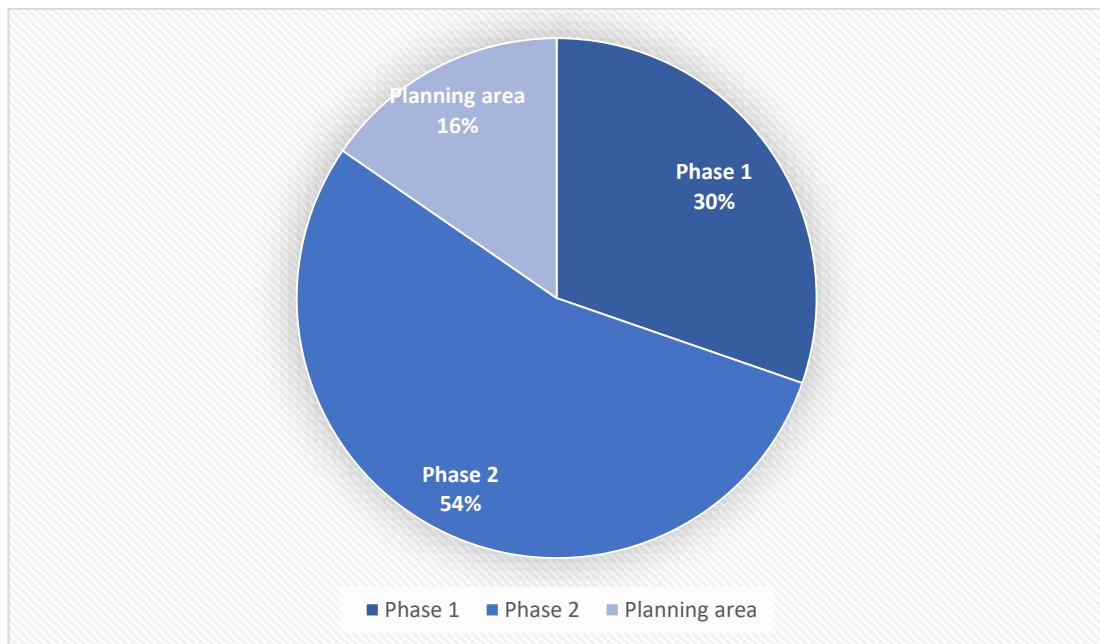
\*Note:1. It is estimated based on Kenya local market prices and experiences from similar project in East Africa.

2. In detailed plan and design stage, it can be calculated that exact quantity and cost.

3. The cost can be revised based on the construction types and methods.

4. Phasing cost is based on either each calculated cost or master schedule. It can be exactly articulated in detail design stage.

Cost break down result shows distributed cost of each phase on the following figure.



**Figure 8-3 Cost Ratio by Phasing**

### 8.2.2 Master Schedule and Annual Cost Breakdown

The master schedule incorporates the actual program of the Project implementation for the 5-year period. The Business plan and financial analysis of the Project also informs the master schedule.

The Project has 4 programs; Project preparedness, Site clearance, Railway infrastructure and Land infrastructure.

#### **Project Preparedness Program incorporates on the following.**

- Detail Design of the Plan
- Set up the Development Agency (e.g. Nairobi Railway City Development Authority)
- Detail Business Plan approval by the Board of Development Agency
- Essential Land Compensation for Phase 1 and 2 (if necessary)
- Project Management Unit set up or outsourcing (if necessary)

#### **Site Clearance Program**

- Prepare Site Clearance Plan
- Remove and dispose existing MGR railway track and appendages
- Remove the physical infrastructure including barracks and workshop building
- Restore the contaminated land<sup>46</sup>(if necessary)
- 

<sup>46</sup>Many cases witnessed over the world that old railway area including barrack, workshop, and station has contaminated land condition caused by which any repairing work has been done for maintaining railway facilities including carriage vehicle, locomotives and any machineries. Detail soil investigation shall be conducted in the Detail design stage.

### **Railway Infrastructure Program**

- Railway infrastructure Detail Design
- Roadbed Construction
- Station building Construction
- System Construction
- Examination Driving

### **Land Infrastructure Program**

- Earthwork /Grading
- Road + Paving
- Water + Sewage
- Landscaping
- Electric + Communication

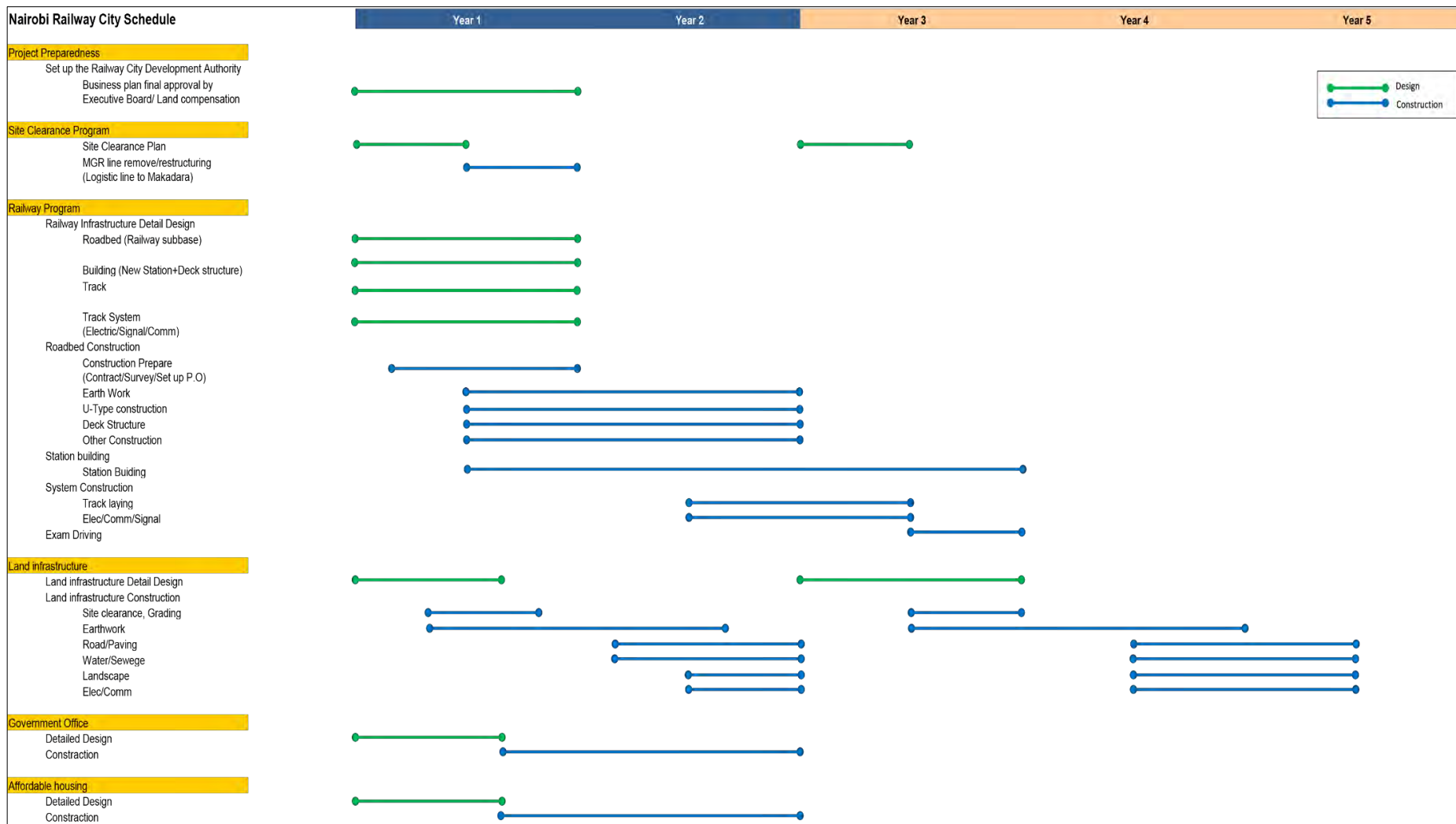
Each program has its own components and is implemented individually but intercrossing critical paths shall be observed as described as below.

### **Critical Path**

- Site clearance plan (Site Clearance program) ▷ Track and building design (Railway program)
- Road bed Design ▷ Road bed construction (Railway program)
- New station Design ▷ New station building (Railway program)
- System Design ▷ System construction (Railway program)
- Deck structure construction (Railway program) ▷ Road +Paving design (Land infrastructure program, fine-tuning)
- Station Building construction (Railway program) ▷ Road + Paving construction (Land infrastructure program, fine-tuning)

The Master schedule with annual cost breakdown is illustrated in the chart below.

**Table 8-3 Master Schedule**



**Table 8-4 Annual Cost Breakdown**

	Total	Phase1				
		+1	+2	+3	+4	+5
		2021	2022	2023	2024	2025
Railway	24,280,329,550	6,389,448,000	14,676,962,865	3,213,918,685	-510,558,685	510,558,685
Earthwork	3,349,760,000	1,004,928,000	2,344,832,000	-	-	-
Superstructure	13,442,800,000	4,032,840,000	9,409,960,000	-	-	-
Track works	729,369,550	-	218,810,865	510,558,685	-510,558,685	510,558,685
Station building	6,758,400,000	1,351,680,000	2,703,360,000	2,703,360,000	-	-
Land infrastructure	10,331,605,000	343,966,000	1,498,550,000	3,047,659,500	3,719,074,500	1,722,355,000
Earthwork	1,719,830,000	343,966,000	-	687,932,000	687,932,000	-
Road & pavement	2,015,715,000	-	403,143,000	604,714,500	604,714,500	403,143,000
Water supply	3,917,916,000	-	783,583,200	1,175,374,800	1,175,374,800	783,583,200
Storm water	201,572,000	-	40,314,400	60,471,600	60,471,600	40,314,400
Sewerage	238,522,000	-	47,704,400	71,556,600	71,556,600	47,704,400
Electricity	1,596,250,000	-	159,625,000	319,250,000	798,125,000	319,250,000
Communication	377,000,000	-	37,700,000	75,400,000	188,500,000	75,400,000
Landscaping	264,800,000	-	26,480,000	52,960,000	132,400,000	52,960,000
Removal	951,965,447	310,417,547	-	641,547,900	-	-
Track	35,468,447	35,468,447	-	-	-	-
Building	916,497,000	274,949,100	-	641,547,900	-	-
Affordable Housing	3,937,500,000	787,500,000	3,150,000,000	-	-	-
Construction Cost	39,501,399,997	7,831,331,547	19,325,512,865	6,903,126,085	3,208,515,815	2,232,913,685
Engineering Cost	5,925,209,999	1,174,699,732	2,898,826,930	1,035,468,913	481,277,372	334,937,053
Contingency (15%)	6,813,991,499	1,350,904,692	3,333,650,969	1,190,789,250	553,468,978	385,177,611
Total cost (excl. Tax)	52,240,601,495	10,356,935,970	25,557,990,764	9,129,384,247	4,243,262,165	2,953,028,348
Tax (16%)	8,358,496,239	1,657,109,755	4,089,278,522	1,460,701,480	678,921,946	472,484,536
Total Construction Cost (incl. Tax)	60,599,097,735	12,014,045,725	29,647,269,286	10,590,085,727	4,922,184,112	3,425,512,884

\*Note: 1. In detailed plan and design stage, it can be calculated that exact quantity and cos

## 8.3 Proposed Governance and Institutional Framework

### 8.3.1 Structuring Financing

In case financing infrastructure development various forms of financing can be utilized as below.

**Corporate Financing-** This is where a lender looks to the balance sheet of the borrower for repayment and assesses the borrower's creditworthiness prior to granting a loan.

**Asset Financing-** This is where a lender grants a loan based on its assessment of the asset(s) forming part of the development as security for loan repayment. Asset financing is usually accompanied by additional support (e.g. government guarantees). In addition to the security provided by the underlying asset and the guarantees, the lender will have recourse to the owner for repayment in the event that the asset does not cover full repayment.

**Project Financing-** This is a funding structure where lenders rely upon the future earnings and assets of the project as the source of funds for repayment and security for the loan, with limited or no recourse to owners of the project. It is the most common mode of financing infrastructure development. The principal modes of infrastructure project financing are covered hereunder in brief, that is;

- Debt Financing- By Loans or Bonds;
- Equity Financing
- Hybrid forms of financing (PPPs & Joint Ventures);
- Public financing;

In the Plan, the following financing options was analyzed.

#### Debt Financing Via Loans

Under the State Corporations Act, State Corporations, and in this case, the Development Authority, have powers to borrow or take loans. Hence, as shall further be discussed herein below, the Development Authority may finance some of the components of the Project via loans, either national or international depending on the powers conferred to it by the President through its gazette. Some of these components which may be financed via loan include construction of roads, hospitals or a public or private school.

Regarding Debt financing via loans, the Plan recommends that The Development Authority Board should identify components of the Project to be financed by debt, identify potential financiers and approach them with a budget for the development within 6 months of the gazette of the Authority.

#### DEBT FINANCING VIA BONDS

Based on a review of other projects, most institutions with the powers to issue bonds have undertaken the financing option under infrastructural developments. Accordingly, should it be empowered to, the Development Authority may adopt this form of financing once it is listed by CMA for the development of the railway where they may finance part of the railway construction through issuance of bonds alongside other forms of financing like the PPP model.

Regarding Debt financing via bonds, the Plan recommends that Corporate Bonds have become an increasingly important source of financing for the Public Sector. The Plan recommends that as soon as it is gazetted, the Development Authority Board begins the process of application to be listed under the CMA to enable them issue bonds.

## **EQUITY FINANCING**

Some components of the Project like the construction commercial developments or housing units shall require the incorporation of an SPV where the investors shall finance the Project through payment to the SPV for an equity share. In such circumstances, the Development Authority shall obtain financing and equally distribute the risk for such developments with the equity partners.

Regarding equity financing, the Plan recommends that the Development Authority Board should identify aspects of the Project which may benefit from equity financing, and incorporate an SPV in which they shall be shareholders and hence develop the property according to the terms under the SPV

## **PPP (PUBLIC PRIVATE PARTNERSHIPS) FINANCING**

The Development Authority shall be a state Corporation hence allowed by the PPP Act to enter into PPP arrangements. Accordingly, the Development Authority may opt to enter into a PPP arrangement with private investors for the construction of high-end housing units, construction of the MICE Core or the construction of roads which may have toll stations. However, the Development Authority should ensure that there exist certain primary facilities on the Project areas, which shall attract investors. Some of these facilities include electricity, water and sewerage systems. Investors shy away from projects which do not have these facilities since they do not want to incur the cost of installation of the facilities. The Development Authority the Development Authority should therefore engage the necessary stakeholders including KPLC, NCCG and NCWSC prior to seeking for PPP investors

Regarding PPP financing, the Plan recommends that the Development Authority Board should engage the PPP Unit with a feasibility study of the aspects of the Project that shall require PPP financing such as the MICE Core and Industrial Parks. The involvement of the PPP Unit ensures that by the time the project proposal and the feasibility study are issued to the PPP Unit, all measures have been taken to ensure that the approval will be given.

## **JOINT VENTURES**

For components of the project such as construction of housing units, industries or commercial developments, the Development Authority may be recommended to finance the same through a Joint Venture with private investors, as long as it is empowered to enter into such arrangements.

Regarding the JV financing, the Plan recommends that the Development Authority Board should identify financiers to enter into joint ventures with on MoU basis to develop aspects of the Project like:

- Development of housing units;
- Industrial parks; and
- Commercial spaces.

## **Public Financing**

As per the budgeting process highlighted in this report, the Development Authority may apply for the various components of the Project, which shall solely be of public benefit to be financed by the Government through Public Financing.

Regarding the public financing, the Plan recommends that the Development Authority Board should identify aspects of the Project that may benefit from public financing and develop an internal budget, which they shall forward to treasury for consideration. Some of the elements which can be financed via public financing include;

- Railway lines; by Kenya Railways Corporation
- Construction of the roads; by KURA
- Construction of Schools; by the Nairobi County Government
- Construction of pedestrian road by KURA and National County Government

### Land Value Capture (LVC)

The concept of Land Value Capture is a policy approach that enables the government, the local community and the land owners to recover and reinvest land value increments for privately owned land, that result from public investment and other government actions. This concept has been embraced in some states since it is believed that the public sector contributes greatly to urban land value through public works projects, zoning changes, granting of planning permission, provision of new infrastructure and other interventions. In that respect, it is only reasonably fair that a significant proportion of the increase in land value is availed to the national and local government to invest in new infrastructure and other public services.

In Kenya, land legislation provides for payment of land tax through land rent for properties under leaseholds from the government and land rates, for properties within municipalities. These may therefore be some of the mechanisms through which the Government recovers land value from infrastructural developments, as shall be highlighted further. However, there has been no development in land value capture in Kenya, and a case in hand being the development of the Thika Super-Highway where the government would have recovered from the increase in land value within a specific radius from the highway.

The table below indicates the various instruments of LVC and adopting in the project

LVC Instrument	Current Authority to benefit	How KR may ultimately capture the increased value of land
Land tax/ Land rates and rent	NCCG is the primary collector of land rates Land rent is payable to the NLC	The Development Authority may engage the NCCG and the NLC to have a separate agreement which shall indicate the revenue share arrangement for increase in rates and rent due to The Railway City Project
Compulsory Acquisition	Currently, there is no beneficiary as the property has yet to be compulsorily acquired	The Development Authority shall be the main beneficiary being the Authority that shall conduct the compensation to the private land owners The Development Authority should however engage the National Land Commission prior to the compulsory acquisition, to avoid any hindrances to the compulsory acquisition and to have NLC appreciate the public purpose for which compulsory acquisition is done
Land pooling	Currently, the private land owners are the primary beneficiaries of the revenue generated from their properties.	The Development Authority shall be the main beneficiary since the land shall be transferred to them and after the development is done, the Development Authority shall retain part of the land and only transfer a portion of the same to the previous owner The Development Authority should start engaging the private owners of the land to have the appreciate the project and the ultimate benefit to be accrued by the private land owners.

Inclusionary housing/inclusionary zoning	There is currently no beneficiary since the development has yet to begin	The Development Authority should engage the NCCG and on expediting the grant of planning permissions to investors of the high-end housing units as an incentive for them to invest in affordable housing units
--	--	--

**Table 8-5 Adopting LVC scheme in the Plan**

The Development Authority Board should table a motion to the County Assembly as well as Parliament on the amendment of county and national legislation to allow the above LVC instruments to be implemented. This is considering the fact that Article 66 (2) of the Constitution requires Parliament to enact legislation that will allow for development of property to **benefit** the local communities. However, some LVC instruments do not call for any legislative review including land property tax, compulsory acquisition and inclusionary housing.

The Development Authority Board should prepare a Proposal to the NLC and the NCCG to allow for sharing of funds generated from increased rent and rates on the Properties within the Project site.

Below table describes the risk and reward assessment for each financing options.

	ELEMENT OF RISK	MITIGATING FACTORS	RISK LEVEL	CONTROL OF HOLDING ASSETS AND LIABILITIES
<b>DEBT FINANCING</b>				
Loan	Interest rates; and Liquidity risk; and The risk of default on payment of the loan;	The Development Authority to take secured loans Internal control and Audit of the Development Authority’s accounts The Development Authority to choose interest fixed loans; The Development Authority should work on improving their assets to avoid their fixed depreciation; The Development Authority to balance variable rate loans with fixed rate loans	Medium risk	Assets: Lender Liabilities: The Development Authority
Bond	Reinvestment Risk Inflation risk and Bond duration Liquidity risk of bonds	The Development Authority to sell long term or non-callable bonds The Development Authority to sell Floating-Rate or High Rate Yield Bonds The Development Authority should build portfolio of bonds with different maturity dates	Medium	Assets: The Development Authority Liabilities: Bond Holder
<b>EQUITY FINANCING</b>				
Equity	Market Risk Loss of control Potential conflict among investors	The establishment of SPV; Equity Partners of the SPV through dividends	High	Assets: The Company and its shareholders Liabilities: the Company or the directors in case of any fraudulent dealings

<b>PUBLIC PRIVATE PARTNERSHIPS</b>				
Management Contract	Poor management of assets	Implement frequent checks and balances and have strong audit requirements of the manager The Development Authority to ensure that the Manager has all the relevant resources for management to avoid loss of funds through poor management.	Medium	Assets: The Development Authority Liabilities: The Development Authority
Lease	Non-payment of rent by the Lessee	Having an interest clause; The Development Authority to ensure that there are enforcement and dispute resolution mechanisms under the Lease	Medium	Assets: The Development Authority Liabilities: shared between the Development Authority and the Lessee
Concession	Land Acquisition ii. Revenue iii. Permits / Approvals Land Acquisition ii. Revenue iii. Permits / Approvals Construction risk Management risk	Solid policies on management of the assets KR to draw up the Concession Agreement binding the parties.	High	Assets: KR Liabilities: KR
BOOT <sup>47</sup> BOT <sup>48</sup>	Design risk Operating risk Transfer risk	Proper feasibility study report Mistake proofing The Development Authority should ensure that the Developer has conducted proper feasibility studies for the Project to avoid the developer accruing losses and abandoning the Project	High	Assets: Developer (during the PPP term) Liabilities: Developer
BTO <sup>49</sup>	Poor management risk Break even risk	Checks and balances including strong audit mechanisms on the administration of funds from the development The Development Authority to ensure that a feasibility study is conducted to avoid investing in non-profitable investments	High	Assets: The Development Authority Liabilities: The Development Authority
ROT <sup>50</sup>	Return of investment risk	Scalability and capacity KR should ensure that the private investor has the requisite capacity to implement the development	High	Assets: KR/Private owner Liabilities: Asset owner
<b>JOINT VENTURE</b>				
Contractual Joint Venture	Breach of contract by wither party	Mistake proofing The Development Authority should ensure that the contracts are air tight and cover all incidences of default	Medium	Assets: The Development Authority Liabilities: The Joint Venture

<sup>47</sup> Build Own Operate Transfer

<sup>48</sup> Build Operate Transfer

<sup>49</sup> Build Transfer Operate

<sup>50</sup> Rehabilitate Operate Transfer

Corporate Joint Venture	Liquidation of the JV Board inefficiency	Performance management The Development Authority should ensure that the JV is at all times accountable for its actions and proper books of account are kept	Medium	Assets: JV Liabilities: JV
<b>PUBLIC FINANCING</b>				
Budgetary Allocation	Political interference; Lack of funds	Creation of regulatory environment The Development Authority should ensure that proper books of account are kept to avoid any incidents of misappropriation of funds and hence political interference	High	Assets: The Development Authority Liabilities: The Development Authority

**Table 8-6 The Risk and Reward Assessment for Financing Options**

### 8.3.2 Project Governance structure

The proposed governance structures of the Project include Inter-Ministerial Committees, Joint Committees under the Inter-Governmental Coordination Structure and Special Purpose Vehicles (SPVs). Accordingly, after review of the governance structures, the Plan shortlisted and come up with two governance options most suitable for the implementation of the Project. This recommendation is based on the SPV models where one SPV may be a company limited by shares which may function as a Master Development Company (MDC) and shall be fully owned by Kenya Railways. The MDC shall be subject to the provisions of the State Corporations Act since it shall be a subsidiary of KR.

The alternative SPV model may be a Development Authority (Dev. Authority) to be a development and planning authority and which shall set up through a Presidential Order and whose members shall be appointed by the President and/or the relevant Cabinet Secretary. This Dev. Authority shall be directly accountable to the President, and the relevant ministries key among them, Ministry of Transport and Infrastructure, NCCG, NMS and KR among other key players. It is noted that there is already an established Development Authority Being The Railway City Development Authority, established under Legal Notice No. 88 of 2020.

The Table below gives a comparison of some of the key aspects and functions of the Development Authority SPV and the Master Development Company SPV:

Function	Development Authority	Master Development Company
Planning functions	Planning shall remain the mandate of the NCCG. However, NCCG being a major stakeholder may delegate the planning function to the Dev. Authority to hasten the process, but retaining the planning authority of the Project	The Master Dev. Co. may enter into an Agreement with the NCCG to delegate the mandate of planning to the Master Development Company
Ownership of land	Land shall be owned by the Authority	Land to be owned by KR or transferred to the Development Company
Technical Capacity	The Dev. Authority has more capacity since it shall be given a budgetary allocation and may have more employees due to availability of funds	The Master Dev. Co. may have lesser technical capacity in as much as it may get budgetary allocation
Cost	The cost of establishing an authority is higher	The cost of establishing a Master Dev. Co. is less expensive also considering that certain staff may be outsourced

		from KR Staff as a cost management measure.
Coordination with stakeholders	The Dev. Authority shall find it easier to coordinate with the government stakeholders	Coordination with KR shall be easier
Ability to replicate	Considering that KR has other properties within the Country, the construction of a Dev. Authority for each future project shall be a long shot	It is easier to replicate this model since the formation of an SPV Company is considerably easier
Corporate Governance	Considering that the Dev. Authority shall be established under the State Corporations Act, the Dev. Authority is more likely to have stronger corporate governance policies as well as more established structures	For the Master Dev. Co. may have weaker corporate governance policies. However, it may be made a Public Company after which it shall also be guided by Corporate Governance Policies for Public Companies.
Benefits of the Project (Revenue/Profit)	Surplus revenue or profits revert to the exchequer	Surplus funds shall revert to KR and shall assist in subsidizing its operations
Ease of Value Capture	Based on the Land Value Captures highlighted in this Report, it shall be easier for the Authority to capture land values since government stakeholders as NLC and NCCG shall be directly involved	Difficult to capture land values
Similar Projects	<i>Local Projects:</i> Konza Technopolis Development Authority, LAPPSET Corridor Development Authority <i>Foreign Project:</i> London Legacy Development Corporation	<i>Local Projects:</i> Two Rivers Development Project; Tatu City Development Project <i>Foreign Project:</i> Metrorail in South Africa

**Table 8-7 Comparison of the Development Authority SPV and the Master Development Company SPV**

In view of the comparison above, and based on feedback received from the Client<sup>51</sup>, the Plan recommends the use of the Development Authority as the implementing vehicle of the Project. The key basis for the recommendation is:

- Coordination between the stakeholders will be improved since performance of the Project shall be spearheaded by members of institutions that appreciate the spirit of the Project;
- Technical capacity and funding of the Project - the Government, through The Railway City Development Authority Order (RCDAO) shall allocate funds to the Development Authority hence reducing the cost to be incurred by the Development Authority in development of the Project, mainly for the public utilities like roads. The budgetary allocation shall also cover the technical capacity of the Development Authority; and
- Corporate Governance- the Development Authority shall have a strong corporate governance structure since the office is well established under the RCDAO.

<sup>51</sup> Feedback was received from the PIT and was subsequently concretized through the gazettment of the Railway City Development Authority Order, while the Project Planning was still in progress.

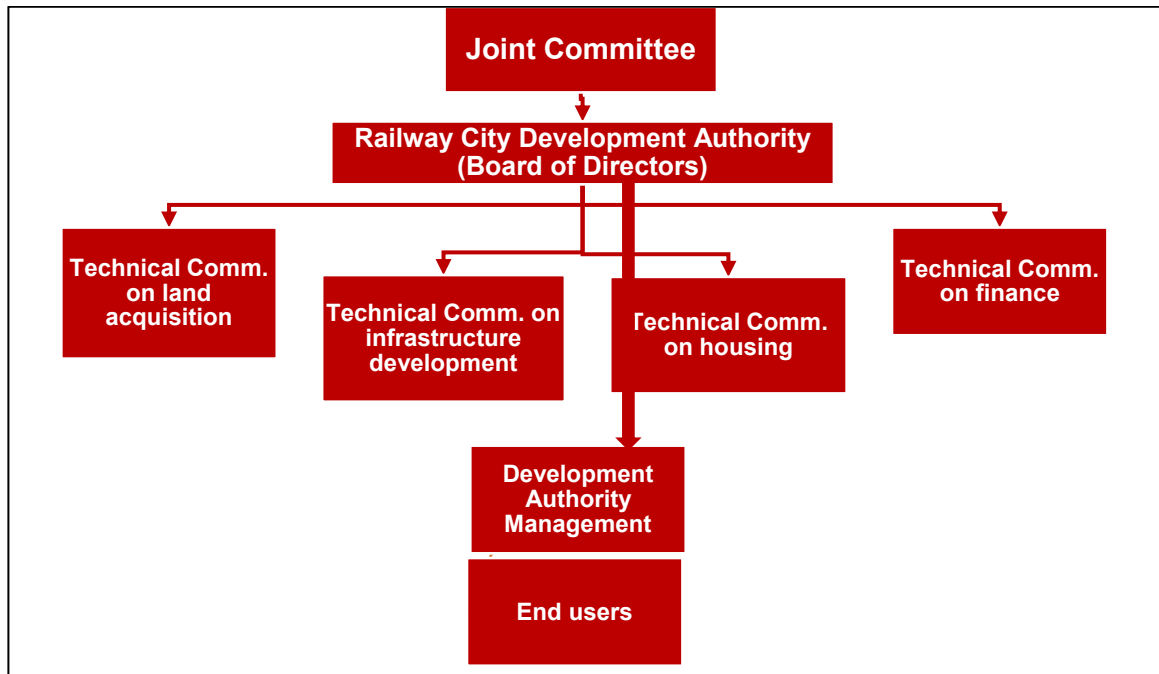
### 8.3.3 Project Governance Co-Ordination Model

As prescribed hereinabove, the Plan envisions a four-tier governance model as follows:

The Joint Committee set up under the National Government Co-ordination Act and the Inter-Governmental Relations Act to regulate and oversee the implementation of the project at a high level.

- The Development Authority as the Project developer
- The Technical Committees as the implementing vehicles for the project
- End-users (the general public)

Accordingly, there is a need for structures that ensure proper co-ordination amongst the above entities for smooth implementation of the Project.



**Figure 8-4 Proposed Coordination Structure**

#### **Coordination between the Joint Committee and the Railway City Development Authority Board**

The Joint Committee will comprise relevant national and county agencies affected by the project from a regulatory perspective. As a regulator of the railway transport in Kenya as well as being a lead agency under the, the Kenya Railways will also have representation in the joint committee.

Notably, in its capacity as a regulator as mentioned above, Kenya Railways will have representation in the Joint Committee as a lead agency under the Ministry of Transport.

### Coordination between the Development Authority Board and the Technical Committees

The Development Authority Board shall appoint members of the technical Committees and thereafter the technical committee shall effectively report to the Board in a frequency to be determined by the Board. Their relationship may be governed by a service charter to be developed by the Board of the Development Authority.

### Coordination framework for End-users

Joint Committee & End Users- The relationship between end-users and the regulators in the Joint Committee will be guided by the legal framework governing public participation.

Development Authority & End users- The relationship between end-users and the Development Authority and its management as a developer will be two-fold:

Contractual- the Development Authority will be involved in various end-user agreements such as leases;

Service Charter- As a public service provider e.g. for rail transport etc., the relationship between the Development Authority and end-users will be guided by the legal framework espousing the mandate of the Authority and service charters relating to the services offered.

### Coordination between the Technical Committees and End-Users

During the implementation phase, the relationship between end-users and the technical committees will be guided by the legal framework governing public participation in implementing projects of national importance. The technical committees will need to adopt models for regular consultation and obtaining end-user feedback as the Project is executed.

#### 8.3.4 Project Governance Implementation plan

ITEM NO.	ACTIVITY	PERSON RESPONSIBLE	ESTIMATED TIME PERIOD
	Upon completion of the Planning phase, the Master plan for Railway City Project ought to be delivered	Kenya Railways/ Development Authority	3 months
	Approval of Railway City Project for implementation	Kenya Railways/ Development Authority Parliament NCG	1 year
	The Project to be identified as a flagship project under Vision 2030 and the Big 4 Agenda.  The Affordable Housing component to be registered under the Affordable Housing Scheme.	Office of the President Kenya Railways/ Development Authority Vision 2030 Secretariat The National Housing Corporation	6 months
	Addressing Land issues on the Project Site i.e. Undertaking compulsory acquisition where appropriate; Negotiating and Purchasing private land within the Project Site where appropriate;	Kenya Railways; Railway City Development Authority; National Land Commission; Ministry of Lands; Nairobi County Government	1 year and above depending on any arising court cases

	<p>Survey and obtaining title document(s) over the Project Site and amalgamating the plots within the Project site as appropriate;</p> <p>Terminating existing leases and undertaking lawful eviction of current tenants; and</p> <p>Transferring the land to the Railway City Development Authority</p>		
	<p>Gazettement of the Railway City Development Authority including: Identifying the stakeholders to be appointed as the Directors of the Authority;</p> <p>Appointment of the Board members</p>	Kenya Railways Office of the President	Up to 1 month
	<p>Setting up joint committees of relevant ministries of the national government and departments of Nairobi County government to oversee the Railway City Project</p>	Office of the President Nairobi County Government Kenya Railways Relevant lead agencies	Up to 6 months
	<p>Lobbying investors including Developing investor-friendly packages including tax exemptions, easing work permits requirements etc.;</p> <p>Designing financing models for uptake by investors;</p> <p>Hosting investor conferences; and</p> <p>Media/publicity campaigns;</p>	Railway City Development Authority Kenya Investment Authority Special Economic Zones Authority Vision 2030	Throughout project cycle
	<p>Procurement of relevant experts including Contractors, Transaction advisers, Legal Advisers</p>	Railway City Development Authority	6 months to 1 year and as the need arises
	<p>Obtaining necessary regulatory approvals</p>	The Joint Committee (NEMA, NCG, KCAA, KENHA, KR, KURA, Ministry of Lands, Director of Planning)	As shall be required by the Board of the Development Authority-in any case within 6 months
	Phase 1: Construction	Project Consultants	Phase 1: 2020-2025 Phase 2: 2025-2030 Phase 3: 2030-2035 2035
	Phase 2: Construction	Project Consultants	
	Phase 3: Construction	Project Consultants	
	Construction completion	Project Consultants	
	<p>Post-construction management</p>	Railway City Development Authority and any appointed property managers	Upon completion of construction

## 8.4 BUSINESS PLAN

### 8.4.1 Preamble

It is the guided opinion that the successful implementation of the proposed Railway City infrastructure and public spaces will fully rely on funds set aside by the national government through the national treasury.

The project is termed as one of national importance and therefore can be fully funded by the government under the oversight of a development authority. Income for running the day-to-day operations as well as the overall profitability of the established Railway City, upon completion, will be sourced from proceeds of the sale and/or lease of designated serviced plots to make it an almost self-sustaining project. Therefore, the sales and/or leasing revenues will be targeted towards at least breaking even with the implementation costs throughout the 2No. phases of the project. This is the overall premise of this business plan proposal.

#### Business Objectives

The main objective of this business plan is to ensure that the proposed Railway City is implemented successfully from proceeds of sales and/or lease of the designated serviced plots within the master plan in order to deliver financial, social, economic and return on investment to the developer, the stakeholders and the public at large.

The Specific Objectives are:

- Fulfil the 'Big 4 Agenda' under the pillar of Affordable Housing initiated to ensures that low- and middle-income households have access to decent and affordable housing units.
- Meet the general market demand for commercial, housing social, cultural and transport infrastructure investment
- Set and meet sales/ lease targets.
- Establish lasting relationships with potential investors, stakeholders and the developers.

#### Marketing and Communication Objectives

The marketing and communications key objectives are as follows;

- Create awareness and provide information on the project and investment opportunity offered by the project in order to attract investors
- Inform the investors of the estimate sale prices or asset value of the selected serviced plots within the Master plan.

### 8.4.2 External Factors Consideration

#### Competition Analysis Development Condition

Various real estate projects proposed in Kenya and in Africa are potential competitors to the Railway City Project. They are funded by either government agencies or private real estate companies, and target the same pool of investors that the Railway City relies on to offtake the project.

Some of the Local County and National Government Development competing projects include:

- The County Government Urban Renewal Plans i.e. Nairobi and Mombasa County
- The National Government affordable housing projects through the MoTHIUD&PW. (The subject project also falls under this Ministry)

Other Local and Regional Development competing projects are:

**Table 8-8 Competitive Projects of the Railway City in Local and Regional Scale**

	Regions	Cities
1	<b>East Africa</b>	
	Tanzania	Kigamboni City
		Safari City
	Kenya	Tatu City
		Konza City
		Two Rivers
Rwanda	Vision City	
2	<b>Southern Africa</b>	
	South Africa	Waterfall City
	Mauritius	Heritage City
3	<b>West Africa</b>	
	Nigeria	Eko Atlantic
		Centenary City
	Ghana	Hope City
		King City
Diamniadio Lake City		
4	<b>Central Africa</b>	
	DRC	Kiswishi

### 8.4.3 Business strategy

The business strategy of the Plan is to attract investors to either purchase or lease serviced land in whichever prescribed format in order to participate in the development as per the proposed master plan. The cost of putting up the infrastructure will be fully funded by National government as the project is classified as one of National Importance.

The execution of the Plan will be through a development authority, Railway City Development Authority, as a special purpose vehicle under the State Corporations Act and under the Companies Act set up to coordinate the implementation of the project

### Products That the Plan Proposes to Offer to Investors

The project will offer a transit-oriented city with the aim of easing the congestion within Nairobi CBD and serving as a linkage to the Nairobi CBD and other surrounding areas in Nairobi and beyond.

The entire development is classified into various precincts as per the Plan. The table below highlights the precincts being developed and their respective development compositions:

**Table 8-9 Precincts as Development Compositions**

Precincts		Composition
1	Government Precinct	Administration Center
2	Street Commercial	Mixed Use Commercial dominant
		Mixed Use Residential dominant (Phase 2)
		Parking
3	Housing Zone-Phase 1	Affordable and Social Housing
4	MICE Core	Convention, Hospitality, Office, Leisure
5	Center Core Zone	Mixed Use Office Dominant
6	East Core	Police/ Fire Station
7	KR Area	Community Center
8	Station Front Commercial	Mixed Use Commercial dominant
		Hospital
		Parking
		Community Center
9	International Office Zone	Mixed Use Office dominant
		Electricity Facility - KPLC
10	Housing Zone	Residential (Middle and High)
		Mixed Use Commercial dominant
11	High Tech Industrial- Planning Area	Industrial dominant
		Parking

The subject land for the proposed project measures circa 357 acres in phase 1 & 2, and the planning phase. However, about 253 acres may be earmarked for outright sale/long-term lease as serviced plots for various land uses as shown in the table below;

**Table 8-10 Outright Sale Area in the Project**

Outright Sale/ Long-term Leases Development Zones		Option Final		
A.	PHASE 1 & 2	Area(m <sup>2</sup> )	Area(Acres)	Proportion (%)
1	Housing Zone- Phase 1 (Affordable Housing)	66,030.00	16.32	8%
2	Housing Zone- Phase 2	141,390.00	34.94	17%
3	Street Commercial- Phase 1	32,320.00	7.99	4%
4	Street Commercial- Phase 2	126,980.00	31.38	16%
5	Station Front Commercial	70,630.00	17.45	9%
6	MICE	123,270.00	30.46	15%
7	Center Core	114,620.00	28.32	14%
8	East Core	63,190.00	15.61	8%
9	International Office Zone	75,140.00	18.57	9%
	Sub total	813,570.00	201.04	100%

Outright Sale/ Long-term Leases Development Zones		Option Final		
A.	PHASE 1 & 2	Area(m <sup>2</sup> )	Area(Acres)	Proportion (%)
B	PLANNING AREA	Area(m <sup>2</sup> )	Area (Acres)	Proportion (%)
1	Station Front Commercial	118,360.00	29.25	56%
2	Housing Zone	42,990.00	10.62	20%
3	High Tech Industrial	51,570.00	12.74	24%
	Sub total	212,920.00	52.61	100%
	TOTAL	1,026,490.00	253.65	100%

The development precincts highlighted above were selected as per the Plan. It is noted that:

- The total 253.65 acres was derived from solely saleable/ leasable land within the various phases.
- The Government precinct measuring approximately 19.42 acres within Phase 1 is excluded from the above analysis because the land has been slotted for government use only and therefore cannot be offloaded to the open market.
- Other excluded plots of land fall within the Station Area, Transportation Facility, Central Parks, Pedestrian Walkways, Parking Plots, Water Parks and KR Area among others.
- Planning Area B comprises of majorly private land and is dependent on Land Acquisition and Compensation Plans by the government.

#### 8.4.4 Outright Sales/Long-Term Leases

This entails the sale/lease of serviced plots within the Plan throughout or within a part of the proposed project's life. The implementation of the Plan is scheduled to take five years, after which serviced plots of land will be available for sale/lease. Serviced plots are achieved once proper infrastructure, i.e. lowering of railway line, road construction and connectivity; water and sewerage connectivity, drainage systems and electricity connectivity are established. Typically, serviced plots fetch higher market rates compared to bare un-serviced land and are therefore more marketable.

In order to arrive at the value of the plots of land within the Plan, a land value estimate was established. However, the Plan recommends a proper land valuation to be commissioned in order to accurately inform on the value of individual plots of land within the Plan.

The value estimate and pricing of the plots of land available for sale/ lease is informed by:

- The findings in the market research report
- Current sales comparable within the Nairobi CBD
- Individual Plot sizes
- The tenure of the existing land leases
- Access to project financing and mortgages for investors
- Details of the land rent and service charge

- Level of infrastructure and standards being provided to each plot to determine the quality of life

The sale/ lease proceeds of land within the proposed Railway City is driven by the main anchor infrastructure of the project, i.e. planned lowering of the railway trucks and the construction of a central station. This will unlock all the other surrounding developments and land uses and cause them to gravitate towards and accrue their benefits.

#### **8.4.5 Incentives to Investors / Unique Selling Points**

For the project to achieve maximum proceeds from the selected precincts within the first, second and planning phases, potential investors need to feel sufficiently incentivized in order to invest in the project through outright purchase/lease.

Below are some of the incentives for potential investors:

##### **Market Incentive**

This is basically an incentive based on market needs/ market demands. Price is usually the most direct market incentive because individuals alter their market behavior in response to their private costs.

Using the market incentive approach, the following apply:

- Railway City is right next to the Nairobi CBD giving potential investors the opportunity to own and develop land within the CBD.
- Limited Supply of land within the CBD - There are very few plots of land available for sale within the CBD more so
- The land on sale is within a well-planned with the attendant infrastructure heralding the onset of the Nairobi CBD renaissance
- Railway City is a transit-oriented master plan and investors will benefit from
- Capital Appreciation
- Upon completion of the planned infrastructure at the end of phase 2 in two years, the investors will benefit from capital appreciation of the land they bought at the start of the project.

##### **Specific Incentives**

In addition to the general market incentives, there are further steps that can be taken in order to boost investment activity.

Highlighted below are some of the incentives that could be further applied to increase demand and give the project as the competitive edge:

##### **1) Proposed Price points**

Competitive market price for Railway City land compared to the market price within the CBD and other satellite CBD like Westlands, Upper Hill and Ngong Road.

## 2) Early Bird Incentives

A further specific incentive is the early bird incentive, which is meant to encourage investors to purchase land off-plan within phase 1 of the project to cushion the total development cost. Some of the benefits to investors include:

- Opportunity to choose prime plots of land in different precincts at the onset
- A longer development periods.
- A higher land value by the 5th year due to land improvements and thus a higher debt ratio
- Enough time to seek out a good joint venture partner
- Market price value without price escalations

### 8.4.6 Products Pricing Model

The assessment of the sale price of the Kenya Railways land is based on the opinion of the land values within the Nairobi CBD and its immediate environs. The proposed valuation model is based on market value;

The market value (MV) means the best price at which the sale of an interest in property might reasonably be expected to have been completed unconditionally for cash consideration on the date of valuation assuming;

- a willing seller;
- That, prior to the date of valuation, there had been a reasonable period (having regard to the nature of the property and the state of the market) for the proper marketing of the interest, for the agreement of price and terms and for the completion of the sale;
- That the state of the market, level of values and other circumstances were on any earlier assumed date of exchange of contracts, the same as on the date of valuation; and
- That no account is taken of any additional bid by a purchaser with a special interest.
- The market value reflects continuation of the existing use and the value may include a special element attributable to the earning potential of the premises for a particular existing purpose by reason of their nature, location, character and physical construction but such element of value, if present, exists irrespective of the benefit for the property to the particular individual undertaking of which it forms a part.

The basis of valuation assessment;

Methods of Valuation Adopted: In this valuation assessment, the Plan has adopted Market Comparison Approach to value only. Assuming the value of land only and ignoring the current buildings and site developments, the Plan has proposed 3 No. valuation models to estimate the sale price of the different plots as delineated by the proposed master plan.

#### 1) Current Market Value

Based on current comparable for sale of land within the CBD in areas with similar characteristics which is about Ksh 150,000 Per Square Meter. This forms the basis of the Future Value 1.

## **2) Future Market Value 1**

Future market value 1 is based on the premise that with commencement of infrastructure development the value of the land increases to the level of the highest comparable rates within the Nairobi CBD. For example, areas like Moi Avenue, Kimathi Street, and Kenyatta Avenue, whose rate is about 400,000 per square meter.

This value forms the initial price point for the land parcels from the second year of Phase 1 and 2, after which escalations apply. It also applies to early bird investors who purchase land at the start of the Railway City development master plan.

## **3) Future Market Value 2**

Future market value 2 is based on the premise developable rights as per the plot ratios. Therefore, the higher the plot ratio the higher the value. This is the product of the current market value (Ksh 150,000 per square meter) and the plot ratios with limit of Ksh 500,000 per square. This would be the most appropriate model for pricing the plots;

The table in the following pages shows the pricing of the different plots for Railway City:

**Table 8-11 Plot Price of the Railway City**

Land Type		Block No.	Land Use	Area			Land Value(Thousand Ksh/m <sup>2</sup> )			Land Value(Thousand Ksh)			
				m <sup>2</sup>	Acres	F.A.R	Market Value (current)	Future Value1	Future Value2	Market Value (current)	Future Value1	Future Value2	
A. Development Area	P1			1,223,000	302.20	-				70,884,000	189,024,000	220,763,125	
				386,240	95.44	-	-	-	-	3,148,500	8,396,000	9,445,500	
		4. Government Precinct	Sub Total	78,610	19.42	-	-	-	-	-	-	-	
			4-1	G	12,150	3.00	400%	-	-	-	-	-	
			4-2	G	11,830	2.92	400%	-	-	-	-	-	
			4-3	G	11,380	2.81	400%	-	-	-	-	-	
			4-4	G	7,720	1.91	250%	-	-	-	-	-	
			4-5	G	20,080	4.96	250%	-	-	-	-	-	
			4-6	MO (R&D)	15,450	3.82	250%	-	-	-	-	-	
		6. Station Area	Sub Total	38,540	9.52	-	-	-	-	-	-	-	
			6-1	T	2,560	0.63	0%	-	-	-	-	-	
			6-2	T	2,560	0.63	0%	-	-	-	-	-	
			6-3	T	5,150	1.27	0%	-	-	-	-	-	
			6-4	T	21,120	5.22	400%	-	-	-	-	-	
			6-5	T	5,140	1.27	0%	-	-	-	-	-	
			6-6	OP-Park	2,010	0.50	0%	-	-	-	-	-	
		8. Street Commercial	Sub Total	32,320	7.99	-	-	-	-	3,148,500	8,396,000	9,445,500	
			8-1	MC	2,600	0.64	300%	150	400	450	390,000	1,040,000	1,170,000
			8-2	MC	2,590	0.64	300%	150	400	450	388,500	1,036,000	1,165,500
			8-3	P	5,250	1.30	300%	-	-	-	-	-	-
			8-4	MC	2,440	0.60	300%	150	400	450	366,000	976,000	1,098,000
			8-5	MC	2,460	0.61	300%	150	400	450	369,000	984,000	1,107,000
			8-6	MC	2,460	0.61	300%	150	400	450	369,000	984,000	1,107,000
			8-7	MC	3,700	0.91	300%	150	400	450	555,000	1,480,000	1,665,000
			8-8	MC	2,300	0.57	300%	150	400	450	345,000	920,000	1,035,000
			8-9	MC	2,440	0.60	300%	150	400	450	366,000	976,000	1,098,000
			8-10	P	4,870	1.20	300%	-	-	-	-	-	-
			8-11	OP-Buffer	1,210	0.30	0%	-	-	-	-	-	-
		10. Housing Zone	Sub Total	66,030	16.32	-	-	-	-	-	-	-	
			10-20	OP-Park	7,570	1.87	0%	-	-	-	-	-	
			10-21	P	4,080	1.01	250%	-	-	-	-	-	
			10-23	OP-Park	4,490	1.11	0%	-	-	-	-	-	
			10-24	C	4,890	1.21	250%	-	-	-	-	-	

Land Type	Block No.	Land Use	Area			Land Value(Thousand Ksh/m <sup>2</sup> )			Land Value(Thousand Ksh)			
			m <sup>2</sup>	Acres	F.A.R	Market Value (current)	Future Value1	Future Value2	Market Value (current)	Future Value1	Future Value2	
		10-25	R	45,000	11.12	250%	-	-	-	-	-	-
		<b>Sub Total</b>		<b>135,480</b>	<b>33.48</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
		<b>Transportation Facility</b>										
		TF-1	OP-Buffer	10,880	2.69	0%	-	-	-	-	-	-
		TF-2	TF	34,100	8.43	0%	-	-	-	-	-	-
		TF-3	OP-Buffer	19,750	4.88	0%	-	-	-	-	-	-
		TF-4	OP-Buffer	7,960	1.97	0%	-	-	-	-	-	-
		TF-5	TF	26,860	6.64	0%	-	-	-	-	-	-
		TF-6	OP-Buffer	7,210	1.78	0%	-	-	-	-	-	-
		TF-7	OP-Buffer	2,560	0.63	0%	-	-	-	-	-	-
		TF-8	TF	2,870	0.71	0%	-	-	-	-	-	-
		TF-9	OP-Buffer	1,020	0.25	0%	-	-	-	-	-	-
		TF-10	OP-Buffer	6,980	1.72	0%	-	-	-	-	-	-
		TF-11	TF	6,870	1.70	0%	-	-	-	-	-	-
		TF-12	OP-Buffer	8,420	2.08	0%	-	-	-	-	-	-
		<b>Sub Total</b>		<b>35,260</b>	<b>8.71</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
		<b>Central Park</b>										
		CP-1	CP	12,720	3.14	0%	-	-	-	-	-	-
		CP-2(1)	CP	22,540	5.57	0%	-	-	-	-	-	-
		<b>Sub Total</b>		<b>836,760</b>	<b>206.76</b>					<b>67,735,500</b>	<b>180,628,000</b>	<b>211,317,625</b>
	P2	<b>1.MICECore</b>		<b>123,270</b>	<b>30.46</b>	<b>-</b>				<b>11,080,500</b>	<b>29,548,000</b>	<b>36,935,000</b>
		1-1	MICE	10,550	2.61	600%	150	400	500	1,582,500	4,220,000	5,275,000
		1-2	MICE	29,450	7.28	600%	150	400	500	4,417,500	11,780,000	14,725,000
		1-3	MICE	17,960	4.44	600%	150	400	500	2,694,000	7,184,000	8,980,000
		1-4	MICE	15,910	3.93	600%	150	400	500	2,386,500	6,364,000	7,955,000
		1-5	OP-Pedestrian	16,860	4.17	0%	-	-	-	-	-	-
		1-6	OP-Pedestrian	11,100	2.74	0%	-	-	-	-	-	-
		1-7	OP-Water	6,020	1.49	0%	-	-	-	-	-	-
		1-8	OP-Park	15,420	3.81	0%	-	-	-	-	-	-
		<b>Sub Total</b>		<b>114,620</b>	<b>28.32</b>	<b>-</b>				<b>14,671,500</b>	<b>39,124,000</b>	<b>48,905,000</b>
		<b>2.CenterCore Zone</b>										
		2-1	MO	12,290	3.04	500%	150	400	500	1,843,500	4,916,000	6,145,000
		2-2	MO	16,770	4.14	500%	150	400	500	2,515,500	6,708,000	8,385,000
		2-3	MO	8,350	2.06	500%	150	400	500	1,252,500	3,340,000	4,175,000
		2-4	MO	7,740	1.91	500%	150	400	500	1,161,000	3,096,000	3,870,000
		2-5	OP-Park	950	0.23	0%	-	-	-	-	-	-
		2-6	OP-Pedestrian	6,220	1.54	0%	-	-	-	-	-	-
		2-7	MO	20,660	5.11	500%	150	400	500	3,099,000	8,264,000	10,330,000
		2-8	MO	12,980	3.21	500%	150	400	500	1,947,000	5,192,000	6,490,000
		2-9	OP-Park	1,230	0.30	0%	-	-	-	-	-	-
		2-10	MO	5,440	1.34	500%	150	400	500	816,000	2,176,000	2,720,000

Land Type	Block No.	Land Use	Area			Land Value(Thousand Ksh/m <sup>2</sup> )			Land Value(Thousand Ksh)				
			m <sup>2</sup>	Acres	F.A.R	Market Value (current)	Future Value1	Future Value2	Market Value (current)	Future Value1	Future Value2		
			2-11	MO	6,800	1.68	500%	150	400	500	1,020,000	2,720,000	3,400,000
			2-12	MO	6,780	1.68	500%	150	400	500	1,017,000	2,712,000	3,390,000
			2-13	OP-Pedestrian	7,050	1.74	0%	-	-	-	-	-	-
			2-14	OP-Buffer	1,360	0.34	0%	-	-	-	-	-	-
	<b>3.EastCore</b>		<b>Sub Total</b>		<b>63,190</b>	<b>15.61</b>	<b>-</b>				<b>3,831,750</b>	<b>10,218,000</b>	<b>9,579,375</b>
			3-1	PS	4,680	1.16	250%	75	200	187.5	351,000	936,000	877,500
			3-2	FS	5,130	1.27	250%	75	200	187.5	384,750	1,026,000	961,875
			3-3	OP-Park	4,130	1.02	0%	-	-	-	-	-	-
			3-4	OP-Pedestrian	3,580	0.88	0%	-	-	-	-	-	-
			3-5	OP-Pedestrian	1,160	0.29	0%	-	-	-	-	-	-
			3-6	MC	19,360	4.78	250%	75	200	187.5	1,452,000	3,872,000	3,630,000
			3-7	OP-Pedestrian	3,230	0.80	0%	-	-	-	-	-	-
			3-8	MR	21,920	5.42	250%	75	200	187.5	1,644,000	4,384,000	4,110,000
	<b>5.KRArea</b>		<b>Sub Total</b>		<b>61,460</b>	<b>15.19</b>	<b>-</b>				<b>-</b>	<b>-</b>	<b>-</b>
			5	C	61,460	15.19	250%	-	-	-	-	-	-
	<b>7.Stationfront commercial</b>		<b>Sub Total</b>		<b>70,630</b>	<b>17.45</b>	<b>-</b>				<b>8,352,000</b>	<b>22,272,000</b>	<b>27,375,000</b>
			7-1	C	3,720	0.92	250%	150	400	375	558,000	1,488,000	1,395,000
			7-2	MC	5,580	1.38	400%	150	400	500	837,000	2,232,000	2,790,000
			7-3	MC	5,290	1.31	400%	150	400	500	793,500	2,116,000	2,645,000
			7-4	MC	3,270	0.81	400%	150	400	500	490,500	1,308,000	1,635,000
			7-5	MC	2,200	0.54	400%	150	400	500	330,000	880,000	1,100,000
			7-6	MC	2,190	0.54	400%	150	400	500	328,500	876,000	1,095,000
			7-7	MC	2,190	0.54	400%	150	400	500	328,500	876,000	1,095,000
			7-8	MC	2,160	0.53	400%	150	400	500	324,000	864,000	1,080,000
			7-9	MC	2,180	0.54	400%	150	400	500	327,000	872,000	1,090,000
			7-10	P	2,190	0.54	400%	150	400	500	328,500	876,000	1,095,000
			7-11	OP-Park	2,460	0.61	0%	-	-	-	-	-	-
			7-12	OP-Pedestrian	1,340	0.33	0%	-	-	-	-	-	-
			7-13	MC	2,290	0.57	400%	150	400	500	343,500	916,000	1,145,000
			7-14	OP-Park	2,610	0.64	0%	-	-	-	-	-	-
			7-15	MC	2,130	0.53	400%	150	400	500	319,500	852,000	1,065,000
			7-16	MC	2,840	0.70	400%	150	400	500	426,000	1,136,000	1,420,000
			7-17	MC	2,320	0.57	400%	150	400	500	348,000	928,000	1,160,000
			7-18	MC	2,260	0.56	400%	150	400	500	339,000	904,000	1,130,000
			7-19	OP-Pedestrian	880	0.22	0%	-	-	-	-	-	-

Land Type	Block No.	Land Use	Area			Land Value(Thousand Ksh/m <sup>2</sup> )			Land Value(Thousand Ksh)		
			m <sup>2</sup>	Acres	F.A.R	Market Value (current)	Future Value1	Future Value2	Market Value (current)	Future Value1	Future Value2
	7-20	OP-Buffer	1,100	0.27	0%	-	-	-	-	-	-
	7-31	OP-Park	6,560	1.62	0%	-	-	-	-	-	-
	7-36	H	12,870	3.18	400%	150	400	500	1,930,500	5,148,000	6,435,000
		<b>8.Street Commercial</b>	<b>Sub Total</b>	<b>126,980</b>	<b>31.38</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>12,882,750</b>	<b>34,354,000</b>	<b>38,648,250</b>
	8-12	MC	2,230	0.55	300%	150	400	450	334,500	892,000	1,003,500
	8-13	MC	2,260	0.56	300%	150	400	450	339,000	904,000	1,017,000
	8-14	MC	2,260	0.56	300%	150	400	450	339,000	904,000	1,017,000
	8-15	MC	2,270	0.56	300%	150	400	450	340,500	908,000	1,021,500
	8-16	MC	1,870	0.46	300%	150	400	450	280,500	748,000	841,500
	8-17	MC	2,240	0.55	300%	150	400	450	336,000	896,000	1,008,000
	8-18	MC	2,240	0.55	300%	150	400	450	336,000	896,000	1,008,000
	8-19	MC	2,260	0.56	300%	150	400	450	339,000	904,000	1,017,000
	8-20	MC	2,260	0.56	300%	150	400	450	339,000	904,000	1,017,000
	8-21	MC	2,260	0.56	300%	150	400	450	339,000	904,000	1,017,000
	8-22	P	4,100	1.01	300%	-	-	-	-	-	-
	8-23	OP-Pedestrian	5,510	1.36	0%	-	-	-	-	-	-
	8-24	MC	2,270	0.56	300%	150	400	450	340,500	908,000	1,021,500
	8-25	MC	2,300	0.57	300%	150	400	450	345,000	920,000	1,035,000
	8-26	MC	2,460	0.61	300%	150	400	450	369,000	984,000	1,107,000
	8-27	MC	1,850	0.46	300%	150	400	450	277,500	740,000	832,500
	8-28	MC	2,460	0.61	300%	150	400	450	369,000	984,000	1,107,000
	8-29	MC	2,460	0.61	300%	150	400	450	369,000	984,000	1,107,000
	8-30	MC	3,050	0.75	300%	150	400	450	457,500	1,220,000	1,372,500
	8-31	MC	2,280	0.56	300%	150	400	450	342,000	912,000	1,026,000
	8-32	MC	2,410	0.60	300%	150	400	450	361,500	964,000	1,084,500
	8-33	MC	2,410	0.60	300%	150	400	450	361,500	964,000	1,084,500
	8-34	MC	3,030	0.75	300%	150	400	450	454,500	1,212,000	1,363,500
	8-35	MC	2,360	0.58	300%	150	400	450	354,000	944,000	1,062,000
	8-36	MC	2,360	0.58	300%	150	400	450	354,000	944,000	1,062,000
	8-37	MC	2,100	0.52	300%	150	400	450	315,000	840,000	945,000
	8-38	MC	1,820	0.45	300%	150	400	450	273,000	728,000	819,000
	8-39	MC	2,050	0.51	300%	150	400	450	307,500	820,000	922,500
	8-40	MC	2,030	0.50	300%	150	400	450	304,500	812,000	913,500
	8-41	MC	2,350	0.58	300%	150	400	450	352,500	940,000	1,057,500
	8-42	MC	2,260	0.56	300%	150	400	450	339,000	904,000	1,017,000
	8-43	MC	2,260	0.56	300%	150	400	450	339,000	904,000	1,017,000
	8-44	MC	2,240	0.55	300%	150	400	450	336,000	896,000	1,008,000
	8-45	OP-Pedestrian	2,890	0.71	0%	-	-	-	-	-	-

Land Type	Block No.	Land Use	Area			Land Value(Thousand Ksh/m <sup>2</sup> )			Land Value(Thousand Ksh)			
			m <sup>2</sup>	Acres	F.A.R	Market Value (current)	Future Value1	Future Value2	Market Value (current)	Future Value1	Future Value2	
	8-46	OP-Pedestrian	540	0.13	0%	-	-	-	-	-	-	
	8-47	OP-Pedestrian	610	0.15	0%	-	-	-	-	-	-	
	8-48	OP-Pedestrian	3,850	0.95	0%	-	-	-	-	-	-	
	8-49	OP-Buffer	570	0.14	0%	-	-	-	-	-	-	
	8-50	OP-Buffer	550	0.14	0%	-	-	-	-	-	-	
	8-51	MR	3,420	0.85	300%	75	200	225	256,500	684,000	769,500	
	8-52	MR	2,290	0.57	300%	75	200	225	171,750	458,000	515,250	
	8-53	MR	2,290	0.57	300%	75	200	225	171,750	458,000	515,250	
	8-54	MR	2,290	0.57	300%	75	200	225	171,750	458,000	515,250	
	8-55	MR	1,900	0.47	300%	75	200	225	142,500	380,000	427,500	
	8-56	MR	2,270	0.56	300%	75	200	225	170,250	454,000	510,750	
	8-57	P	4,580	1.13	300%	75	200	225	343,500	916,000	1,030,500	
	8-58	MR	2,290	0.57	300%	75	200	225	171,750	458,000	515,250	
	8-59	MR	2,290	0.57	300%	75	200	225	171,750	458,000	515,250	
	8-60	MR	2,290	0.57	300%	75	200	225	171,750	458,000	515,250	
	8-61	MR	1,970	0.49	300%	75	200	225	147,750	394,000	443,250	
	8-62	MR	1,970	0.49	300%	75	200	225	147,750	394,000	443,250	
	8-63	OP-Buffer	550	0.14	0%	-	-	-	-	-	-	
	8-64	OP-Buffer	590	0.15	0%	-	-	-	-	-	-	
	8-65	OP-Pedestrian	6,410	1.58	0%	-	-	-	-	-	-	
	<b>9.International Office Zone</b>	<b>Sub Total</b>	<b>75,140</b>	<b>18.57</b>	<b>-</b>				<b>9,099,000</b>	<b>24,264,000</b>	<b>30,330,000</b>	
		9-1	MO	4,690	1.16	600%	150	400	500	703,500	1,876,000	2,345,000
		9-2	MO	6,070	1.50	600%	150	400	500	910,500	2,428,000	3,035,000
		9-3	MO	6,200	1.53	600%	150	400	500	930,000	2,480,000	3,100,000
		9-4	MO	5,550	1.37	600%	150	400	500	832,500	2,220,000	2,775,000
		9-5	MO	5,590	1.38	600%	150	400	500	838,500	2,236,000	2,795,000
		9-6	MO	5,550	1.37	600%	150	400	500	832,500	2,220,000	2,775,000
		9-7	MO	4,800	1.19	600%	150	400	500	720,000	1,920,000	2,400,000
		9-8	E-KPLC	10,930	2.70	400%	-	-	-	-	-	-
		9-9	OP-Pedestrian	3,550	0.88	0%	-	-	-	-	-	-
		9-10	MO	7,380	1.82	600%	150	400	500	1,107,000	2,952,000	3,690,000

Land Type	Block No.	Land Use	Area			Land Value(Thousand Ksh/m <sup>2</sup> )			Land Value(Thousand Ksh)					
			m <sup>2</sup>	Acres	F.A.R	Market Value (current)	Future Value1	Future Value2	Market Value (current)	Future Value1	Future Value2			
			9-11	MO	7,450	1.84	600%	150	400	500	1,117,500	2,980,000	3,725,000	
			9-12	MO	7,380	1.82	600%	150	400	500	1,107,000	2,952,000	3,690,000	
		<b>10.Housing Zone</b>	<b>Sub Total</b>			<b>141,390</b>	<b>34.94</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>7,818,000</b>	<b>20,848,000</b>	<b>19,545,000</b>
			10-1	R	24,290	6.00	250%	75	200	187.5	1,821,750	4,858,000	4,554,375	
			10-2	S	13,860	3.42	150%	-	-	-	-	-	-	
			10-3	R	7,140	1.76	250%	75	200	187.5	535,500	1,428,000	1,338,750	
			10-4	R	6,370	1.57	250%	75	200	187.5	477,750	1,274,000	1,194,375	
			10-5	R	6,150	1.52	250%	75	200	187.5	461,250	1,230,000	1,153,125	
			10-6	OP-Pedestrian	4,280	1.06	0%	-	-	-	-	-	-	
			10-7	OP-Buffer	690	0.17	0%	-	-	-	-	-	-	
			10-8	OP-Buffer	1,360	0.34	0%	-	-	-	-	-	-	
			10-9	OP-Park	10,100	2.50	0%	-	-	-	-	-	-	
			10-10	R	16,830	4.16	250%	75	200	187.5	1,262,250	3,366,000	3,155,625	
			10-11	R	4,900	1.21	250%	75	200	187.5	367,500	980,000	918,750	
			10-12	OP-Pedestrian	6,860	1.70	0%	-	-	-	-	-	-	
			10-22	MC	13,270	3.28	250%	75	200	187.5	995,250	2,654,000	2,488,125	
			10-26	MC	2,450	0.61	250%	75	200	187.5	183,750	490,000	459,375	
			10-27	MC	2,460	0.61	250%	75	200	187.5	184,500	492,000	461,250	
			10-28	MC	2,120	0.52	250%	75	200	187.5	159,000	424,000	397,500	
			10-29	MC	1,500	0.37	250%	75	200	187.5	112,500	300,000	281,250	
			10-30	MC	1,500	0.37	250%	75	200	187.5	112,500	300,000	281,250	
			10-31	MC	1,500	0.37	250%	75	200	187.5	112,500	300,000	281,250	
			10-32	MC	2,670	0.66	250%	75	200	187.5	200,250	534,000	500,625	
			10-33	MC	2,050	0.51	250%	75	200	187.5	153,750	410,000	384,375	
			10-34	MC	1,520	0.38	250%	75	200	187.5	114,000	304,000	285,000	
			10-35	MC	1,840	0.45	250%	75	200	187.5	138,000	368,000	345,000	
			10-36	MC	960	0.24	250%	75	200	187.5	72,000	192,000	180,000	
			10-37	MC	950	0.23	250%	75	200	187.5	71,250	190,000	178,125	
			10-38	MC	940	0.23	250%	75	200	187.5	70,500	188,000	176,250	
			10-39	MC	940	0.23	250%	75	200	187.5	70,500	188,000	176,250	
			10-40	MC	940	0.23	250%	75	200	187.5	70,500	188,000	176,250	
			10-41	MC	950	0.23	250%	75	200	187.5	71,250	190,000	178,125	
		<b>Central Park</b>	<b>Sub Total</b>			<b>60,080</b>	<b>14.85</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	
			CP-2(2)	CP	60,080	14.85	0%	-	-	-	-	-	-	
<b>B. Planning Area</b>						<b>220,380</b>	<b>54.46</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>25,098,750</b>	<b>66,930</b>	<b>81,120,625</b>	
	<b>B</b>					<b>220,380</b>	<b>54.46</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>25,098,750</b>	<b>66,930</b>	<b>81,120,625</b>	
		<b>7.Stationfront commercial</b>	<b>Sub Total</b>			<b>118,360</b>	<b>29.25</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>15,712,500</b>	<b>41,900</b>	<b>52,375,000</b>	
			7-21	MC	7,030	1.74	400%	150	400	500	1,054,500	2,812,000	3,515,000	
			7-22	MC	6,900	1.70	400%	150	400	500	1,035,000	2,760,000	3,450,000	

Land Type	Block No.	Land Use	Area			Land Value(Thousand Ksh/m <sup>2</sup> )			Land Value(Thousand Ksh)				
			m <sup>2</sup>	Acres	F.A.R	Market Value (current)	Future Value1	Future Value2	Market Value (current)	Future Value1	Future Value2		
			7-23	MC	2,970	0.73	400%	150	400	500	445,500	1,188,000	1,485,000
			7-24	MC	2,930	0.72	400%	150	400	500	439,500	1,172,000	1,465,000
			7-25	MC	11,730	2.90	400%	150	400	500	1,759,500	4,692,000	5,865,000
			7-26	MC	2,560	0.63	400%	150	400	500	384,000	1,024,000	1,280,000
			7-27	MC	1,980	0.49	400%	150	400	500	297,000	792,000	990,000
			7-28	MC	1,900	0.47	400%	150	400	500	285,000	760,000	950,000
			7-29	OP-Pedestrian	750	0.19	0%	-	-	-	-	-	-
			7-30	OP-Buffer	1,390	0.34	0%	-	-	-	-	-	-
			7-32	MC	39,450	9.75	400%	150	400	500	5,917,500	15,780,000	19,725,000
			7-33	P	5,050	1.25	250%	-	-	-	-	-	-
			7-34	E	6,420	1.59	250%	0	0	0	0	0	0
			7-35	MC	27,300	6.75	400%	150	400	500	4,095,000	10,920,000	13,650,000
		<b>10.Housing Zone</b>	<b>Sub Total</b>		<b>42,990</b>	<b>10.62</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>3,050,250</b>	<b>8,134,000</b>	<b>7,625,625</b>
			10-13	R	6,890	1.70	250%	75	200	187.5	516,750	1,378,000	1,291,875
			10-14	R	7,840	1.94	250%	75	200	187.5	588,000	1,568,000	1,470,000
			10-15	OP-Pedestrian	1,420	0.35	0%	-	-	-	-	-	-
			10-16	R	8,130	2.01	250%	75	200	187.5	609,750	1,626,000	1,524,375
			10-17	R	8,410	2.08	250%	75	200	187.5	630,750	1,682,000	1,576,875
			10-18	R	9,400	2.32	250%	75	200	187.5	705,000	1,880,000	1,762,500
			10-19	OP-Buffer	900	0.22	0%	-	-	-	-	-	-
		<b>11.HighTech Industrial</b>	<b>Sub Total</b>		<b>51,570</b>	<b>12.74</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>6,336,000</b>	<b>16,896,000</b>	<b>21,120,000</b>
			11-1	P	3,930	0.97	400%	-	-	-	-	-	-
			11-2	HI	1,970	0.49	400%	150	400	500	295,500	788,000	985,000
			11-3	HI	1,970	0.49	400%	150	400	500	295,500	788,000	985,000
			11-4	HI	1,970	0.49	400%	150	400	500	295,500	788,000	985,000
			11-5	HI	2,000	0.49	400%	150	400	500	300,000	800,000	1,000,000
			11-6	HI	2,000	0.49	400%	150	400	500	300,000	800,000	1,000,000
			11-7	HI	1,980	0.49	400%	150	400	500	297,000	792,000	990,000
			11-8	HI	1,980	0.49	400%	150	400	500	297,000	792,000	990,000
			11-9	HI	1,980	0.49	400%	150	400	500	297,000	792,000	990,000
			11-10	HI	1,980	0.49	400%	150	400	500	297,000	792,000	990,000
			11-11	HI	1,950	0.48	400%	150	400	500	292,500	780,000	975,000
			11-12	HI	2,220	0.55	400%	150	400	500	333,000	888,000	1,110,000
			11-13	HI	2,240	0.55	400%	150	400	500	336,000	896,000	1,120,000
			11-14	HI	2,240	0.55	400%	150	400	500	336,000	896,000	1,120,000
			11-15	HI	2,240	0.55	400%	150	400	500	336,000	896,000	1,120,000
			11-16	P	4,500	1.11	400%	-	-	-	-	-	-
			11-17	HI	2,280	0.56	400%	150	400	500	342,000	912,000	1,140,000
			11-18	HI	2,260	0.56	400%	150	400	500	339,000	904,000	1,130,000

Land Type	Block No.	Land Use	Area			Land Value(Thousand Ksh/m <sup>2</sup> )			Land Value(Thousand Ksh)		
			m <sup>2</sup>	Acres	F.A.R	Market Value (current)	Future Value1	Future Value2	Market Value (current)	Future Value1	Future Value2
	11-19	HI	2,250	0.56	400%	150	400	500	337,500	900,000	1,125,000
	11-20	HI	2,250	0.56	400%	150	400	500	337,500	900,000	1,125,000
	11-21	HI	2,250	0.56	400%	150	400	500	337,500	900,000	1,125,000
	11-22	HI	2,230	0.55	400%	150	400	500	334,500	892,000	1,115,000
	11-23	OP-Buffer	900	0.22	0%	-	-	-	-	-	-
	<b>Central Park</b>	<b>Subtotal</b>	<b>7,460</b>	<b>1.84</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
	CP-3	CP	7,460	1.84	0%	-	-	-	-	-	-
<b>Total</b>			<b>1,443,380</b>	<b>357</b>					<b>95,982,750</b>	<b>255,954,000</b>	<b>301,883,750</b>

Key:

- R: Residential
- MR: Mixed use Residential dominant
- MC: Mixed use Commercial dominant
- MO: Mixed use Office dominant
- MICE: Convention, Hotel, Office, Leisure
- C: Community center
- PS/FS: Police/Fire Station
- G: Administration center
- HI: High-tech Industrial
- U: University
- S: School
- H: Hospital
- E: Electric Facility
- T: Transportation center
- F: Transportation Facility
- P: Parking Building
- CP: Central Park & Plaza
- OP: Open space

### 8.4.7 Land Disposal Plan

The National Government will fund the initial infrastructure cost for the proposed project. Therefore, the sales disposal plan assumes that the first two years will not realize any sales since the infrastructure development will only be 65% complete. Additionally, due to the infrastructural value addition the land values will be considerably higher and there will be market confidence that the project will be implemented thus increasing the demand for the plots.

Sales will be open from the third year to achieve a sales target of about 50% of the available land by the fifth year. Thereafter, sales will stabilize at about 10% per annum for the remaining five years of the forecast period.

It should be noted that the development authority will have the discretion to implement outright sale of the saleable land or enter into lease agreements or joint venture partnerships using the land values as proposed sale prices, net book values or equity contribution.

The detailed disposal plan is discussed further in the financial analysis section.

### 8.4.8 Planning Area B (Land for Compulsory Acquisition)

The planning boundary of the project land also includes several portions of land that are owned by private third-party entities. For purposes of the Plan, herein it has been assumed that the said properties will be acquired either by private treaty or compulsory land acquisition. The table below shows the details of the affected land portions;

**Table 8-12 Land Size of the Planning Area B**

	Planning Area	Size of Land(Acres)	Size of Land (Hectares)
1	Station Front Commercial	29.25	11.84
2	Housing Zone	10.62	4.30
3	High Tech Industrial	12.74	5.16
	Total	52.61	21.30

However, it is proposed that the best option is to purchase through compulsory land acquisition to curtail the private entities from arbitrarily increasing the purchase price or refusing to sell their land, which may affect the project negatively.

In so doing upon approval of the project for implementation, the designated development authority should gazette through the National Land Commission an Intention to Acquire so as to lock the prices at the current market rates as per the Land Act, the National Land Commission Act and the Land Value Index (Amendment) Act, 2019. Thereafter the acquisition cost should be included as part of the project cost.

The table below shows the estimated cost of the acquisition considering a 15% mark up for disturbance allowance as per the Land Acquisition Act (Repealed) cap 295.

**Table 8-13 Estimated Cost of the Land Acquisition in the Planning Area B**

	Planning Area	Size of Land (Acres)	Current Market Value (Ksh)	ADD Statutory 15% (Ksh)	Compensation on Value (Ksh)
1	Station Front Commercial	29.25	15,712,500,000	2,356,875,000	18,069,375,000
2	Housing Zone	10.62	3,050,250,000	457,537,500	3,507,787,500

	Planning Area	Size of Land (Acres)	Current Market Value (Ksh)	ADD Statutory 15% (Ksh)	Compensation on Value (Ksh)
3	High Tech Industrial	12.74	6,336,000,000	950,400,000	7,286,400,000
	Total	52.61	25,098,750,000	3,764,812,500	28,863,562,500

#### 8.4.9 Investor Conference plan

The investor conference is meant to bring together corporate leaders, financial sponsors and institutional investors to introduce the proposed Railway City project so as to garner feedback on the project.

##### Proposed Conference Details:

- Targeted Guests: 100 to 150 guests maximum
- Conference Period: One and a half days
- Conference Partnerships: API Events Company & KPDA

##### Target Guests

The conference targets the various classes of investors as highlighted in the invitees list.

The proposed selection criteria are as follows:

- Advertise the conference and request for interested parties to bid.
- Vet the bid applications.
- Select the attendees based on the categories of stakeholders for the project.
- Send an official invitation

The proposed target/ invitee list is as follows.

##### Invitees List

The invitees list is highlighted below under various categories and sub categories indicating the main players to be targeted by the outreach and conference program, but not limited to the following;

**Table 8-14 Invitees List**

	Main Category	Sub-Category
<b>A</b>	<b>Financiers</b>	
	<b>Banks</b>	KCB BANK KENYA LIMITED
		COOPERATIVE BANK OF KENYA
		HF LTD
		BARCLAYS BANK KENYA
		STANDERED CHARTERED BANK KENYA
		EQUITY BANK KENYA
		NCBA BANK KENYA
		DIAMOND TRUST BANK GROUP
		NATIONAL BANK OF KENYA
		STANBIC BANK
	<b>Scheme Administrators</b>	ZAMARA, ALEXANDER FORBES
		AON MINET
		OCTAGON
		ENWEALTH
	<b>Fund/Asset Managers</b>	SANLAM INVESTMENTS EAST AFRICA

	Main Category	Sub-Category
		GENAFRICA (GENESIS KENYA INVESTMENTS MANAGEMENT LIMITED) ASSET MANAGERS STANLIB KENYA OLD MUTUAL INVESTMENT GROUP PUBLIC INVESTMENT CORPORATION, SOUTH AFRICA AFRICAN LOCAL CURRENCY BOND FUND (ALCB) FUSION CAPITAL ICEA LION GROUP BRITAM ASSET MANAGERS CYTONN ASSET MANAGERS
	<b>International Banks</b>	WORLD BANK IDA- INTERNATIONAL DEVELOPMENT ASSOCIATION IFC - INTERNATIONAL FINANCE CORPORATION MIGA-MULTILATERAL INVESTMENT GUARANTEE AGENCY AFRICA DEVELOPMENT BANK (AFDB) SHELTER AFRIQUE OVERSEAS PRIVATE INVESTMENT CORPORATION (OPIC) EXPORT-IMPORT BANK OF THE UNITED STATES (EX-IM BANK) U.S. TRADE AND DEVELOPMENT AGENCY (USTDA)
	<b>Donors</b>	SWEDISH INTERNATIONAL DEVELOPMENT AGENCY (SIDA) FRENCH DEVELOPMENT AGENCY (AFD) COMMONWEALTH DEVELOPMENT CORPORATION (CDC) EU - TRANSPORT NETWORKS DEPARTMENT FOR INTERNATIONAL DEVELOPMENT
<b>B</b>	<b>Insurance</b>	BRITAM INSURANCE UAP INSURANCE MADISON GROUP JUBILEE INSURANCE CIC INSURANCE
<b>C</b>	<b>Pension Schemes</b>	SAFARICOM KENYA POWER PENSION SWISSPORT UNILEVER KENYA WILDLIFE SERVICES LAPTRUST NIC / CBA PENSION KENGEN KNBS
<b>D</b>	<b>Developers</b>	HF DEVELOPMENT & INVETSMET LTD SHREEJI DEVELOPMENT LTD TWO RIVERS DEVELOPMENT LTD AFRICAN DEVELOPERS GROUPS (ADG) FOR CONSTRUCTION & INVESTMENTS AHCOF INVESTMENTS (KENYA) COMPANY LIMITED ACORN DEVELOPERS ADWAA ALKHALIL DEVELOPEMNT COMPANY AMS PROPERTIES LTD

	Main Category	Sub-Category
		AMAZON PROJECTS
		BAHATI RIDGE DEVELOPMENT LTD
		BLUELINE PROPERTIES LTD
		CENTURY CITY PROPERTY LIMITED
		CHIGWELL HOLDINGS LTD
		CYTONN
		DUNHILL
		FAIRDEAL DEVELOPMENT & INFRASTRUCTURE LTD
		HASS CONSULT
		HOME AFRIKA
		KARIBU HOMES
		KAMHOMES INVESTMENT LTD
		KINGS DEVELOPERS LTD
		LORDSHIP AFRICA
		MML TURNER & TOWNSEND
		NATUREVILLE HOMES
		PDM KENYA
		SJR PROPERTIES LTD
		SOHAIL DEVELOPMENTS LTD
		SOMA PROPERTIES LTD - SARIT CENTER
		SUPERIOR HOMES LTD
		TATU CITY LTD
		TRIDENT ESTATES
		TGS REALTY
		VAAL REAL ESTATE LTD
E	Private Equity Companies	GLOBAL
		THE CARLYLE GROUP
		ACTIS CAPITAL
		KKR
		GOODWELL INVESTMENTS
		PAN AFRICAN
		HELIOS INVESTMENT PARTNERS
		AFRICINVEST
		EMERGING CAPITAL PARTNERS (ECP)
		KIBO CAPITAL PARTNERS
		PHATISA FUND MANAGERS
		PROGRESSION CAPITAL AFRICA
		TBL MIRROR GROUP
		AFRICA ENTERPRISE CHALLENGE FUND (MANAGED BY KPMG)
		DFID
		INTERNATIONAL HOUSING SOLUTIONS
		VITAL CAPITAL FUNDS
		EAST AFRICA
		ASCENT CAPITAL PARTNERS
		CATALYST PRINCIPAL PARTNERS
		FANISI VENTURE CAPITAL
		MARIS
		CENTUM INVESTMENT
		BPI EAST AFRICA
		IMPACT INVESTMENT FUNDS
		GRASSROOTS BUSINESS FUNDS
		ACUMEN FUND
		GROFIN AFRICA
		SEAF INVEST EAST AFRICA FUND
		FAMILY
		CHANDARIA INDUSTRIES
F	Construction Industry	BAMBURI CEMENT

	Main Category	Sub-Category
		ATHI RIVER MINING CEMENT LTD
		BLUE TRIANGLE CEMENT
		TONONOKA STEEL
		DEVKI GROUP

#### 8.4.10 Investor Outreach plan

This should not be taken as a one off event and should be continuous over the years as the project takes shape

Investor Outreach can be defined as the process of informing and educating the relevant groups of stakeholders, that is, the general public, various sections of government and investors on the positive attributes of the project with the goal of forging long-term relations that lead to its successful life.

An investor outreach program is thus a systematic way of passing on information to the various stakeholders all through the life of the project. It is therefore, a continuous event rather than a one-day occurrence that ensures the invested parties are informed on the progress of the project and simultaneously marketing the project to increase overall demand.

#### Purpose of The Investor Outreach

The objective of the investor outreach is to inform institutional investors, individual investors and financial advisors both locally and internationally on the positive attributes of investment opportunities available in the proposed Railway City project.

Moreover, the investor program seeks to also get feedback from the investors on the project attributes that resonate with them.

#### Investor Outreach Schedule

An efficient manner of conducting the investor outreach is by developing a schedule of events. The schedule aims to overcome the shortcomings of targeting individual stakeholders and potential investors at any given moment to providing an effective means that utilizes minimum resources while achieving the intending goal.

It is proposed that the investor outreach be carried out for a period of at least 3 years and a maximum of 5 years to cover the First Phase of the project. The specific time range is based on the phasing strategy which indicates that significant improvements on site will be visible by the 3rd year of the project.

The schedule is framed around the quarterly, bi-annually and annual events attended by potential investors where the proposed Railway City project can be sensitized.

Below is a list of some of the potential events to conduct the outreach:

**Table 8-15 Investor Outreach Schedule**

Events	Dates	Location
East Africa Property Investment (EAPI) Summit	Apr-20	
Africa Property Investment (API) Summit	Sep-20	
West Africa Property Investment (WAPI) Summit	Nov-20	
Cityscape - Dubai	Oct-20	Dubai
Presidential Delegations E.G. Annual Un Conference		
Africa Hotel Investment Forum (AHIF)	Sep-20	
Africities	Nov-20	Morocco
Africities	Nov-21	
East Africa Business Council		

This presents a forum with most of the members as potential buyers in one gathering

## 8.5 Financial and Economic Analysis

To facilitate the financial and economic analysis of the proposed Railway City Project, a Financial Model has been constructed.

### 8.5.1 Financial Model Overview

#### Structure

The financial model, which is annexed to this report, provides the following input and workings tabs:

- Non-time based inputs for the four scenarios investigated: base case, which has land values based on future value 1; scenario two based on future value 2 land valuation; scenario 3, which is based on combination of future value 1 land valuation and a 20 % increase in the project cost and scenario 4 which is based on combination of future value 1 land valuation and 20 % increase in the project cost;
- Capital costs estimates and drawdown schedule;
- Operating costs and revenue estimates and
- Depreciation computations and a fixed assets schedule

With respect to outputs, the model has the following worksheets:

- A summary sheet for the selected scenario indicating key information relating to project dates; the project cost; project returns and audit checks;
- Annual financial statements: profit & loss, cash flow and balance sheet and
- Estimation of the proposed project's Economic Internal Rate of Return(EIRR)

#### Model Inputs

The base case model inputs are provided in the financial model. These inputs are based on the best available inputs at the time of this study and should be subjected to refinement as and when better information comes to light. The base case inputs are mostly drawn from the Infrastructure Cost Estimate and the Final Land Use Plan. Additional inputs for the computation of the EIRR are drawn from the Turner & Townsend Construction Cost Survey, 2019 section relating to construction costs in Kenya.

##### 1) Model Set-up

The model set-up assumes a construction start of July 2020 over a construction period of 5 years. The drawdown of construction funds is identical to the drawdown schedule contained in the Infrastructure Cost Estimate. The model term is assumed to be 10 years, including the 5-year infrastructure construction period since the disposal of land and construction of the built-up areas by the eventual developers is not expected to await completion of the infrastructure works. The disposal of project land is assumed to be completed with a 10-year period on account of the quantum of land that requires a drawn-out period to market it and close the sale transactions. For the computation of EIRR, the forecast horizon is estimated at 15 years. This is to allow for the capture of construction-driven benefits derived from the activities of the eventual developers of the disposed land.

##### 2) Capital Expenditure

Capital expenditure (Capex) estimates are derived from the Infrastructure Cost Estimate and a Land Value's estimate of the cost of compensation associated with the acquisition of 52.6 acres of private land within the designated project area. The base Capex estimates are shown below:

**Table 8-16 Construction Cost of the Railway City**

	Capital Costs(KES)		
	Cost Item	Amount	
1	Railway		
	Earthworks	3,349,760,000	3.7%
	Structure(U-type, Deck)	13,442,800,000	15.0%
	Track works	729,369,550	0.8%
	Station building	6,758,400,000	7.6%
2	Land Infrastructure		0.0%
	Earthwork	1,719,830,000	1.9%
	Road & pavement	2,015,715,000	2.3%
	Water supply	3,917,916,275	4.4%
	Storm water	201,571,500	0.2%
	Sewerage	238,521,960	0.3%
	Electricity	1,596,250,000	1.8%
	Communication Network	377,000,000	0.4%
	Landscape	264,800,000	0.3%
3	Removal		0.0%
	Track	35,468,447	0.0%
	Building	916,497,000	1.0%
4	Affordable Housing	3,937,500,000	4.4%
5	Planning, Design & Construction Supervision	5,925,209,960	6.6%
6	Contingency	6,813,991,454	7.6%
7	VAT	8,358,496,183	9.3%
8	Land compensation	28,863,562,500	32.3%
9	<b>Total</b>	<b>89,462,659,828</b>	<b>100.0%</b>

### 3) Revenue and Operating Expenditure Assumptions

The main assumptions underpinning the revenue projections are that 758,060 sq. m of land will be available for sale over a 10-year period. The sales forecast assumes that the first two years will not realize any sales since the infrastructure development will only be 65% complete. Sales will ramp up from the third year to achieve a sales target of 50% of the available land by the fifth year. Thereafter, sales will stabilize at about 10% per annum for the remaining five years of the forecast period. As to operating expenditure, sales expenses and legal fees have been provided for at 3% and 0.5% of the sales proceeds, respectively.

### 4) Tax and Depreciation

The tax treatment of the vehicle through which the proposed project will be delivered is uncertain at the moment. As a result, it has been assumed that the project-delivery-entity will not be tax exempt. Consequently, tax computations are based on a corporation tax rate of 30% while tax depreciation using the reducing balance method assumes a rate of 2.5% for affordable housing assets; 2% for railway infrastructure; 4% for land infrastructure and 20% for professional fees and other Capex items.

### 8.5.2 Model Results

The results of the four scenarios investigated are tabulated below:

**Table 8-17 Model Scenario**

Scenario	Future Value 1	Future Value 2	20% Increase in Project Cost	20% Decrease in Project Cost
Project Cost	89,462,659,828	89,462,659,828	104,612,434,160	79,362,810,273
Pre-tax Project IRR	33.5%	42.7%	34.1%	50.3%
Post-tax Project IRR	27.3%	33.8%	26.8%	40.0%
Economic Internal Rate of Return	19.2%	19.2%	15.5%	12.1%
NPV Economic Benefits and Costs	33,103,208,172	33,103,208,172	19,292,547,758	591,876,089

Under all scenarios, the Project IRR is above the assumed Government of Kenya discount rate of 12%. Since, the Project IRR exceeds the hurdle rate of 12% under all scenarios, the project is, therefore, considered financially viable.

### 8.5.3 Cost-Benefit Analysis

A cost benefit analysis has been undertaken as part of the economic appraisal of the project under the financial modelling for the proposed project. The measures of project worth used are the Economic Internal Rate of Return (EIRR) and Net Present Value (NPV) at a discount rate of 12%. The costs considered are construction costs, statutory fees, professional fees, and the cost of compensation related to acquisition of parcels of land privately owned. For the operating phase, the cost incorporated are sales expenses and legal fees. The economic investment cost under the base case scenario is estimated at KES 89.4 billion and would be disbursed over five years from 2020 to 2025. Residual value at the end of forecast period has been incorporated so as not to underestimate the benefits of the project given that the design life of the project assets is longer than the model's forecast period.

The main project benefits in the economic evaluation include direct and indirect construction wages; healthcare savings on the part of residents and users of in the project's accommodation on account of improved sanitation and environmental improvement and the local content component of construction works. Construction induced wages both direct and indirect are estimated KES151 billion while healthcare savings are estimated at KES 3.1 billion. Lastly, construction-related local content benefits are estimated at KES 86billion. To put into context, the envisaged construction-related economic benefits, it is to be borne in mind that the Land Use Plan forecasts a total built-up area of 3.75 million square meters; comprised of retail, office, industrial and hospitality accommodation. About 55% of the project benefits is due to construction-driven direct and indirect wages while local content benefits account for an additional 32% of the economic value. The Net Present Value of the projects economic costs and benefits at a discount rate of 12% is significantly greater than zero, indicating that the proposed project will generate substantial economic value.

## 8.6 COMMUNICATION STRATEGY AND ACTIVITIES

### 8.6.1 Communication Stakeholder Analysis

#### General Information

Table 3-1 overleaf provides the findings of the preliminary stakeholder analysis. The assessment is subjective having followed the following framework for stakeholder analysis.

**Table 8-18 Framework for Stakeholder Analysis**

<sup>52</sup> Stakeholder Group	Interests at stake in relation to the project	Effect of project on interests + 0 -	Importance of Stakeholder for Success of Project	Degree of Influence of Stakeholder over the Project
			U=Unknown	U=Unknown
			1=Little/No Importance	1=Little/No Influence
			2=Some Importance	2=Some influence
			3=Moderate Importance	3=Moderate Influence
			4=Very Important	4=Significant Influence
			5=Critical player	5=Very Influential

#### Preliminary Communication Stakeholder Analysis

This is a live document that will be validated and at the various iterations during the stakeholder engagement process during the assignment. A stakeholder database will be developed as part of the records for the stakeholder analysis; and periodically updated to facilitate continuity in engagement with regard to the project.

**Table 8-19 Preliminary Stakeholder Analysis Findings**

Stakeholder	Interest at stake in relation to the project	Effect of project interest, Importance of Success & Degree of influence
Kenya Railways (KR)	Owners of the land on which the project is to be developed. Development of the station in line with the vision, mandate and roles of KR would require active participation by KR in the planning process for the project.	Positive Critical Very influential
	The Nairobi Railway station is a major component of the Railway City Master Plan hence its implementation is of high importance to KR. The approval of the development plan for the Nairobi Railway Station can be considered as a critical step to the	

<sup>52</sup>Developed from Rietbergen-McCracken and Narayan, 1997 in AfDB, *A Handbook on Stakeholder Participation and Engagement for ADB Operations*, 2001

Stakeholder	Interest at stake in relation to the project	Effect of project interest, Importance of Success & Degree of influence
	implementation of the KR Nairobi Railway City Master Plan	
	The national headquarters for KR are located within the target planning site. Private consortium running railway operations on the meter gauge railway. Operations within the planning area related to the current railway transport system serving the main Mombasa-Malaba-Kampala line passing through the Nairobi Railway Station. Other lines connecting Nanyuki (Central Region), Embakasi (Nairobi) and Kisumu (Western Region) also transit through the Nairobi Railway Station.	
Ministry of, Transport Infrastructure Housing and Urban Development (MoTIH&UD)  State Department for Transport	They are the Ministry in charge of transportation systems in Kenya and this Project is supposed to be multimodal Railway Station. It is in the institution's interest that a multi-modal railway station is developed to promote development of sustainable, integrated and efficient transport systems for Nairobi County. Considering the played by Nairobi as an entry gateway into the country (Air based travel) and a strategic location for transit through the country (road and railway), a more efficient, integrated and multi-modal Nairobi Railway Station is a key facet to improvement in the Transport systems in Kenya as a whole.	Positive Critical Very influential
	The Ministry is expected to have a keen interest in the development of the station in line with the vision and objectives of the Nairobi Metropolitan Master Plan	
Ministry of, Transport Infrastructure Housing and Urban Development (MoTIH&UD)  State Department for Housing and Urban Development	The Ministry is in charge of provision and regulation of housing standards in the country. As a regulator, the Ministry is expected to be non-partisan to the various interests of the developers and final consumers of the proposed housing, so long as the developer's objectives and visions do not infringe on the final consumers' rights and needs with regard to housing standards. The current site is a brown site with housing facilities including low income housing for students of the higher education facilities within the greater CDB area. Consideration for inclusivity of the low-income bracket (specifically the one-bedroom units for students) has been raised by the stakeholder representatives in previous engagement on the project. Affordable housing and affordable health care will be of interest to this state department as they are key in the current Government's key focus over the next five years under the big 4 agenda by President Uhuru Kenyatta.	Positive Critical Significant influence
Nairobi City County Government  Physical and Planning Department	The KR Nairobi City Master Plan is a critical component to the expansion of the Nairobi CBD as prescribed in the Nairobi City Integrated Urban Development Master Plan (NIUPLAN). It is one of the projects that was integrated into NIUPLAN as required by Articles 36 to 42 of the Urban Areas and Cities Act and Article 107 of the County Government Act. The development of the Nairobi Railway Station can therefore be considered as a very important aspect to the Nairobi City County Government's mandate and responsibility to the citizens of Nairobi County.	Positive Critical Significant influence
Nairobi City County Government	The County wide blue-print for development of environmental management plans, valuation rolls, social infrastructure, transportation, service delivery (water,	Positive Critical

Stakeholder	Interest at stake in relation to the project	Effect of project interest, Importance of Success & Degree of influence
Physical and Planning Department	electricity, health, telecommunications, solid waste management), GIS system for the City as well as disaster preparedness and response for the city as described in Article 36 (d) of the Urban Areas and Cities Act was based on NIUPLAN. In the interest of the County Government's implementation of its mandate, observance of the County standards in any of the above aspects triggered in this master plan is of high importance to this institutional stakeholder.	Significant influence
	It is in the County Government's interest that a multi-modal railway station is developed to promote development of sustainable, integrated and efficient transport systems for Nairobi County.	
	The County government is keen to have land use and spatial plans that follow the County Government's vision for Nairobi's expanded CBD. They are therefore expected to be non-partisan to the various interests of the developers and final consumers of the proposed land uses, so long as the developer's objectives and vision do not infringe on the final consumers' rights and needs.	Physical and Planning Department- Neutral Critical Very Influential
Kenya Railways Staff Retirement Benefit Scheme	The Kenya Railways Staff Retirement Benefit Scheme was formed in 2008. It has a portfolio of property-based assets to fund the scheme. These properties were transferred to the scheme from KR. Some residential properties with tenants paying rent to the Scheme are located within the targeted planning area.	To be determined Very important Significant influence
Railway Police	Railway Police have offices within the targeted planning area.	To be determined Very important Significant influence
Residents within the planning area	Some residential properties with tenants paying rent to the Scheme are located within the targeted planning area. The representatives engaged to date are very keen on "meaningful engagement" for a win-win situation.	To be determined Very important Significant influence
Immediate neighbors to the planning site	Land uses in the immediate neighborhood of the planning area include low income residential units, retail and wholesale markets (Muthurwa and Wakulima Markets), education facilities, government and private sector offices for the services sector (e.g. banking, telecommunication, insurance), hotels and restaurants, facilities /monuments of recreation and cultural (heritage) value. Possible concerns over relocation and interruption of business and commercial activities. From the stakeholder engagement conducted to-date, the main concern of this group was about need for change in land use and whether their land will be bought or acquired under compulsory acquisition.	To be determined Very important Significant influence
Potential investors and tenants	The currently undefined institutions, corporations, companies and individuals with an interest in investment and any other type of uses for the future development within the proposed planning site.	Positive Critical Significant influence
Development partners World Bank, JICA European Investment Bank (EIB) African	To be determined in relation to projects they are financing that have a direct or indirect impact on the project. Reference was made to the Inception Report findings on analysis of other projects in the vicinity of, or within the proposed planning area.	Positive Critical Very influential

Stakeholder	Interest at stake in relation to the project	Effect of project interest, Importance of Success & Degree of influence
Development Bank (AfDB), UN-HABITAT		
Kenya National Highway Authority	Traffic and adjacent land-use impacts on Uhuru Highway section of A104. A104 forms the northern border of the project site; Secondary traffic impact on Thika Road (A2)	To be determined Very important Significant influence
Kenya Urban Roads Authority	Impact on major urban roads bordering or in the proximity of the project site namely Haile Selassie, Enterprise Road, Ladhies Road and Tom Mboya Street.	To be determined Very important Significant influence
Kenya Civil Aviation Authority	Development control in accordance with International Civil Aviation Organization (ICAO) requirements for land uses in the vicinity of aerodromes, specifically Jomo Kenyatta International Airport, Wilson Airport and Moi Air Base.	Unknown but to be determined Critical Very influential
Kenya Airports Authority	Development control in accordance with International Civil Aviation Organization (ICAO) requirements for land uses in the vicinity of aerodromes specifically Jomo Kenyatta International Airport and Wilson Airport.	Unknown but to be determined Very important Significant influence
Kenya Defense Forces	Development control in accordance with International Civil Aviation Organization (ICAO) requirements for land uses in the vicinity of aerodromes, specifically Moi Air Base.  Engagement may be delegated to the Moi Airbase, Base Commander.	Unknown but to be determined Critical Significant influence
Service Providers including Kenya Power and Lighting Company, Nairobi Water and Sewerage Services Mobile providers e.g. Safaricom, Jamii Telkom, Airtel, Telkom etc.	Provision of services to the planning areas and relevant to determination of plans on laying of enabling infrastructure within the planning area.	Positive Moderate importance Moderate influence
NAMATA	The project aims to Promote sustainable integrated public transport strategy by redevelopment of the site which will be the main hub of commuter rail and MRT lines necessary in the improvement of traffic congestion in the CBD which is of importance to NAMATA as the authority mandated with addressing challenges in the transport sector in the metropolitan areas	Unknown but to be determined Critical Significant influence
National Transport and Safety Authority (NTSA)	The safety measures put in place during the construction of the commuter rail and MRT lines with regards to the general public and vulnerable groups such as children, women disabled, the elderly when interacting with the various transport modes.	Unknown but to be determined Very important Significant influence
Other regulatory Agencies namely: National NEMA, WRA, AWSB, National Museums of Kenya (NMK)	Regulation / permitting and authorization in accordance with their mandate over natural and socio-economic resources of relevance to the project.	Neutral Very important Significant influence

Stakeholder	Interest at stake in relation to the project	Effect of project interest, Importance of Success & Degree of influence
National Land, NLC, KNHRC, ERC		
General population	This includes the residents and land users in the project's immediate zone of influence (to be determined during the study) as well as the residents of Nairobi County in particular, as well as the Kenyan population in general. Considering the position taken by Nairobi County in the Country and in the region, individuals in the country and in the diaspora may also have an interest in the project proposals and its implementation.	All Unknown at this level but to be reviewed in future reiterations
Civil society organizations	These organizations will be mapped and included in the analysis in an on-going process. Civil societies that have had an interest in urban development in the area in the past include resident associations, business associations, transportation associations (e.g. public transport provider associations), professional associations, organizations with interest in advocacy for social development issues affecting the city etc.	All Unknown at this level but to be reviewed in future reiterations
Academia	Can facilitate the availability of local human capacity to support the re-development and implementation of the Railway Station, through provision of and investment in professional and technical education programs of relevance to the project. Can also facilitate generation and compilation of information and data of relevance to the study development and implementation phases of the project by conduct of research programs that are of relevance to the project.	Positive Critical Significant influence
Business community	The currently undefined corporations, companies and individuals with an interest in investment and any other type of uses for the future development within the proposed planning site.	Positive Critical Significant influence
Elected Leaders	Members of County Assembly Members of Parliament (Including Nairobi County Women's Representative) Senator, Nairobi County	All Unknown at this level but to be reviewed in future reiterations
Ministry of, Transport Infrastructure Housing and Urban Development (MoTIH&UD)  State Department for Transport	They are the Ministry in charge of transportation systems in Kenya and this Project is supposed to be multimodal Railway Station. It is in the institution's interest that a multi-modal railway station is developed to promote development of sustainable, integrated and efficient transport systems for Nairobi County. Considering the played by Nairobi as an entry gateway into the country (Air based travel) and a strategic location for transit through the country (road and railway), a more efficient, integrated and multi-modal Nairobi Railway Station is a key facet to improvement in the Transport systems in Kenya as a whole.  The Ministry is expected to have a keen interest in the development of the station in line with the vision and objectives of the Nairobi Metropolitan Master Plan	Positive Critical Very influential

Stakeholder	Interest at stake in relation to the project	Effect of project interest, Importance of Success & Degree of influence
Ministry of, Transport Infrastructure Housing and Urban Development (MoTIH&UD)  State Department for Housing and Urban Development	The Ministry is in charge of provision and regulation of housing standards in the country. As a regulator, the Ministry is expected to be non-partisan to the various interests of the developers and final consumers of the proposed housing, so long as the developer's objectives and visions do not infringe on the final consumers' rights and needs with regard to housing standards.  The current site is a brown site with housing facilities including low income housing for students of the higher education facilities within the greater CDB area. Consideration for inclusivity of the low-income bracket (specifically the one-bedroom units for students) has been raised by the stakeholder representatives in previous engagement on the project. Affordable housing and affordable health care will be of interest to this state department as they are key in the current Government's key focus over the next five years under the big 4 agenda by President Uhuru Kenyatta.	Positive Critical Significant influence
Nairobi City County Government  Physical and Planning Department	The KR Nairobi City Master Plan is a critical component to the expansion of the Nairobi CBD as prescribed in the Nairobi City Integrated Urban Development Master Plan (NIUPLAN). It is one of the projects that was integrated into NIUPLAN as required by Articles 36 to 42 of the Urban Areas and Cities Act and Article 107 of the County Government Act. The development of the Nairobi Railway Station can therefore be considered as a very important aspect to the Nairobi City County Government's mandate and responsibility to the citizens of Nairobi County.	Positive Critical Significant influence
Nairobi City County Government  Physical and Planning Department	The County wide blue-print for development of environmental management plans, valuation rolls, social infrastructure, transportation, service delivery (water, electricity, health, telecommunications, solid waste management), GIS system for the City as well as disaster preparedness and response for the city as described in Article 36 (d) of the Urban Areas and Cities Act was based on NIUPLAN. In the interest of the County Government's implementation of its mandate, observance of the County standards in any of the above aspects triggered in this master plan is of high importance to this institutional stakeholder.  It is in the County Government's interest that a multi-modal railway station is developed to promote development of sustainable, integrated and efficient transport systems for Nairobi County.  The County government is keen to have land use and spatial plans that follow the County Government's vision for Nairobi's expanded CBD. They are therefore expected to be non-partisan to the various interests of the developers and final consumers of the proposed land uses, so long as the developer's objectives and vision do not infringe on the final consumers' rights and needs.	Positive Critical Significant influence   Physical and Planning Department- Neutral Critical Very Influential
Kenya Railways Staff Retirement Benefit Scheme	The Kenya Railways Staff Retirement Benefit Scheme was formed in 2008. It has a portfolio of property-based assets to fund the scheme. These properties were transferred to the scheme from KR.	To be determined Very important Significant influence

Stakeholder	Interest at stake in relation to the project	Effect of project interest, Importance of Success & Degree of influence
	Some residential properties with tenants paying rent to the Scheme are located within the targeted planning area.	
Railway Police	Railway Police have offices within the targeted planning area.	To be determined Very important Significant influence
Residents within the planning area	Some residential properties with tenants paying rent to the Scheme are located within the targeted planning area. The representatives engaged to date are very keen on "meaningful engagement" for a win-win situation.	To be determined Very important Significant influence
Immediate neighbors to the planning site	Land uses in the immediate neighborhood of the planning area include low income residential units, retail and wholesale markets (Muthurwa and Wakulima Markets), education facilities, government and private sector offices for the services sector (e.g. banking, telecommunication, insurance), hotels and restaurants, facilities /monuments of recreation and cultural (heritage) value. Possible concerns over relocation and interruption of business and commercial activities. From the stakeholder engagement conducted to-date, the main concern of this group was about need for change in land use and whether their land will be bought or acquired under compulsory acquisition.	To be determined Very important Significant influence
Potential investors and tenants	The currently undefined institutions, corporations, companies and individuals with an interest in investment and any other type of uses for the future development within the proposed planning site.	Positive Critical Significant influence
Development partners World Bank, JICA European Investment Bank (EIB) African Development Bank (AfDB), UN-HABITAT	To be determined in relation to projects they are financing that have a direct or indirect impact on the project. Reference was made to the Inception Report findings on analysis of other projects in the vicinity of, or within the proposed planning area.	Positive Critical Very influential
Kenya National Highway Authority	Traffic and adjacent land-use impacts on Uhuru Highway section of A104. A104 forms the northern border of the project site; Secondary traffic impact on Thika Road (A2)	To be determined Very important Significant influence
Kenya Urban Roads Authority	Impact on major urban roads bordering or in the proximity of the project site namely Haile Selassie, Enterprise Road, Ladhies Road and Tom Mboya Street.	To be determined Very important Significant influence
Kenya Civil Aviation Authority	Development control in accordance with International Civil Aviation Organization (ICAO) requirements for land uses in the vicinity of aerodromes, specifically Jomo Kenyatta International Airport, Wilson Airport and Moi Air Base.	Unknown but to be determined Critical Very influential
Kenya Airports Authority	Development control in accordance with International Civil Aviation Organization (ICAO) requirements for land uses in the vicinity of aerodromes specifically Jomo Kenyatta International Airport and Wilson Airport.	Unknown but to be determined Very important Significant influence
Kenya Defense Forces	Development control in accordance with International Civil Aviation Organization (ICAO) requirements for land uses in the vicinity of aerodromes, specifically Moi Air Base.	Unknown but to be determined Critical Significant influence

Stakeholder	Interest at stake in relation to the project	Effect of project interest, Importance of Success & Degree of influence
	Engagement may be delegated to the Moi Airbase, Base Commander.	
Service Providers including Kenya Power and Lighting Company, Nairobi Water and Sewerage Services Mobile providers e.g. Safaricom, Jamii Telkom, Airtel, Telkom etc.	Provision of services to the planning areas and relevant to determination of plans on laying of enabling infrastructure within the planning area.	Positive Moderate importance Moderate influence
NAMATA	The project aims to Promote sustainable integrated public transport strategy by redevelopment of the site which will be the main hub of commuter rail and MRT lines necessary in the improvement of traffic congestion in the CBD which is of importance to NAMATA as the authority mandated with addressing challenges in the transport sector in the metropolitan areas	Unknown but to be determined Critical Significant influence
National Transport and Safety Authority (NTSA)	The safety measures put in place during the construction of the commuter rail and MRT lines with regards to the general public and vulnerable groups such as children, women disabled, the elderly when interacting with the various transport modes.	Unknown but to be determined Very important Significant influence
Other regulatory Agencies namely: National NEMA, WRA, AWSB, National Museums of Kenya (NMK) National Land, NLC, KNHRC, ERC	Regulation / permitting and authorization in accordance with their mandate over natural and socio-economic resources of relevance to the project.	Neutral Very important Significant influence
General population	This includes the residents and land users in the project's immediate zone of influence (to be determined during the study) as well as the residents of Nairobi County in particular, as well as the Kenyan population in general. Considering the position taken by Nairobi County in the Country and in the region, individuals in the country and in the diaspora may also have an interest in the project proposals and its implementation.	All Unknown at this level but to be reviewed in future reiterations
Civil society organizations	These organizations will be mapped and included in the analysis in an on-going process. Civil societies that have had an interest in urban development in the area in the past include resident associations, business associations, transportation associations (e.g. public transport provider associations), professional associations, organizations with interest in advocacy for social development issues affecting the city etc.	All Unknown at this level but to be reviewed in future reiterations
Academia	Can facilitate the availability of local human capacity to support the re-development and implementation of the Railway Station, through provision of and investment in professional and technical education programs of relevance to the project. Can also facilitate generation and compilation of information and data of relevance to the study development and implementation phases of the project	Positive Critical Significant influence

Stakeholder	Interest at stake in relation to the project	Effect of project interest, Importance of Success & Degree of influence
	by conduct of research programs that are of relevance to the project.	
Business community	The currently undefined corporations, companies and individuals with an interest in investment and any other type of uses for the future development within the proposed planning site.	Positive Critical Significant influence
Elected Leaders	Members of County Assembly Members of Parliament (Including Nairobi County Women’s Representative) Senator, Nairobi County	All Unknown at this level but to be reviewed in future reiterations

From the analysis above, Table 10-2 below presents the focus of engagement with the above stakeholder groups.

**Table 8-20 Focus for Engagement of the Stakeholder Groups**

Satisfy	Influence
Consumer associations Area Residential Associations Neighbors National Assembly World Bank JICA Development partners Neighboring governments Academia including TUK General public Civil society organizations Public services	MoTIH&UD KR NCCG County governments/ local authorities Regulatory agencies including KENHA, KURA, KCAA, KAA, KDF, Ministry of Land & Physical Planning& others Kenya Railways Staff Retirement Benefit Scheme NAMATA Media Investors Private sector Diaspora
Monitor	Inform
All known stakeholder groups	All known stakeholder groups

**Audience Analysis**

Audience analysis in this strategy involves identifying the audience for the project. Audience comprises of the people whom the communication strategy is targeting. As audiences are identified, they are also grouped according to their common characteristics such as interests, age, gender, occupation, and access to different media-print, radio, television, and new media.

For the Railway City, the audience include the general public, the community within The Railway City precincts, neighboring community, various members of the Kenya Railways, the media, and civil society, business community, learning institutions, among others.

It is important to have in mind the message target for the following reasons:

- Messages need to be tailored to ensure that they are appropriate and relevant to the needs of the different audiences; and
- Different audiences require different tactics and different communication tools to ensure effective communication.

The target audience comprises of the primary group of people that the communication activities will be directed to. With a good understanding of the target group, the communication activities can be properly diffused and achieve intended outcomes. The following section identifies the audience that will be targeted by in the project process.

### 1) Primary Audience

These are the people who are directly affected by the development of The Railway City. They are also the groups that are critical to the successful realisation of the goals of the project. They need to be regularly informed about the various activities that the NRC is carrying out and are critical for any successful accomplishment of NRC goals. The primary audience comprises of the following:

#### a. Nairobi Metropolitan Area Residents / General Population

The city is made up of the people involved in different activities that constitute everyday life. The everyday life involves diverse activities, ranging from seeking of basic wants which lead to other secondary needs. The services and amenities are about the residents. As such, it is important for the general public (in Nairobi and beyond) to be aware of the plans and how these plans relate to them.

On one level, the general public can be viewed as a single target group in terms of the generic messages emanating from the project. At the second level, it is important to break down the groups into smaller units given the varying proximities to the project. For the example, residents that live within a kilometer or two radius of the proposed Railway City are likely to be more frequent users of the various services it will provide.

#### b. Residents and Land Users within the Planning Area

As earlier identified, there is an immediate residential area of Landi Mawe which is an estate housing of various types of land users ranging from students, traders to low-income earners. It has land uses surrounding estate made of residential area, transportation-both vehicular roads and footpaths in the estate; and commercial land use which range from the informal commercial stalls all over the estate to the very few formal commercial activities located within the estate. Others include representatives of the business entities here, and also students from Technical University of Kenya who are accommodated in the area. Their interests, aspirations and concerns need to be considered during the planning process.

#### c. Private Land Owners

These comprise of those holding leases given by the NLC and the Ministry of Lands. They have a long-standing ownership and long-term expectations with the planning area. Their interests, concerns and aspirations have to also be considered during the planning process.

#### d. The Kenya Railways

The Kenya Railways is a giant organization that has various players. These range from the Board, Management and workers, former workers, those in the various facilities and installations within Kenya Railways, and related institutions. It is extremely important to have buy-in from the Kenya Railways publics from the beginning. The project must move beyond decision-making organs to bring everyone on board through basic provision of information about the project.

#### e. Kenya Railways Retirement Benefit Scheme

These comprise of KR former workers who came together in 2008 to form The Kenya Railways Staff Retirement Benefit Scheme (KRSRBS). It has a portfolio of property-based assets to fund the scheme. These properties were transferred to the scheme from KR. Some residential properties with tenants paying rent to the Scheme are located within the targeted planning area. These pensioners still retain interests with the planning area and would therefore be vital to capture their input concerning the planning area.

#### f. KR NCCG and MoTIH&UD Staff

There will be need to secure buy-in from the internal stakeholders comprising of staff and management organs within the three key stakeholders MoTIH&UD, KR and NCCG. Once sufficiently briefed on the project and their inputs sort they then are converted into brand ambassadors for the project.

#### g. Media

Media is arguably the most important institution when it comes to providing information, which in the end shapes various public perceptions, including about the direction of the metro.

Media serves as the primary information outlet for most audiences. Apart from being a platform where the information is transmitted, media shapes public opinion and drives the discourse. As a result, it is critical that the PIT engage media, as the first line audience to ensure that the information that finally ends up in the public domain is current, factual and reliable. At the same time, the project process needs a solid media engagement strategy embedded therein to mitigate recurrence of information that may negatively impact on the project.

#### h. Business Community

The business community is an important part of primary target audience for the NRC. Business community would comprise of corporations, companies and individuals with an interest in investment and other uses for the future development within the proposed planning area.

Business community provides, among others, investments, suggested programs and various ideas that would be part of the city. They also form a critical group that would be of interest in the final uptake of the NRC development. The business community can be differentiated based on size such as corporations and SMEs, sectors of work, their strategic inputs/possible partnerships like investors, developers, tenants, their communication needs, and the mode of engagement, among others. Possible approaches include open forums, meetings, workshops use of print and broadcast media where wide reach is intended.

#### i. Regulatory Bodies

There are a number of regulatory bodies including National Transport and Safety Authority (NTSA), National Environment Management Authority (NEMA), Water Resources Authority (WRA), Athi Water Services Board (AWSB), National Museums of Kenya (NMK), National Land Commission (NLC), Kenya National Human Rights Commission (KNHRC), and Energy Regulatory Commission that need to be engaged. These are bodies tasked with various regulatory mandates on various aspects touching on the planning area including natural and socio-economic resources of relevance to the project. Seeking their consensus and approval on the project would be critical to the smooth delivery of the planning process, as well as implementation.

#### j. Security Organs and Experts

Safety and security are an important component of any development. In recent times, security in the city settings and other places with higher concentration has become critical. Beyond ensuring protection of individuals and property, other matters touching on National Security requires a different thinking. This including incorporating safety and security measures in the design process and putting together all relevant measures. To that, the relevant actors must be engaged and aspects of disaster preparedness considered in the planning process. At the same time, such efforts will have to be communicated to other audiences identified and specifically tasked with interior security.

#### k. Academic Institutions

The Technical University of Kenya who neighbors the land and the Railway Training Institute are two important institutions that need to be engaged. Beyond the obvious involvement due to their proximity and activities related in the space, they also provide possibilities for various

forms of collaboration moving forward, including research, provision of human resources as well as encouraging them to provide training that would be relevant to the realization of the NRC.

## 2) Secondary Audience

Secondary audience refers to the people that directly influence the primary audience. Secondary audience in the work of NRC include the governmental and public agencies and the civil society organizations

### a. Government and Public Agencies

The NRC project brings together three public bodies. Right cooperation with other government and public bodies is important for realizations of any goal. Different types of communication will therefore be required to improve such engagement. The various arms of government such as the executive and the legislature for the proper buy in.

At the devolved level, it is important to engage with other counties, starting from those that fall in the metro area, as well as those beyond on areas of mutual interests. Appropriate methods of engagement with this audience include using forums and sharing of informational materials to complement activities under stakeholders' engagement.

### b. Civil Society Organizations

Civil society comprises a large proportion of non-state actors in Kenya and includes community-based organizations, non-governmental organizations and faith-based organizations. Their presence is widespread with their activities extending to all levels. The civil society has a significant influence on the general public and tend to work across a broad spectrum of issues. Some are directly involved in matters of people's livelihoods, safety and security, governance and justice related activities, all which may touch on NRCs processes and the future of the city.

Like the media, the members of civil society are critical in shaping public opinion. They can also be used to pass important messages due to their direct contact with the public. Churches and mosques for example can be used to pass informational and educational messages.

The civil society can be reached using different channels and tactics including use of print and electronic media, interpersonal communication through meetings, stakeholder engagement forums, among others. The civil society is also critical in community mobilization activities.

## 3) Tertiary Audience

Tertiary audience will comprise of the players that indirectly influence the primary audience and secondary audiences. Although they may not directly touch with the audience, their activities are critical in influencing the communication outcomes of the NRC. NRC's tertiary audience include trade unions and other education institutions outside those directly involved. Given the nature of these audiences, direct engagement is likely to be more productive as opposed to mediated communication. The communication goals associated with the tertiary audience are also more specific hence an even more targeted approach is required.

### Deductions from the Stakeholder and Audience Analysis

- That highly inclusive stakeholder engagement forums are extremely key to the urban planning process to bring it to its success;
- During the project planning process, it will be important to demonstrate public support and identify risks in order to plan accordingly for mitigation of those risks;
- These stakeholder engagement forums will be critical in determining the specific interests of the various stakeholders with the aim of including as much as is practicable the issues raised;

- It will also be critical to develop a greater sense of 'public ownership' over the changes, legitimise public interests, and enhance a sense of community and collective vision for the Nairobi Railway City;
- Consultations will help improve the fit between design and needs of the public;
- Consultations will also allow for more effective use of resources, offer time or cost savings during the decision-making process, by encouraging increased public support for positive inclusive change thereby providing informed direction for decision-making;
- Partners must be involved in key decision-making milestones of the project. If for any reason they are not available during the set dates of stakeholder engagement forums, efforts will be made to reach them through alternative means;
- Engaging development partners will be important for the project to align itself to the objectives and policies of these organisations so that if in future they are approached for actualisation of The Railway City the conversations will have been entrenched;
- For the project to have practical outreach of investor groups, documenting actual organisations and contact persons to be involved during the planning stage and implementation stage will be important;
- The political class being opinion leaders of the general public, their project buy-in will be a good indicator of support during the planning and implementation of the project. Deliberate steps will be taken to engage them during the planning process.
- Attention will be paid to stakeholder views and submissions to ensure and demonstrate where applicable, integration of their recommendations/expectations/comments/concerns/needs in the urban planning process;
- The importance of internal communications cannot be overstated. With a number of organisations and partners involved in the implementation of the project, aligning messages, sharing updates, and disseminating information is important. This should be led by PIT, and cascaded through project sub-committees so that everyone within this structure speaks with one voice. Further the Railway City story should be known and owned by all those involved in the urban planning process and implementation for greater understanding of their role within the project. Capacity should be built within the PIT to be able to effectively tell The Railway City story.

## 8.6.2 Brand Development

### Background

The main objective of brand development will be to:

#### 1) To create a strong brand identity and consistent experience for audiences across all touch points.

This strategy will provide a roadmap to build and maintain a strong corporate identity for consistent and coordinated use throughout the project and implementing organization. Tied to the visual identity, is the consistent experience that the NRC delivers to its target audience every day and opportunities for continuous improvement.

A good brand requires not only a strong culture, but also a clear strategy to support it. The brand strategy can be broken into three areas of focus:

- Leveraging strengths and opportunity;
- Building relationships with partners and stakeholders because they are key to success;
- Continuous performance improvement by striving to integrate innovation in all aspects of service delivery.

The brand development for Railway City is expected to be undertaken by the entity that will implement The Railway City Master Plan.

### Brand Identity

The Railway City logo will be an important element in creating a strong identity. The approved and correct version of the logo should be applied consistently and variations eliminated or minimized. Collateral on all materials, project application, vehicles, outdoor materials and all Information, Education and Communication materials will reflect the spirit and colors of the brand.

### Touch Points

Brand touch points are the direct contact areas that a customer experiences when they interact with a product or service. These contact points must be managed to create a positive image for NRC. They include:

- Project offices;
- Project planning area;
- Brochures and marketing materials including posters, giveaways, fliers, letters, factsheets;
- Venue branding during corporate and outreach events;
- Videos;
- PowerPoint presentations;
- Uniforms;
- Digital screens and signage;
- Office stationery;
- Staff who interact with customers e.g. reception personnel, telephone operators, officers, managers etc.
- Reports;
- Briefing materials;

- Internal and external collateral e.g. service forms, complaints forms, leave forms, receipts, requisition forms, workflows, work orders;
- Website and other online executions e.g. YouTube, Twitter, Facebook;
- Media engagements;
- Advertisements in newspapers, radio;
- Television;
- Exhibitions and trade fairs.

Each touch point should reinforce key messages and should be gauged regularly through observation and surveys to reveal the sort of experiences stakeholders and the public are having with NRC and also check for internal compliance.

### **Brand Promise**

Also known as a tagline or strapline, the brand promise is the sum total of what people expect from NRC. It is the one line that captures what to expect in terms of experiences, and information from the Project.

The proposed brand promise is Sustainable, Integrated, Iconic City for All. This tagline has the following elements:

- Captures people's imagination;
- Communicates inclusivity;
- Signals change;
- Signifies posterity;
- It is ambitious;
- It is a promise and an aspiration;
- It's inspirational;
- It is a message that encapsulates NRC's intention.

To build the brand experience, the following should be done:

- Showcase its value to the society;
- Responsiveness and prompt communication;
- Prompt resolution of complaints;
- Offering service with excellence
- Offering technical advice where required.

### **Brand manual**

A comprehensive brand identity manual should be developed to give specific direction on application of the logo and colors across all brand executions.

### 8.6.3 Project Communication

#### Background

In order for the NRC to successfully accomplish the urban planning process, it is important to communicate effectively with the different external audiences and stakeholders. First, external communication is critical in establishing a clear understanding of the process.

As a new project that is aimed at addressing challenges that affect the city of Nairobi, it is important that the public, stakeholders, media and other audiences have valid, accurate and authoritative information relating to the project. As a public inclined project, it is imperative that the project builds a sustainable brand, sending the right messages to the relevant audience using appropriate communication channels.

The planning process is critical to the future of Nairobi Railway City and overall improvement of the metropolitan area. In the initial process, it is important to ensure that a wide range of players are involved and relevant coalitions built to secure buy-in. When a good foundation is laid, the NRC will be able to fulfil its desired ends with strong support and involvement from all actors and stakeholders.

Building the Railway City requires collaboration from the implementing body itself as well as an enabling environment that can be achieved by positive participation of the public, state actors, non-state actors, regulators, among others. Smooth processes where all work together, will help to create good understanding from the beginning and contribute to the achievements of the project goals.

#### Importance of Project Communication

While communication is inevitable in any organizational setting, a number of specific reasons underline its importance for the project. These are discussed below:

- Building a desired future city with multimodal transportation, proper social amenities, safe and secure, etc. calls for broad involvement by different players for success. Communication is an important component for this involvement.
- Development of the Railway City calls for careful implementation to ensure that the overall goals are achieved.
- The PIT and other key players have narrow timeframes as they move towards realisation of The Railway City and metro plans. There are high expectations across the board on what needs to be done and achieved. For the Project to rise up to its task, it has to get the processes right and make the case to all parties.
- The PIT must reach out to all players, work with those who are already involved as well as building new platforms that will support the current and future processes and projects.
- The PIT needs to communicate the aspiration, the value proposition and expected outcome in order to build understanding, confidence and improve perceptions among all the players. This can also be useful in mobilizing resources needed to move to the next steps.
- There is a need to clearly articulate and convince the public, leaders and stakeholders to amplify their role in building a metro area that serves all as part of sustainable development agenda.

#### Guiding Principles for Railway City Communication

The guiding principles are a set of rules that will guide the implementation of NRC communication strategy. These include:

- The communication shall be in harmony with the MoTIH&UD's (including NaMSIP), KR and NCCG core values;
- All the key players support the Communication Strategy as a process-wide tool;
- All stakeholders and the public at large are considered in the implementation of communication;
- The public good and the different needs occasioned by economic realities, the people's need, cultural diversity, multilingualism, regional realities and historical experiences will be considered in communications planning and delivery, which should be people-sensitive;
- In the spirit of transparency and participation, different actors' involvement, support and collaboration will be sought in communication activities;
- The PIT will strive for the highest quality of communication including timeliness, responsiveness, relevance, editorial standards, and accessibility for the audience;
- PIT will maximize its communications, community mobilization, advocacy and influence by building strategic partnerships;
- PIT will strive to be accessible, responsive and promote information and knowledge sharing for effective communication;
- PIT will embrace technology, information and communication methods and advances to enhance communication.

### **Approach to Railway City Communication**

The external communication for NRC will entail complex and broad range of activities with the aim of reaching multiple audiences, stakeholders and community. This calls for use of different approaches to ensure that the varied needs are considered and fulfilled. It is therefore proposed that use of the Communication tools (including branding) and stakeholders Engagement and Community Mobilization activities as defined in the subsequent sections.

### **Key Messages**

The key messages in the communication strategy should be geared towards addressing the communication gaps by providing pertinent information; promoting greater understanding about the functions of the NRC among the target audience, addressing the existing misconceptions and misperceptions about the Project and building relationships with different partners and stakeholders in the realization of the city. Some of the key messages include:

- The benefits of the project;
- Communicate the project planning process;
- Nairobi as a hub, therefore the project's prime location value;
- Emphasize its increased economic value to the capital as a strategic business hub within East Africa;
- Demonstrate enhanced competitiveness of the city in general;
- Emphasize its strategic and intrinsic value to tourism;
- The strategic location of the Nairobi station area positions it perfectly to be an iconic nerve center for the Nairobi Multimodal Transport System with a world class new central station incorporating mixed use commercial developments, hotels and intermodal facilities;
- The project's new office/commercial space would reduce pressure on prices in property/ rental markets;
- The proposed linkages across the existing rail tracks will increase access to the current CBD and promote the continuation of the city fabric towards the south;

- New ways of integrating Kenyan culture and heritage into the plans for the project site will also be proposed;
- Improved mobility of city dwellers and business people;
- Increase in both commercial and social space within Nairobi CBD, lowering of commercial office space rent within CBD;
- De-congestion of CBD;
- Rich land value that will stimulate positive investment;
- Preservation of the rich historical nature of the railways for passage to future generations;
- Demonstrating an inclusive spirit and seriousness to incorporating the views of the various stakeholders;
- Demonstrate improved 'Quality of Life' with the adoption of the new NRC redevelopment concept;

Tell stories that capitalize on heritage and provide a historical context to NRC proposed improvements.

### **Communication Channels and Tactics**

The information needs in terms of messages that require to be passed as well as the audiences that must be reached will primarily determine the communication channels. In order to reach the targeted audiences and deliver the intended messages, the channels outlined below will be applied.

#### **1) Interpersonal Communication**

##### **a. Public Fora**

Public workshops will be used to reach the public at the stakeholder group while small groups meetings will be held to reach the public within and immediately surrounding the project area, at community level. These will require working in concert with the different people at the local level including opinion leaders, religious leaders, local administrators, teachers, and business people etc. to organize and facilitate forums. Public fora allow for direct contact and offer an open space to provide varied views and receive information.

##### **b. Events and Hospitality**

Events hosted by railway city project team provide a forum for delivering messages through speeches, round table discussions, Q&A sessions, individual discussions and conversations. A range of activities will be applied during public launches and business breakfasts.

##### **c. Meetings and Individual Contact**

These are arranged meetings that would allow for general discussions, introductory meetings and follow up discussions with members of special groups on behalf of their general members.

#### **2) Broadcast Media**

##### **a. Television**

Television is one of the most widely used platforms especially in urban set up like Nairobi. It reaches a large audience instantaneously and can be used to provide intended information from NRC through general information, news and even entertainment. Important information can be passed through spots and PSAs. It is also possible to send more complex messages through inserts in dramas, talk shows among others. Due to its relatively high costs, appearance in different shows would be cost effective. Television will provide interactivity and opportunities to engage the audience in discussions. For this project, use of television is

envisaged in airing of the documentary and utilizing different business talk show TV programs to articulate the vision of the NRC.

b. Radio

Overall, radio is the most powerful mass medium in Kenya and has the highest reach allowing audiences to simultaneously obtain information. One upside of the radio in Kenya is that it is highly differentiated and can allow for specific targeting of the required communication. For messaging that is targeted for Nairobi and the environs, there are many choices of the radio platform that NRC can go for depending on the audience. Communication can be done through general information, news, spots, inserts or specific program. Though not as expensive as TV, radio in Kenya is also costly while the high differentiation of audience can make it necessary to use different outlets to reach the target audience making the overall costs high. Radio does provide high degree of interactivity and participation especially through studio appearances. In using radio, language reach, and specific tactics to be used will need to be considered. The NRC PIT will employ public relations tactics to utilize various radio talk show programming available to reach as many audiences and ensure as many people as possible are aware of the project. This also provides for a good platform to take in feedback from the audiences.

### 3) Print Media

The Railway City communication team will use the following set of print media to communicate different messages:

a. Newspapers

Newspapers in Kenya remain a valuable communication channel in reaching the literate audience. Leading newspapers with high circulation allow for an almost national reach. Newspapers are effective in providing news and specific technical information. They can also be read past circulation date. Newspapers will be useful in communicating wide-ranging information from The Railway City about the process and the future plans.

At the planning stage, newspapers will be used to pass on project information by employing the use of public notices and advertisers features.

b. Newsletters

Use of mass media such as newspaper may not reach audience that comprise of small or specialized groups. In Nairobi, there are numerous periodical magazines that have different content. These include business, construction, lifestyle, among others. Specific messages can be targeted to relevant magazines.

Newsletters on the other hand are a shorter publication of up to 12 pages that can be produced within a short period (weekly or bi-weekly) to capture what is happening with the project. Newsletters are more cost friendly and can be done in-house. The project will publish Information, Education and Communication (IEC) materials to create awareness and communicate project progress. These will be distributed in various stakeholder forums, different government offices, agencies and websites.

c. Posters

Posters present an opportunity for a good reach, depending on the numbers disseminated and the placement. For example, information that is targeted to the members of a specific community or group can be strategically placed in different location.

Posters are suitable for messages that are short and focused. They can also be specifically designed to target the intended audience. Posters can be used to target both literate and low literate population.

The Railway City will apply the use of billboards, streetlight signage and prefabricated signs within and in close proximity to the site to disseminate this short and focused information.

#### 4) Web Based Media

While most mass media are available today via use of websites, the following web-based media will be utilized or specifically developed for use by the project team.

##### a. Website

The project website can serve as an important tool for communicating with an unlimited audience. The Railway City website will be used to provide wide range of information including different announcements, project newsletter and web magazine, providing pertinent information on the project's activities, among many functions.

The website will also be used as depository for important information on the project that will be accessible to all audiences. During the initial stages of the planning process, the project will utilize all three key stakeholder websites to pass important information on the project. However, after the determination of the key master plan components is concluded, The Railway City website will be developed and launched for use even after the planning process is concluded.

##### b. Social Media

Social Media comprises of web-based and mobile technologies used in communication as an interactive dialogue. Social media includes tools like internet forums, internet sites, weblogs, social blogs, micro blogging, wikis, podcasts, photographs or pictures, and video. The increase in internet use as supported by the wide reach and adoption of mobile telephones in Kenya has resulted in increased use of social media. Popular applications used by Kenyans today include Facebook, Twitter, YouTube, Skype and Google+. These are accessible through computers and smart devices for a large segment, especially the youthful population. There is also a rise in the use of mobile-based applications such as WhatsApp and Telegram. In Kenya, Facebook, Twitter and YouTube are popularly used.

This strategy recommends use of Facebook, Twitter and YouTube to engage audiences. A Facebook Page will allow for posting of information and interacting with different audiences. Twitter also allows for short targeted messaging, discussions as well as interaction and is a highly effective tool for immediate feedback.

A YouTube Channel can also be used to post videos from different sources. This can be custom made to pass different information, scooped from different media and other sources as long they resonate with the subject at hand. This strategy will also present social media audiences with opportunity to vote for various proposed designs of The Railway City.

While social media provides a great opportunity to communicate, its use requires careful planning and proper moderation to maximize information exchange and avoid improper use. A social media team will be set up to manage information flow and ensure relevance.

##### c. Slides

Slides are effective communication tools in interactive situation, discussion groups etc. Slides can come in handy for project-based work as they allow very specific information to be packaged and presented multiple times. However, they are not suitable among low literate population, rural and remote settings. Slides are useful for general and specific topics for small-scale reach. They can be used effectively for focused messaging and advocacy settings. They are highly interactive and inexpensive to produce if there is access to a computer and the related accessories such as a screen and projector. PIT will utilize slides in various stakeholder forums.

##### d. Email

Like in internal communication, emails come in handy in external communication and can be used to quickly send information for specific audience. These can be used to communicate

with key stakeholders outside the Project and to share information with a small group of people. The PIT will set up an internal email group to ease on communication and utilize this platform to reach various stakeholders.

e. List serves

A list serves, an application that distributes email messages to subscribers on the list, can also be used to communicate with a specified group of people. List serves can be used to send important information outside the Project quickly and efficiently.

### **Stakeholder Mobilization**

Organizing the public into specific stakeholder groups of common interest is helpful because it will bring together the different realities of the particular group of people. It will also capture the nuances and characteristics of a group making it possible to address any challenges that arise in a sensitive and informed manner.

The process will begin with a dialogue among and with members of the stakeholder groups to determine who, what and how issues will be addressed and provide an avenue for participation in issues that affect their lives.

The stakeholder mobilization process will therefore actively provide for activities aimed at reaching, influencing, enabling, and involving key segments of the stakeholder groups to collectively create an environment that will affect positive behavior and bring about desired change. Such segments in the stakeholder groups will include opinion leaders, influential groups, as well as formal and informal leaders who are part of direct beneficiaries of the desired change. Social mobilization process will also aim at empowerment of local leadership on ideals that are grounded on local concerns and stakeholder capacity for greater sustainability and impact.

An expected key outcome therefore is facilitation of participants to move beyond their interests and differences to meet in equal terms and facilitate a mutually beneficial decision-making process.

The following steps will be undertaken:

#### **1) Step 1 - Analysing the Situation**

The initial step will be to collect the basic information about the project in the context of each stakeholder group. This will provide information on the perceptions around the project, whether there are issues, the possible causes and any on-going efforts to address these issues. Initial outcomes of this process are presented in the stakeholder analysis section of this strategy. This analysis will therefore undergo additional iterations in the coming months and subsequent engagement activities as outlined in the Communication Plan.

Through this, there will be a clear idea of the situation in the stakeholder group and the target population and key resource will be identified. For example, the current situation analysis suggests land uses in the immediate neighborhood of the planning area include low income residential units (e.g. Muthurwa Estate), retail and wholesale and retail markets namely Wakulima Markets and Muthurwa Market, education facilities, government and private sector offices for the services sector (e.g. banking, telecommunication, insurance), hotels and restaurants, facilities /monuments of recreation and cultural (heritage) value.

From these groups, there may be possible concerns over implications of change of land use to their livelihoods and residences, relocation and interruption of business and commercial activities.

**2) Step 2- Establishing Stakeholder Mobilisation Group**

The second step is establishing a group that can help to influence stakeholder groups. This can comprise of a group of people that The Railway City can work with at the stakeholder / community level. Within these groups, care will be taken to involve opinion leaders, nominated or selected stakeholder representatives as well as representatives of vulnerable sub-groups within the stakeholder group.

**3) Step 3- Identifying Partners**

There are various partners in the community / stakeholder group who are likely to be working independently to achieve the same goals that The Railway City is trying to achieve. Identifying these partners through mapping exercise can bring synergies, increased involvement and effective utilization of available resources. Relevant partners may include governmental institutions, faith-based institutions, CBOs, NGOs, among others.

**4) Step 4- Designing Strategies, Objectives and Selecting Target Groups**

To achieve the envisaged results at the community level, the project will come up with clear objectives that can be later assessed to establish the impact on the community/stakeholder group. The PIT will then mobilise the identified community/stakeholders and other external partners to design strategies that will address identified issues.

**5) Step 5- Capacity Building**

A sensitization and capacity building program will be developed with the participation of The Railway City team as well as any willing stakeholder mobilization partners as identified in Step 3.

**6) Step 6 Developing Action Plans and Timelines**

For each key issue identified and packaged in Steps 1 to 4, an action plan will be drawn to connect the stakeholder mobilization and engagement plan with The Railway City planning program and where necessary / possible, railway city implementation milestones. The roles of the partners will be clearly articulated and communicated in the Action Plans.

Finally, a monitoring and evaluation action plan will be drawn with the full participation of stakeholder representatives and partners, to enable the project to check timely execution of the action plan as well as to measure the effectiveness of the various actions to be undertaken.

**Civic Education and Capacity Building**

Training and capacity building are an important component of The Railway City as in a project of this kind, the process presents daily learning. The communication process and the strategy will only be successful if there is enough capacity among the various stakeholders to input into the envisaged programs and plans.

As such, sensitization will be undertaken at the commencement of every stakeholder engagement program or event. The key information to be disseminated will articulate the thinking behind the particular project component or milestone so as to enable the participants understand the basis and usefulness of their input into the project decision making. IEC materials will also be developed and packaged with this in mind. A lot of emphasis will therefore be put on packaging the information in a form and manner that can be easily read / understood by the target audience.

This engagement process will also be used a platform to continuously note the existing communication gaps or communication need areas and provide mechanisms for future capacity building and sensitization programs for future consensus building on The Railway City programs.

The PIT will also be sensitized on the effective use of information tools and tactics, handling the media (including interviews with reporters), making major announcements, use of social media, and other identified areas based on individual needs.

As the communication team must have the human capital to manage the communication and related functions at both strategic and operational level, strategies for building the project's communication functions and to an extent the information systems will also be applied during strategy implementation. The project will also facilitate continuous liaison with the KR, NCCG and MoTIH&UD communication teams.

## Communication Matrix

The Communication Matrix for the planning process of The Railway City is presented in Table 10-4 below.

**Table 8-21 Communication Matrix for the Project**

<b>Objective 1: Encourage an open, enabling and inclusive public engagement in the project from all stakeholders</b>	
<b>Specific Objectives</b>	<ul style="list-style-type: none"> <li>• Mobilize all stakeholders</li> <li>• Provide a space for open and honest dialogue</li> <li>• Listen, capture and document all the concerns of stakeholders</li> <li>• Address the concerns of the stakeholders and communicate them</li> <li>• Communicate the project conception status and forward planning</li> <li>• Provide an environment that allows for advocacy, negotiation, consensus building and grievance management</li> </ul>
<b>Target Audience</b>	All stakeholders including residents, business community, public organizations, Civil Society and media
<b>Tools and Tactics</b>	<ul style="list-style-type: none"> <li>• Open Forums</li> <li>• Meetings</li> <li>• Public Barazas</li> </ul>
<b>Expected Outcomes</b>	<ol style="list-style-type: none"> <li>1. All stakeholders are adequately involved in the processes</li> <li>2. The project has demonstrated an inclusive spirit and seriousness to incorporating the views of all stakeholders</li> <li>3. Stakeholders' fears are captured and addressed</li> <li>4. The project has the necessary support from all stakeholders.</li> </ol>
<b>Objective 2: To create a shared view of Nairobi as the leading hub in East Africa</b>	
<b>Specific Objectives</b>	<ul style="list-style-type: none"> <li>• To demonstrate Nairobi's competitive advantage as a global city</li> <li>• To affirm Nairobi's technological and infrastructural advantage</li> <li>• To share the project's role in driving Nairobi forward</li> </ul>
<b>Target Audience</b>	Business Community, Investors, Development Partners, Media, National Government, County Government, Academic institutions, security and safety organs, Regulators
<b>Tools and Tactics</b>	<ul style="list-style-type: none"> <li>• Media activities including radio, television, print media</li> <li>• Meetings and Open forums</li> </ul>
<b>Expected Outcomes</b>	<ol style="list-style-type: none"> <li>1. Increased confidence among relevant stakeholders on the project and metro city at large</li> <li>2. Support for the project and other activities moving forward</li> <li>3. Positive image of the city</li> </ol>
<b>Objective 3: To create awareness of the economic contribution of the project</b>	
<b>Specific Objectives</b>	<ul style="list-style-type: none"> <li>• To demonstrate enhanced competitiveness of the city in general</li> <li>• To increase awareness on the how project's new office/commercial space will reduce pressure on prices in property/rental markets</li> </ul>

	<ul style="list-style-type: none"> <li>To create awareness of how the project will contribute to lowering of office space rents within CBD</li> <li>To stimulate positive investment from investors</li> </ul>
<b>Target Audience</b>	Business community, Investors, National and County Government, Academic Institutions, general public, regulators
<b>Tools and Tactics</b>	<ul style="list-style-type: none"> <li>Media activities including radio, television, print media</li> <li>New media tools</li> <li>Meetings and Open forums</li> </ul>
<b>Expected Outcomes</b>	<ol style="list-style-type: none"> <li>Increased information on the project and city economic viability</li> <li>Positive image of the project's economic viability</li> <li>Increased image of The Railway City as a future social and business space</li> <li>Increased willingness to invest in The Railway City</li> </ol>
<b>Objective 4: To Showcase how the plan will meet the development objectives of the City</b>	
<b>Specific Objectives</b>	<ul style="list-style-type: none"> <li>How linkages across the existing rail tracks will contribute to access to the current CBD and promote the continuation of the city fabric towards the south</li> <li>Communicate improved mobility of city dwellers and business people</li> <li>Communicate how the project will contribute to the de-congestion of CBD</li> </ul>
<b>Target Audience</b>	General public, Business Community, Investors, Development Partners, Media, National Government, County Government, Academic institutions, security and safety organs, Regulators
<b>Tools and Tactics</b>	<ul style="list-style-type: none"> <li>Media activities including radio, television, print media</li> <li>Meetings and Open forums</li> </ul>
<b>Expected Outcomes</b>	<ol style="list-style-type: none"> <li>Increased knowledge on the envisaged system and how it will work</li> <li>Increased awareness on the role of the project in improving Nairobi transport</li> <li>Positive perception on the project's role in decongesting the city.</li> </ol>
<b>Objective 5: Increase awareness of the importance of the project in promoting Kenyan culture and heritage and build a sense of ownership</b>	
<b>Specific Objectives</b>	<ul style="list-style-type: none"> <li>Create awareness on the place of the project in integrating Kenyan culture and heritage</li> <li>Communicate the role of the project in preserving the rich historical nature of the railways for passage to future generations</li> <li>Tell stories that capitalize on heritage and provide a historical context to NRC proposed improvements</li> </ul>
<b>Target Audience</b>	General public, Business Community, Investors, Development Partners, Media, National Government, County Government, Academic institutions, security and safety organs, National museums
<b>Tools and Tactics</b>	<ul style="list-style-type: none"> <li>Media activities including radio, television, print media</li> <li>New media tools</li> <li>Meetings and Open forums</li> </ul>
<b>Expected Outcomes</b>	<ol style="list-style-type: none"> <li>Improved knowledge on the role of the project in promoting Kenyan culture and heritage</li> <li>Increased appreciation of the Railway and its history in Kenyan heritage</li> <li>Improved perception on the role of the project in preserving and driving railway heritage</li> </ol>

## Communication Plan

The Communication Plan is as presented in Table 10-5 below.

**Table 8-22 Communication Plan**

MONTHS	APRIL 2017	MARCH 2018	APRIL	MAY	JUNE	JULY	AUG	SEPT
<b>TASK/ACTIVITY</b>								
Confirmation of TOR, Inception meetings & Levelling expectations								
Preparatory meetings, review of documents and preparation of inception report and work plan								
Inception report Outcome: <b>Inception Report</b>								
Media advertisement of the intention to plan by the Nairobi City County as stipulated in the County Government Act, the Cities and Urban Areas Act and Physical Planning Act Cap 286. Place Newspaper Advert in three major newspapers and Stakeholders websites								
Situation analysis including FGDs and preparation of formative assessment report with implications on communication strategy On the desk study and data gathering Opportunities and Constraints								
Stakeholder Mapping Stakeholder meeting and workshops (4) Create awareness, Visioning, Sensitization and Receive views Convening stakeholders' meetings and workshops to build two-way communication structure: create awareness, visioning, sensitization and receiving views, in close collaboration with the client. Guided selection process/ Civic engagement Review concepts and select preferred option Outcome: <b>4 stakeholder engagement forums</b> <b>Creating awareness and documenting initial stakeholder views</b>								
Prepare draft Communication Strategy incorporating process communication plan and stakeholder engagement strategy Outcome: <b>Draft Communication Strategy</b>								





## Communication Budget

The Communication Budget is as presented in Table 8-23 below.

**Table 8-23 Communication Budget**

Month	Week	Activities	Week	Breakdown of Cash Required	Total Cash Required
	1	<ul style="list-style-type: none"> <li>Development of Billboards and Posters</li> <li>Development of web-based content (For use in social media, websites and web-based newspaper articles)</li> </ul>	1	450,000 - (Billboard Deposit)  Communication Expert – Development of web-based content  Development of print material content	450,000.00  -  1,250,000.00
	2	<ul style="list-style-type: none"> <li>Development of print material content (including IEC Materials)</li> <li>Develop Batch 153 of the promotion materials</li> </ul>	2	200,000 - Training of social media support team & social media team, bloggers, influencers, tweeps & social media monitoring team for 2 separate half days.	200,000.00
	3	<ul style="list-style-type: none"> <li>Launch Social Media Outreach</li> <li>off low key activities for Investor Outreach</li> </ul>	3	Social media assistant  Sponsorship of social media pages for increased reach  Press assistant - outreach	150,000.00  100,000.00  44,800.00
			4	(1/4 * 1,200,000) Video development for use in TV & web-based disclosure platforms – (Budget borrowed from street pole)	300,000.00
	<b>TOTAL CASH DISBURSEMENT</b>				
October	1	<ul style="list-style-type: none"> <li>Production of Documentary</li> </ul>	1	Documentary production: Dept. of Film  Notice of completion in Kenya Gazette  686,000 – Notice of completion in Nation, Standard and Taifa Leo newspapers	350,000.00  20,000.00  686,000.00
	2	<ul style="list-style-type: none"> <li>Submit Local Physical Development Plan in preparation for public inspection at NCCG</li> <li>Publish Notice of Completion (Friday)</li> </ul>	2	(90,000 * 1/2) – Interactive exposure / TV campaign  (1/2 * 44,800) – Press assistant – for TV & newspaper campaign	45,000.00  22,400.00

<sup>53</sup> Generic materials not impacted by the Muthurwa and related land use plan issues

Month	Week	Activities	Week	Breakdown of Cash Required	Total Cash Required
				686,000 – Newspaper advert for validation workshop	686,000.00
				Airing of 4 min. documentary (Nation and KBC)	800,000.00
<b>TOTAL CASH DISBURSEMENT</b>					<b>2,609,400.00</b>
November	1	Final report submission	1	Street poles notices for city launch	600,000.00
	2	<ul style="list-style-type: none"> <li>Approval of the plan by NCCG</li> <li>Update Print and Web-Based Materials on Railway City</li> <li>Endorsed Plan</li> <li>Update Billboard(s) with Approved Plan Information</li> </ul>	2	½ * 1,200,000 – Newspaper insert for launch – Advertisers Feature (Budget borrowed from Street pole cost)	1,200,000.00
				90,000 x ½ (social media Interactive exposure)	90,000.00
				450,000 – Newspaper ads for investor conference: Nation, Standard & Taifa Leo	450,000.00
	3	<ul style="list-style-type: none"> <li>Preparations for Public Launch</li> <li>Publish Newspaper Notice for Investor Conference</li> </ul>	3	4,620,744 – Public launch of Railway City	4,620,744.00
Video coverage at public launch Investor conference venue hire Video coverage at investor conference				100,000.00 800,000.00 50,000.00	
4	<ul style="list-style-type: none"> <li>Public Launch</li> <li>Investor Conference</li> </ul>	4	Media mobilization, monitoring & tracking	200,000.00	
<b>TOTAL CASH DISBURSEMENT</b>					<b>8,110,744.00</b>

**Grand Total = 12,764,944.00**

## **Nairobi Railway City Public Launch**

### **1) Background**

The Kenya Railways, in collaboration with the County of Nairobi and the Directorate of Urban and Metropolitan Development of the Ministry of Land, Housing and Urban Development, intend to develop the Nairobi Central Railway Station (NCRS) and its surrounding areas into the Nairobi Railway City. The Nairobi Central Railway Station (NCRS) is strategically located in a prime area situated next to Nairobi CBD, which makes it best placed to meet the vision of a Railway City that will then perfectly serve as a nerve center for the Nairobi Multimodal Transport System (NMTS). The project is in its final phase of planning and will be ready for handover to the client by Mid-September.

This document presents a section of the communication strategy implementation for the Nairobi Railway City (The Railway City). The communication objectives outlined in the wider communication strategy revolve around the principle of public participation and aims at facilitating the development of a shared view of Nairobi as the leading hub in East Africa. The communication agenda also recognizes the project's economic contribution, its role in easing Nairobi's transport and related commute challenges. Lastly, in view of the rich history of the Nairobi Central Railway Station and its catalytic role in the establishment of the Capital City, communication objectives under this program also aim at underpinning the cultural and heritage values of Kenyan Citizens at large in the development of the image of the Nairobi Railway City.

Stakeholder identification and mapping was then applied to identify the pertinent groups that must be engaged through-out this process. These stakeholder groups include public bodies, the business community, regulators, neighbors of the site, the general public, political leaders, academic institutions among others. Through-out the visioning process for the proposed Railway City, the values, expectations and concerns from these stakeholder groups greatly informed the stakeholder analysis employed in the development of the wider communication strategy. As such, the stakeholder analysis brought out their interests, importance to the project and their degree of influence on the planning process. A cross analysis of the SWOT deductions and the outcomes of stakeholder analysis was then applied to inform the messaging, platforms for outreach as well as the stakeholder sensitization / capacity building needs that must be entrenched in the engagement process for the planning phase of the project. Key aspects of project communication including the guiding principles, the approach to project communication, and the importance were also addressed and key messages of the communication strategy identified, whose objective is to address the communication gaps by providing relevant information to create enhanced understanding about the functions of the Nairobi Railway City among the target audiences. These include the benefits of the project, the project process, and project value. The strategy identifies different communication channels through interpersonal communication such as public forums, events and hospitality, meetings and individual contacts. Broadcast media, television and radio are also expected to be effective in communication. Other tools namely print media like newspapers, magazines, newsletters and posters are also included. The use of "new media" through website, the Social Media, email and List-serves are also envisaged.

The one-month Public Relations Campaign, the proposed public launch and investor conference addressed in this document are part of the implementation of the wider communication strategy that was prepared for this project.

### **2) Rationale**

Following the successful completion of the planning process it is imperative to showcase the NRC dream to the general public through a high-profile public launch that sets the tone for its implementation from the top. As such a Presidential public launch is recommended in the presence of top officials from the National and County Governments, the three project partners, key stakeholders, potential investors and the general public. This launch is envisaged by first week of December, subsequently followed by a two-day investor conference. The two will be preceded by one month of PR campaign around the project planning to educate the public more on the envisioned NRC. The public launch venue is suggested as the Kenya Railways

station/grounds or Muthurwa Market depending on suitability. The Project Implementation Team will do a recce tour of the proposed launch venue to visualize and decide which one works best for the launch.

### 3) Objectives:

- Public awareness & involvement/participation
- Spur Investor interest – launching pad for the two-day subsequent Investor Conference
- Participation and high-level pitching /positioning with Government at National & County including Metro Area
- Introduction to the public
- Positioning the project to generate interest at high levels and set the tone from the top.
- Advocacy platform for project implementation.

### 4) Pre-launch:

- One month Public Relations (PR) campaign and implementation of Communication Plan (as per the attached communication plan)
- Before the launch, one week teasers for publicity build up (In form of Social Media Ads, sign posts & Bill Boards selling the amenities that are expected in the NRC – The Dream)
- Launch area set up and branding (Banner/Bill board, pillar branding & signage branding)
- Information boards set up at the entrance of the launch ceremony (4)
- Advertiser's feature (Compelling story with visuals, but not revealing the model plan) on the day of the launch in the Daily Nation
- Skaters distributing flyers (6) to the general public in traffic on the day of the launch.

### 5) Launch Concept:

- This is the unveil concept for the Nairobi Railway City proposed plan.
- The launch will tackle two products – the website and the model plan. Therefore, a suggestion to have a digital launch flagged by a physical launch of the model. A digital website launch can be done by the CS Transport soon after his remarks. While the model of the plan will be unveiled by the Chief Guest (H.E the President) soon after his keynote address. The CG will walk to the physical free-standing Architectural model for the launch. The dummy will be A0 size mounted on a pedestal and covered in sheer cloth and helium balloons. The CG will use scissors to cut the ribbons and the balloons will ascend, as the sheers are quickly pulled away from the back. Both launches will be enhanced with launch effects created out of smoke, pyrotechnics, lighting and trance music for sound effects. The model unveil will quickly be followed by a celebratory dance by Sarakasi dancers. The CG will then proceed to do photo shoots around the model with key stakeholders.

### 6) Sequence at Launch (tentative):

- Arrival
- Holding room (High tea)
- Tour of the facility (Railway & new public bridge - TBA)
- Information Boards exhibits set-up at the entrance of the launch ceremony (four)

**7) Official Ceremony MC**

- Audio Visual/documentary on the road to Nairobi Railway City – The Dream
- Entertainment (Spoken word on the dream of a new railway city & dance troupe)

**8) Remarks & Speeches**

- Welcoming remarks by KR
- Remarks NCCG
- Remarks by NaMSIP
- PS Urban Planning
- Governor Nairobi
- Cabinet Secretary for Transport

**9) Launch of website**

- Presentation by Consultants (Animated Audio-Visual production of the concept)
- Keynote address by HE the President
- Unveil of the Nairobi Railway City Plan Architectural Model
- Photo-Op and handing of IEC materials
- *\*Lunch/Refreshments are served (Tentative depending on budgets)*
- Post-Launch:
- Media talk shows (Radio, TV)
- Media stories (Newspapers)

## 8.6.4 Monitoring and Evaluation

### Background

Monitoring is the continuous and systematic process by which information on the progress of a project under implementation is collected and analyzed to check compliance against the intended plan. The purposes of monitoring will be to:

- To document the process of implementation;
- To facilitate decision making by the management;
- To take remedial action;
- To learn from experience and feedback to planning.

Unlike monitoring, which is continuous and happens throughout the life of the project, evaluation is an event whose purpose is to assess the impact (in terms of objectives and other outcomes), effectiveness and efficiency of the communication strategy and its operational aspects. For this project, evaluation is laid in the strategic planning matrix in the previous chapter. Measurement of achievements will provide confirmation that the strategy is delivering its initial results, on which the outcomes depend.

The results and recommendations from the monitoring and evaluation process will:

- Aim to inform the process of scaling up the communication strategy for NRC;
- Develop evidence-based policies and advocate for the same;
- Assess the various targeting mechanisms, including linkages between the various actors and their significance as players within the larger system (economic, political and social) in the transmission/reception of messages and promotion of project/organizational goals;
- Measure the impact of this strategy to guide the project to ensure that target audiences understand messages and evaluate whether the strategy needs to change in any way.
- Understand the impact of the strategy as well as provide a yardstick for communication activity;
- Measure success by establishing the achievement level of the stated goals and objectives of the strategy;
- Establish whether there have been improvements in the public's understanding of the project, its work and the operational landscape;
- Develop a new approach to external communication in the project and beyond is vital to the successful delivery of the communication strategy. The regular survey of the central players can be used to track understanding of their function as communicators.

The Monitoring and Evaluation Matrix is as presented in table below.

**Table 8-24 Monitoring and Evaluation Matrix for the Communication Strategy**

<b>Task</b>	<b>Description</b>	<b>Measure</b>	<b>Verification</b>	<b>Frequency</b>
Public notices	<p>Website Publication and Newspaper adverts in a newspaper of national circulation. Provision of public notices for meetings with a nationwide reach as follows;</p> <p>Reprint of the intention to plan by the Nairobi City Railway</p> <p>Public Workshop (County Level)</p> <p>Investor Conference</p> <p>Public Workshop (County Level)</p> <p>Validation Workshop</p>	Publishing done	Newspaper cuttings Published on websites for MoTIH&UD, NCCG & KR	Before dates indicated
Billboards & Signage	<p>Set up of Notices around Planning area</p> <p>Notice of Intention to Plan</p> <p>Planning and City Launch Notices Landi Mawe, Post Office, Southern Edge (2), Wakulima, Matatu Stop, Footbridge, Uhuru Highway</p>	Set up done	Physical erection of billboards & signposts in the identified locations	Once to stay for the life of the project
Stakeholder Engagement Forums	<p>Meetings with select stakeholders from Nairobi County</p> <p>Thematic Groups Meeting</p> <p>Investor Conference</p> <p>Public Workshop (County Level)</p> <p>Validation Workshop</p>	Meetings held	Record of meeting attendance/ minutes/reports	As per dates indicated
Public Launch of Planning Process	<p>Public Launch</p> <p>To symbolize the commencement of the project planning process</p>	Project planning officially launched	New paper advert, invited, guest list, video and photography of event	Once
Media Training	<p>Phase 1 talking points, training, and media preparation</p> <p>Identification of media support team of 14 business reporters from 7 major media houses including international media houses</p> <p>Identification of Editors and sub-editors</p> <p>Identification of social media team</p> <p>Training of media support team</p>	Project training for the media support team done	Record of Activity, attendance list	Once

Task	Description	Measure	Verification	Frequency
Media Plan	<p>Implementation of the project publicity plan for five months; Preparation of fact sheets, position statements Business Talk Shows for Sensitization &amp; Agenda Setting Stories Identifying various publicity platforms and relevant business talk shows</p> <p>Talking to editors for bookings, briefing presenters and moderators Packaging the stories, preparation of talk show materials Briefing &amp; training of spokes people Preparation of Press Conferences; Preparation of fact sheets, position statements, media kits, briefing spokes people, sending out media invitations, setting up for press conference, following up to ensure stories are aired</p>	<p>NRC stories placed in various media platforms</p> <p>Press conferences done</p>	<p>Media Monitoring &amp; Tracking</p> <p>Number of stories done, clippings filed</p>	<p>Media Schedule covering 5 months</p>
Social Media	<p>Social Media Campaign; Management of Facebook &amp; Twitter Handles for five months with strategic inputs for 3 major campaigns to re-energies the planning process, the Investor Conference, Launch of the City. Preparation of materials, fact sheets, tweetable content</p> <p>Mobilizing influencers, bloggers, tweeps, briefing them, facilitating engagement, facilitating online voting, packaging the social media reports</p> <p>Inclusion of social media prolific, influencers and bloggers</p> <p>Sponsorship of social media pages for increased reach</p>	<p>NRC stories placed in various social media platforms</p>	<p>Social Media Analytics report done and filed</p>	<p>Media Schedule covering 5 months</p>
Documentary	<p>Production of Documentary-Co-development of idea, shooting, scripting and editing, briefing of interviewees, guiding the production team, booking for interviews and shoots</p> <p>Documentary highlighting the road and the envisioning of a Nairobi Railway City, outlining some strategic “first cut” ideas</p>	<p>Documentary done and Aired in three stations</p>	<p>Aired Clippings and documentary recording filed</p>	<p>4 different times. (Nation TV, KTN and Kenya Broadcasting Corporation)</p>
IEC Materials	<p>Preparation of Information, Communication &amp; Education (IEC) materials that support dialogue and debate among stakeholders on the concept options.</p> <p>Graphic Material Preparation for Exhibit, PR Models, Video Brochures/Posters. To include branded notebooks, pens, folders, conference bags, shirts, banners (both landscape &amp; broad-based rollups &amp; Dropdown banner), caps, lanyards, nametags, posters, flyers.</p> <p>To be used during conferences, workshops and launches</p>	<p>IEC Materials done</p>	<p>Number of IEC materials done verified and hard copy samples filed</p>	<p>Once</p>
Website	<p>Development of the project website; Securing website URL &amp; host</p>	<p>We7bsite done</p>	<p>Web presence of NRC on the selected URL</p>	<p>Once</p>

Task	Description	Measure	Verification	Frequency
	Preparation of content Review and approval of design, pages and content Launch of website Training and hand-over of website to transition team			
Project Publication – Popular version	Production of detailed development and design guideline for use by the implementing authorities, technicians and public investors  Design a simplified publication of the project document for the consumption of general public. A document highlighting the roadmap and the envisioning of a Nairobi Railway City – The dream  This is synthesized document of the final work handed to client Editorial, proof reading, checking it for presentation, sourcing for photos & graphics, design & layout and printing	Publication printed	Hard copies available and distributed	Once
Project Launch	Preparation of Final Launch Setting date Confirmation of Public Launch Program Mobilization of Key Guests & Guest of Honor Procurement of Service Providers Design, approval and printing of IEC /branding Materials Seeking concessions from NCCG on branding elements where applicable Logistical arrangements and mobilization of Media	Launch done	Video & photography documentation of launch event	Once

# Chapter 9. STAKEHOLDER ENGAGEMENT

## 9.1 Stakeholder Consultation

The stakeholder consultations and civic engagement process to help develop an inclusive plan commenced on 07 July 2017 and has been ongoing with stakeholders in the planning area with the aim of triggering public awakening about the project and result in useful feedback for refinement of the Plan.

### 9.1.1 Main Public Workshop

Following the notices published in the local newspapers, as well as invitation letters, emails and phone calls, meetings and workshops with stakeholders and the general public were conducted as indicated below:

- 12 July 2017 – Thematic Working Group meeting held at Ambank House;
- 13 July 2017 – Thematic Working Group meeting held at Ambank House;
- 20 Feb 2018 – Visioning Workshop held at Utalii hotel;
- 21 Feb 2018 – High level meeting to validate the Railway City Vision held at UN Complex Gigiri
- 9 March 2018 – Thematic Working Group meeting held at Kenya School of Monetary Studies;
- 23 March 2018 – 1st County level public workshop to discuss the proposed development options for the planning area held at Kenya School of Monetary Studies;
- 8 June 2018 – Thematic Working Group meeting held at Kenya School of Monetary Studies;
- 3 October 2018 – Thematic Working Group meeting held at Kenya School of Monetary Studies;
- 23 October 2018 – High level meeting at UN Habitat to present and discuss materials for disclosure at the planned second county level meeting;
- 24 October 2018 – 2nd County level workshop to discuss the final option held at Kenya School of Monetary Studies;
- 23 August 2019 – Public meeting with a small group of Muthurwa residents consisting of Block representatives, village elders and *Nyumba kumi* representatives at Muthurwa’s Dallas social hall; and
- 9 October 2019 – Public meeting at Muthurwa estate to obtain views of the residents and business operators on what they would like to see put in the Plan, as well as provide environmental and social issues for consideration in to the Plan.
- 11 October 2019 – Workshop in Naivasha with Planning Committee of the Nairobi County Assembly as well as Nairobi County MCAs in to brief them on the Railway City planning project.
- Round table meetings were conducted with the following:
  - Representatives of the Nairobi City County Government on 17 and 26 July 2017;

- The Project Implementation Team (PIT) consisting of representatives from the Kenya Railways, Nairobi City County Government and the Ministry of Transport through-out July 2017 to October 2019;
- A high-level breakfast was also conducted on 22 October 2019 to brief the project stakeholders on the final plan and the way forward in implementing the Plan.

From the workshops and round table meetings and official letter communications, the following organizations have been represented, namely:

- Kenya Railways (KR);
- Kenya National Highways Authority (KeNHA);
- Jomo-Kenyatta University of Agriculture and Technology (JKUAT);
- Kenya institute for public policy research & analysis (KIPRRA);
- Nairobi City County Government (NCCG);
- The Godown Arts Center;
- Ministry of Transport Infrastructure, Housing, Urban Development and Public Works (MoTIH&UD & PW);
- University of Nairobi (UoN);
- Nairobi Metropolitan Services Improvement Project (NaMSIP);
- Kenyatta University (KU);
- UN Habitat;
- National Museums of Kenya (NMK);
- Kenya Railways Staff Retirement Benefit Scheme (KRSRBS);
- Kenya Civil Aviation Authority (KCAA);
- Muthurwa Estate Residents Association;
- Ministry of Interior and Coordination of National Government; and
- Planning committee of Nairobi City County Assembly.



Visioning workshop at Utalii Hotel, Nairobi. 20 February 2018



Thematic Group Workshop at Kenya School of Monetary Studies, 3 Oct 2018,



1<sup>st</sup> County Level Workshop at Kenya School of Monetary Studies 23 March 2018,



2<sup>nd</sup> County Level Workshop at Kenya School of Monetary Studies on 24 Oct. 2019



Public meeting in Muthurwa estate at the Muthurwa clinic grounds on 9 October 2019.



MCA Workshop in Naivasha on 11 October 2019

### 9.1.2 Meetings with Stakeholders and Businesses within the Planning Area

The process involved going door to door around the Plan area including a public meeting in Muthurwa. Questionnaires were enclosed with a project brief explaining the aspects of the project and seeking views for improvement of the optimal option of the master plan. A total of 52 questionnaire responses were collected.

Other stakeholders and neighbors in the planning area consulted included Technical University of Kenya (TUK), Landi Mawe business and resident’s association, businesses majorly located on Factory Street and Commercial Street on the southern edge of the planning area, and residents and business operators in Muthurwa estate. The intention of meetings was to raise awareness, and improve their perception of the project’s intention for the planning area.

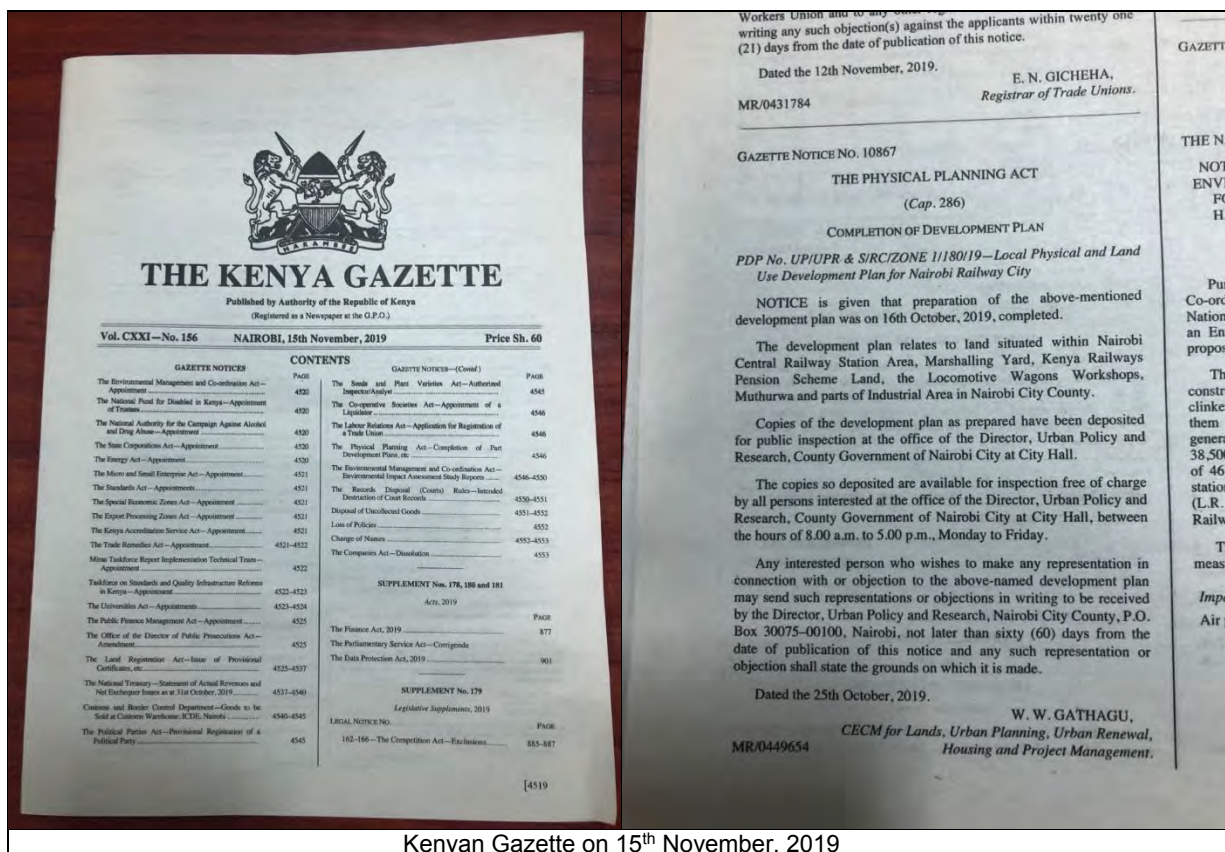
### 9.1.3 Disclosure of the Plan

Contents of the Railway City planning reports are to be made public on the Railway City website. At the time of preparing this report, steps to set up the website were ongoing. In addition, the Local Physical and Land Use Development Plan for Nairobi Railway City was disclosed in the national newspapers (see plate below of the media notice) in line with the Physical Planning law on October 31, 2019 in the *Daily Nation* and *The Standard newspapers*, with the public allowed 60 days to provide feedback.

Figure 9-1 Photos of Disclosure of the Plan



Figure 9-2: Photos of Kenyan Gazette



Kenyan Gazette on 15<sup>th</sup> November, 2019

## 9.2 Key messages of the Stakeholder Engagement Process

The key messages in the communication strategy should be geared towards addressing the communication gaps by providing pertinent information; promoting greater understanding about the functions of the NRC among the target audience, addressing the existing misconceptions and misperceptions about the Project and building relationships with different partners and stakeholders in the realization of the city. Some of the key messages include:

- The benefits of the project;
- Communicate the project planning process;
- Nairobi as a hub, therefore the project's prime location value;
- Emphasize its increased economic value to the capital as a strategic business hub within East Africa;
- Demonstrate enhanced competitiveness of the city in general;
- Emphasize its strategic and intrinsic value to tourism;
- The strategic location of the Nairobi station area positions it perfectly to be an iconic nerve center for the Nairobi Multimodal Transport System with a world class new central station incorporating mixed use commercial developments, hotels and intermodal facilities;
- The project's new office/commercial space would reduce pressure on prices in property/ rental markets;

- The proposed linkages across the existing rail tracks will increase access to the current CBD and promote the continuation of the city fabric towards the South;
- New ways of integrating Kenyan culture and heritage into the plans for the project site will also be proposed;
- Improved mobility of city dwellers and business people;
- Increase in both commercial and social space within Nairobi CBD, lowering of commercial office space rent within CBD;
- De-congestion of CBD;
- Rich land value that will stimulate positive investment;
- Preservation of the rich historical nature of the railways for passage to future generations;
- Demonstrating an inclusive spirit and seriousness to incorporating the views of the various stakeholders;
- Demonstrate improved 'Quality of Life' with the adoption of the new NRC redevelopment concept;

Tell stories that capitalize on heritage and provide a historical context to NRC proposed improvements.

### 9.3 Issues Arising from Consultations and Their Integration into the Plan

Formulation of the Nairobi Railway City master plan has been based on mobilizing stakeholders' participation with a view to ensure that the final plan reflects the views and expectations of stakeholders. Issues raised by stakeholders are presented in

**Table 9-1 Issues and Incorporated into the Plan**

No.	Issue	Incorporated into the Plan
1.	<p>Preservation of culture and historical heritage African culture should be preserved in the planning and development of NRC.</p> <p>Proposal to preserve: The Railway Headquarters Nairobi Railway Museum Wakulima Market Stalls Easy Coach Building Sikh Temple (Siri Gurdwara Ramgarhia) at Landi Mawe Muthurwa's Dallas Social Hall To also maintain cultural heritage, pedestrian walkways can have historical and cultural exhibitions and displays</p>	<p>Part of the Nairobi Railway Station Building will be preserved as a historical building. Exhibition material at the Railway Museum will be relocated to the new museum structure next to the existing location of the Kenya Railway Headquarters building; Wakulima Market Stalls to be protected as historical structures and change of use to a public park with green cover. (The existing Wakulima market will be relocated to a more spacious area in Muthurwa) The Sikh Temple in Landi Mawe (Siri Guduwara), Shaffi mosque in Muthurwa and Muthurwa's Dallas Social hall will be protected as historical buildings without change of use. The master plan proposes that the Easy Coach Building and Kahawa House building be refurbished.</p>
2	<p>Congestion and air quality</p> <p>The city is congested by human population and vehicle traffic. Development of NRC will increase traffic, making air quality deteriorate.</p>	<p>The master plan lays out strategies that could maintain good air quality, namely: Proposed new roads that provide alternative routes through the Central Railway Station thus dispersing traffic over a wider area with the aim of reducing congestion within the main</p>

No.	Issue	Incorporated into the Plan
	<p>An air quality study was recommended</p>	<p>corridors connecting to the CBD, Uhuru Highway, Haile Selassie avenue, Ladhies Road, Tom Mboya Street and Moi Avenue; Increase of green cover within the Railway City through an eco-green corridor; Proposal of light industrial uses as a buffer between the current industrial area and the rest of the Railway City.</p>
3	<p>Aesthetics of peripheral areas to NRC</p> <p>The low to middle income areas surrounding NRC should be upgraded. Areas mentioned included:</p> <p>Muthurwa market and estate; Machakos country bus station; Gikomba community; Marikiti market; and Wakulima market.</p>	<p>The master plan includes urban renewal projects to address existing housing shortages in the city of Nairobi as well as improve aesthetics. The low-income housing area of Muthurwa has been incorporated into the core planning area of Nairobi Railway City. Consultations with Muthurwa residents were carried out on 22 Aug. 2019 and 9 Oct. 2019 to sensitize them and get feedback on what they would like to see improved in the area. Gikomba area will be developed under the Eastlands upgrading project, a different planning project under NaMSIP. The existing markets will remain at their present locations but upgraded. According to NCCG, the Wakulima Market will be relocated to a modern and spacious facility to be constructed in Muthurwa area.</p>
4	<p>Addition of new and maintenance of 'green' spaces and parks</p> <p>Uhuru Park is an existing green space near the planning area that should be maintained.</p> <p>Though privately owned, the Railway Golf course should also be preserved.</p> <p>Green spaces and paved areas should be separated.</p> <p>The Nairobi national park is also near the planning area.</p> <p>Suggestion into green areas and parks was that a link should be created between Nyayo Stadium and City stadium.</p>	<p>The land use plan has allocated 19.6% of land for open space such as parks and plaza, pedestrian road, and a buffer zone.</p> <p>The pedestrian footpaths through Nairobi Railway City planning area creates a connection between Nyayo Stadium in the south west planning boundary and City stadium next to the north east boundary.</p>
5	<p>Consideration of vulnerable groups</p> <p>Vulnerable groups include:</p> <p>Muthurwa estate</p> <p>SMEs (Jua kali artisans and other start-ups)</p> <p>Persons with disability</p> <p>Elderly, women carrying children, expectant mothers etc.</p>	<p>The Plan proposes to formalize the vulnerable groups by coming up with simple retail structures and flea markets to attract tourists through a governance system, where if vulnerable people are allocated spaces, it ensures it is sustainable and that these spaces will not be sold or rented out to other people. This is to be implemented by NCCG.</p>
6	<p>Sanitation and rivers pollution</p> <p>Eastlands area is downstream of NRC, hence sewage from NRC will affect Eastlands including polluting Nairobi river (passing through Gikomba, Eastleigh, Kiambu slum, Dandora and onwards) and Ngong river (passing through industrial area, pipeline estate, Embakasi and onwards).</p>	<p>The master plan has developed a waste water plan that will see development of proper routing infrastructure for final disposal of sewage at the Dandora waste water treatment plant in Embakasi.</p> <p>The land-use plan requires reclamation of the riparian and enhancement of water quality within the tributary of the Ngong River that passes through the project site. The</p>

No.	Issue	Incorporated into the Plan
	A suggestion put forward is to include public toilets in NRC with digesters and other practical recycling mechanisms curb sewage pollution of the surface and ground water sources.	enhancement of the river aesthetics and conservation of its ecological value is of importance to the enhancement of the proposed MICE precinct within the vicinity of the river channel.
7	<p>Conflict or linkages with other plans and projects</p> <p>Existing projects and plans mentioned by stakeholders include:                      TUK master plan                      Nairobi water master plan                      A104 road expansion                      Embakasi railway station (Suggestion made was to freeze this project until NRC is complete)</p>	The master plan recognizes existence of other projects in and around the planning area. The Railway City master plan has considered the expansion plans in the TUK master plan, hence the two plans will benefit reciprocally, as business and urban activities will be driven by student activities. The Railway City master plan has also considered linkage with the Eastlands urban renewal project through pedestrian walkways connecting The Railway City and Eastlands at Gikomba area.
8	<p>Tourism development</p> <p>To boost tourism and foreign earnings, NRC should create connection with:                      JKIA; and                      Nairobi national park</p>	The master plan has suggested access roads through the planning area that will connect to Uhuru highway and Mombasa road, all of which connect it to the JKIA.
9	<p>Building heights and aviation rules</p> <p>Building heights in the NRC should be in reference to the Kenya Civil Aviation Authority rules, as the Moi Air force base – Eastleigh is in close proximity.</p>	The eastern area of Railway city has been planned with consideration of the building height due to its proximity to the Eastleigh air base. See section 4.1.7 on the building height plan
10	<p>Land ownership, land-take and resettlement issues</p> <p>Areas with potential acquisition leading to resettlement:                      Muthurwa estate (Ownership of Muthurwa social hall should be confirmed)                      Industrial area (Privately owned)                      Landi Mawe (Owned by Kenya Railways Staff Retirement Benefit Scheme, KRSRBS)</p>	<p>Proposed land uses will result in changes in land tenure and / or ownership of land as a result of the following:                      Land acquisition for public right of way for roads;                      Transfer of land public to private land to allow for investment by private parties within railway city;                      Amalgamation of land parcels to accommodate the new design guidelines;                      Transfer of public land among government agencies for public purpose use such as schools, health facilities, heritage sites and bus parks or for public right of way.</p> <p>With the adoption of the final option into The Railway City Master Plan, the modalities to provide an enabling environment for management of the impacts arising from land tenure and/or ownership will be developed in collaboration with stakeholders' and the project social safeguards as well as the governance and institution experts.</p>
11	<p>Connectivity/Transport network</p> <p>There is lack of access to the CBD hence the reason why Easy Coach services bus stop is located at the KRSRBS property, including Railways bus terminus for city transit. Considerations mentioned for improvement of connectivity included:                      Nairobi viaduct project                      Flyover from Ngara market to Coast bus stage                      Helipads</p>	<p>The Plan has incorporated access roads that connected industrial area and Haile Selassie avenue on a North-South axis and an access road connecting Uhuru Highway to the Eastlands area on an East – West axis. This will help reduce congestion in the existing roads.</p> <p>In addition, pedestrian foot paths in the planning area have been suggested which also aim at promoting healthy living through walking.</p>

No.	Issue	Incorporated into the Plan
	Improvement and expansion of A104 road; and An option for intercity terminal (This was discouraged as it would increase traffic)	The Plan has incorporated BRT plans into the Nairobi metropolitan to provide public transportation routes in the CBD.
12	Creation of 'Concrete jungle' It was indicated that there should be optimum location of NMT corridors and zones to prevent creation of a 'concrete jungle'.	'Green spaces' have been incorporated into the plan taking up 18.7% of the 435 acres. It has included pedestrian foot paths as well.
13	Planning projections Planning projections should look 30 years ahead for e.g. traffic, population and climate change.	The Plan which is to be implemented in 2 phases is looking at about 5 years' projection.
14	Incorporation of smart technologies Smart technologies recommended for inclusion in NRC included: Solar hot water Rain water harvesting Storm drains Underground networks	The Plan has included underground reservoir for rainwater harvesting as one of the smart technologies including underground utility lines that accommodate power, water and telecommunication lines. Surveillance using CCTV has also been recommended in the plan area to boost security.
15	Vehicle parking measures in the CBD NRC will add traffic to the CBD hence need to look at vehicular parking	The Plan has incorporated parking spaces but also encourages NMT throughout the planning area to dissuade overreliance on vehicles.
16	Integration and/or relocation of passenger motorbikes/BodaBoda  The numerous BodaBoda operating in the CBD that are providing work to the youth should be factored in the NRC master plan.	NCCG through a public notice on 11 November 2015 banned with immediate effect the ferrying of people on <i>BodaBoda</i> within the CBD due to insecurity reasons, restricting them to drop off their passengers at City stadium or at the Ngara bus terminus. Hence, the proposals in Railway City has exempted motor cycles
17	Impacts of lowering the railway An analysis of environmental, social and economic impacts of lowering the railway should be undertaken.	The viability of lowering the railway tracks at central railway station, and maintaining the tracks At-grade has been analyzed; the master plan recommends lowering the tracks because of economic aspects compared to at-grade, as well as options it provides for land densification. (The analysis is captured in Appendix)
18	Public service delivery The east end could have county and national government offices due to public nature of the planning area. Existing in the area include: TLB licensing offices Ministry of Youth Affairs	The Plan has set up a government precinct on the north western boundary of the planning area to accommodate government offices. The location was favored due to its proximity to parliament buildings which is on the opposite direction of Haile Selassie avenue.
19	Measures for reducing hawkers, informal settlements and crime in and around NRC	The street commercial area has been provided to accommodate hawkers and kiosks along the pedestrian walkways. The walkways will be set up with CCTV cameras to help in fighting criminal activities.
19	Integration of education facilities into the master plan Two educational facilities exist in the planning area: TUK; and Railway Training Institute (RTI)	The Plan has considered the future expansion plans of TUK, which is also a neighbor to RTI into the overall plan so that an R&D area has been set aside for the institutions in the eastern boundary of the master plan.

No.	Issue	Incorporated into the Plan
20	<p>Disaster preparedness                      In the event of a disaster, to facilitate emergency response:                      Proper roads should be set up for swift response;                      There should be more fire stations in the planning area                      There should be more police stations in the planning area</p>	<p>The master plan has incorporated a fire station, level IV hospital, and police post pertinent in the management of disasters. The master plan indicates that disaster management and evacuation centers will be managed by the authority that will manage Railway city (i.e. the proposed Nairobi Railway City Development Authority).</p>
21	<p>Future consultations                       Further meetings were suggested in the following areas:                      Meeting at Landi Mawe estate with consideration of faith-based organizations and the business community;                      Meeting with Muthurwa estate residents; and                      A meeting be done in the general planning area                      It was mentioned that the meetings should be clear on who the project owner is and the financier, and assure the attendees that NRC is not a duplicate of NIUPLAN.</p>	<p>A public meeting was conducted in Muthurwa estate on 9 October 2019 targeting the Muthurwa residents and business operators. This was done after a series of meeting cancellations due to the volatile nature of the area propagated by court cases between KR pensioners and the owner of the Muthurwa property, Kenya Railways Staff Retirement Benefit Scheme (KRSRBS)</p>



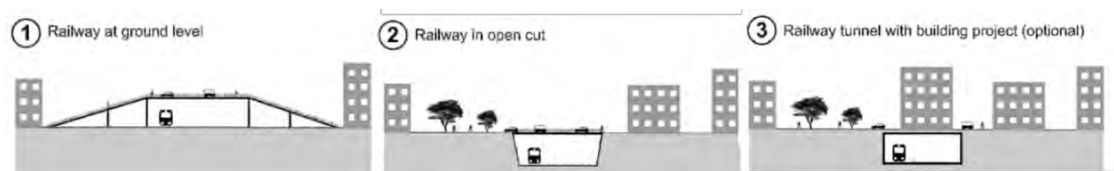
# A. APPENDIX

## APPENDIX 1. Comparison of Lowering and At-grade the Railway

The purpose of this comparison is to explain the difference between lowering and At-grade of railway track. Lowering the railway is superior to the At-grade option. The Plan explains the key comparisons between the two.

### Background

The Railway Lowering idea was initiated by the previous and affiliate NAMSIP study Feasibility study, Detailed Design, Tender Documentation and Supervision of Selected Roads and A Green Mall Street Bus Station in the Nairobi Railway Station and its Surroundings (Hereinafter, “Green Mall” project). This Green Mall project aims to define and frame the future road network relating to The Railway City area and has a brief spatial scheme of The Railway City. The Green mall consultant team demonstrated the idea of lowering the rail as the best option for the future Nairobi with advantages such as environmental, social and urban quality perspective. Kenya Railway find this proposal viable.



**Figure A-1 Exemplary drawing of Railway At-grade and lowering in Green Mall Project. (2016. NAMSIP)**

The other related project is the “Viaduct” project by KURA, which was done by JICA consultant team. Their project has different goal and objective, which is to widen the Enterprise road and overpass the railway track to improve the traffic flow between the CBD and Nairobi South. With funding from JICA, NCCG and KURA have been keen on this project.



**Figure A-2 Exemplary Figure of Viaduct across The Railway City**

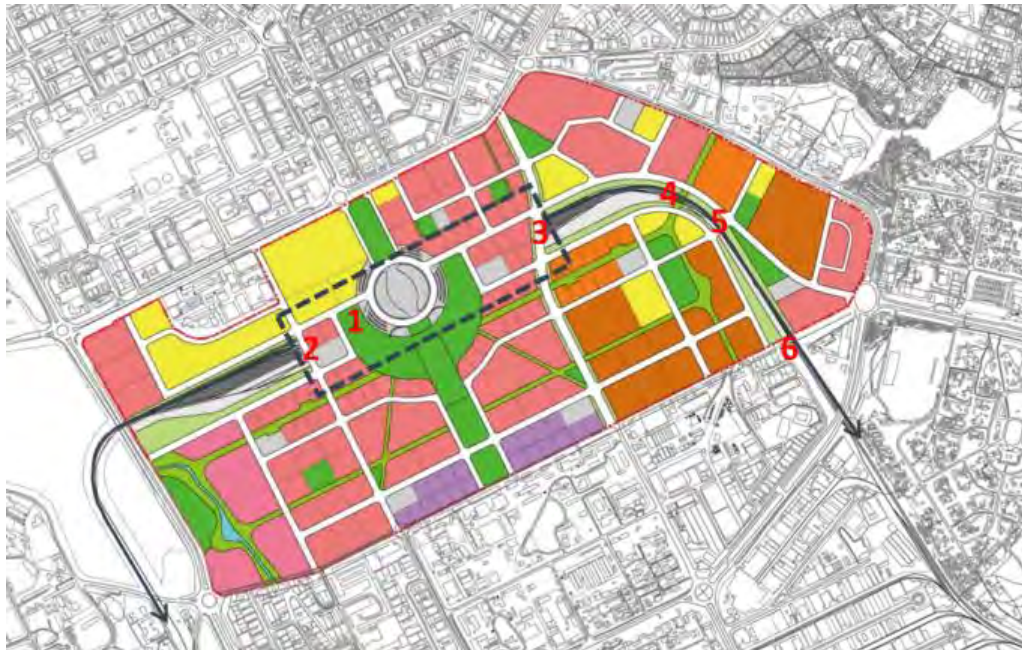
As mentioned above, the two different projects have quite different goals and objectives, but seem to be in conflict with each other. It means that in case of the Viaduct is accepted, lowering the track will be useless. However, the two projects are both viable if well-coordinated.

**Comparison method: Construction Cost-Land value comparison**

At-grade versus Lowering comparison might request long and tedious economic analysis which shall encompass the direct/ indirect benefit/ loss in terms of social, environmental and other aspects. Therefore, prior to the detailed economic analysis, the Plan has prepared a simple comparison approach based on Construction cost- Land value comparison.

**1) Structure cost**

The two cases of At-grade and Lowering require different structure cost. At-grade case needs a flyover structure over the railway track (120m length). Lowering case requires deck superstructure (artificial land) and lowered track. Both cases have the station structure above the track. The figure below shows the different structures.



**Figure A-3 Lowering Railway Structure**

Note: Red-lowered Track, Dot-line Superstructure



**Figure A-4 At-Grade Case Structure**

**Table A-1 Superstructure Table of Lowering/ At-grade Track**

No	Lowered Condition	Width (m)	Length (m)	Area (m <sup>2</sup> )
1	Super deck Structure	120.00	718.00	86,160.00
2	Bridge on Workshop Rd	28.00	120.00	3,360.00
3	Bridge on Enterprise Rd	32.00	120.00	3,840.00
4	Pedestrian Bridge	20.00	57.00	1,140.00
5	Proposed bridge 1	16.00	55.00	880.00
6	Proposed bridge 2	32.00	80.00	2,560.00
No	At-Grade Condition	Width (m)	Length (m)	Area (m <sup>2</sup> )
7	H Type Road Bridge 1	16.00	515.00	8,240.00
8	H Type Road Bridge 2	26.00	610.00	15,860.00
9	H Type Road Bridge 3	12.00	340.00	4,080.00
10	H Type Road Bridge 4	12.00	230.00	2,760.00
11	H Type Road Bridge 5	12.00	134.00	1,608.00
12	H Type Road Bridge 6	12.00	134.00	1,608.00
13	Super deck Structure (Circular)			54,739.00
14	Pedestrian Bridge	20.00	57.00	1,140.00

**Table A-2 Construction Cost of Lowering / At-grade Track**

	Lowering the Track	At-grade Track
Earthworks	3,349,760,000	786,360,000
Superstructure	13,442,800,000	14,061,270,000
Track Works	729,369,550	729,369,550
Railway Station Buildings & Facilities	71,800,000	71,800,000
Sum	17,593,729,550	15,648,799,550

\*Note: Break down cost is attached at the end.

## 2) Land Value

Both cases have different effects on the land value. The Lowering case shows a positive (+) effect, but the At-grade has a negative (-) effect.

The Lowering case can obtain additional land value from the artificial land (deck structure). The Plan uses the value of 50% of normal land.

At-grade case decreases the saleable land. The Flyover structure hinders the on-ground traffic by due to its pier structure hence, at least 5m width of each side should be deducted from the saleable land. The table below shows the land value (+) and (-) conditions.

**Table A-3 Land Value Comparison of Lowering / At-grade Track**

	location	m <sup>2</sup>	Unit cost(m <sup>2</sup> )	Price(Ksh)
Lowering case				
Gained land value by Deck	Deck structure	31,139	45,000**	1,401,255,000
At-grade case				
Reduce land value by flyover	Workshop, Enterprise	6,300	90,000*	567,000,000
	Commercial	1,250	90,000	112,500,000
	Sub Total			679,500,000

Note \* m<sup>2</sup>/ 90,000Ksh: average land price of CBD commercial land by market trend in Nairobi (2018)

\*\*m<sup>2</sup>/ 45,000Ksh: artificial land price as 50% discount from normal land, referred by Korean cases

## 3) Structure Cost – Land Value Comparison

Structure cost and land value in both cases could provide a quick comparison between At-grade and Lowering the track as shown in the table below.

**Table A-4 Structure Cost-Land Value Comparison**

Item	Lowering	At-grade	
Cost	Construction cost	17,593,729,550	15,648,799,550
Benefit by Lowering	Deck structure land value	1,401,255,000	-
counter Benefit by At-grade	Reduced land value	-	679,500,000
Cost +/- Land value		16,192,474,550	16,328,299,550
		1.00	1.01

From the result shows the difference between lowering and At-grade cases is minimal, 1%. Therefore, Lowering is better option than At-grade, due to the other benefits.

## Indirect benefit comparison between Lowering and At-grade

### 1) Connection to the Surrounding

Railway track hampers the smooth movement between the surroundings. Nairobi originated from the railway track developing northwards. Thereafter the spatial division of Nairobi started from the track with North-West hosting the Government, administrative and official commercial area. The North-East side was for the caravans and the indigenous market serving the Railway track is a physical barrier for the future expansion of Nairobi, Lowering the track can ensure the actual connection of all activities At-grade level whether they are economic, transportation, social transactions.

### 2) City Landscape

Railway At-grade case requires overpasses. These will be at Enterprise road, Workshop road and access road to the new station (three directions; east, west and north) and Commercial road. Every flyover needs a long ramp structure (at least 4% slope, 200m length). In addition, pedestrian bridges will be required. These expected flyovers will hamper the future city landscape. The structure also creates a shadow area on the adjacent land. This shaded area will be a hub for crimes and filthy landscape.

### 3) Public Health by Walkability

Lowering the railway will promote a walkable city. It will impact not only on The Railway City, but also the entire surrounding Nairobi CBD area. Every bicycle path and pedestrian non-motorized path can be linked without the burden of over passing the railway track. In addition, The Railway City has generally flat land, which is very suitable environment for the bicycle users. If the track is removed, free movement could be possible. It will promote better public health for Railway City users, residents, the and all entire Nairobi CBD users and the neighboring areas. Pedestrian circulation will reduce the vehicle traffic volume which will have environmental benefits.

### 4) Social Integration

The Railway tracks have existed as physical development barrier in Nairobi CBD. Naturally, it limits the boundary of CBD to the South, East and West. Physical integration by lowering the track will promote the social interaction between these areas. The government could invest in an elevated urban park above the track, creating an area for social interaction and transactions.

## Future transition of Nairobi-Open towards the Southern NMR

The Southern are of the Nairobi Metropolitan area has great growth opportunities. around JKIA and along the Nairobi South Station, a new strong economic corridor will be developed. Lowering the track will open the CBD to the South and vice versa. It will transform the entire Nairobi into a stronger economic growth-engine for the larger East African region.

**Table A-5 Comparison Table of Lowering and At-grade Scenario**

Contents	Lowering	At-grade	Remarks
Connection to the surrounding	√		Railway track acts as a barrier, creates a boundary for the city.
Access to the elderly, disabled, and youth	√		Ease of accessibility for vulnerable groups.
City landscape	√		Superstructure hampers the landscape beneath the superstructure
Public Health by walkability	√		It promotes public health and energy efficient society
Social integration	√		Geographical integration will enhance social integration.
Future transition of Nairobi-	√		The Southern area of the Nairobi metropolitan region has great growth opportunities in the future of Nairobi by lowering, the CBD can be spatially

Contents	Lowering	At-grade	Remarks
Open towards the Southern NMR			integrated with the SGR station, JKIA and future airport city.

## Global reference

### 1) Chunggye River rehabilitation project: Removal of the fly over structure

Chunggye River is a major river within Seoul CBD area. During the modernization period, huge numbers of informal settlers made their own huts along the river which resulted in many negative impacts such as a filthy landscape, bad odors and raw sewage. The government of Seoul at that time (1960's) decided the river should be covered by the road and forcefully evacuated the informal settlers from the area. To reduce the traffic, an overpass was constructed and used as main arterial road for a 30years. Along the flyover, many of shaded areas were occupied by light industrial and small services shops. Many have expressed the need to revive the original natural environment.

In 2005, the Seoul governor had a plan to keep his pledge to revive the area. The first action was removal of the flyover. In spite of his strong initiative, there were many public hearings and consultations, in which many concerns were raised about transportation and industrial impacts. However, the strong political will overtook the concerns adapting to the general urban planning trend of strengthening an environmentally-friendly development and use of non-motorized traffic.

The benefits from the project are

- Transition of urban landscape from shadowy landscape to eco-friendly urban scenery,
- Reducing the traffic volume in CBD
- Transition of economic activity from light industry with small service shop to tourism-oriented dining, shopping and real estate development.<sup>54</sup>

The project has been a successful model within the field of urban planning, urban rehabilitation and governance.



**Figure A-5 Image of Transition of Chunggye River**  
 Note: Flyover(left) to Revived river(middle) and Night Scenery(right)

<sup>54</sup>Gentrification is two swords of urban development especially in urban rehabilitation. By this project, new industry as tourism, service and office industry by real estate booming is gain of the project. Former landowner and lessees of existed industry area shall to relocate their economic activity. Government of Seoul promoted their relocation into one of new town area.

**2) Paris Rive Gauche: Deck structure development above the Railway track**

Rive Gauche district is 2km from the CBD, which was an old barracks and chimney industry along the railway track. River Seine and 13<sup>th</sup> district residential area was cut off by the track.

In 1991, the City of Paris initiated the urban rehabilitation project by SEMAPA as main developer, through a public-private operated vehicle. Firstly, they embarked on the project plan which entailed covering the old railway track with a superstructure, on which urban diversity would be fostered through housing, offices public facilities shops, creating neighborhood where 18,000 residents, 30,000 students as well as 60,000 employees.

Artificial land (named as Avenue de France) made from covering the track ensures the urban continuity from the 13<sup>th</sup> district residential area to the Seine river. The structures length was 3000m X with a width of 100m of physical structure. Streets running perpendicular to the Avenue de France link the area to the rest of Paris and create a smooth transition to the existing districts in the 13<sup>th</sup> district and the Seine riverfront.

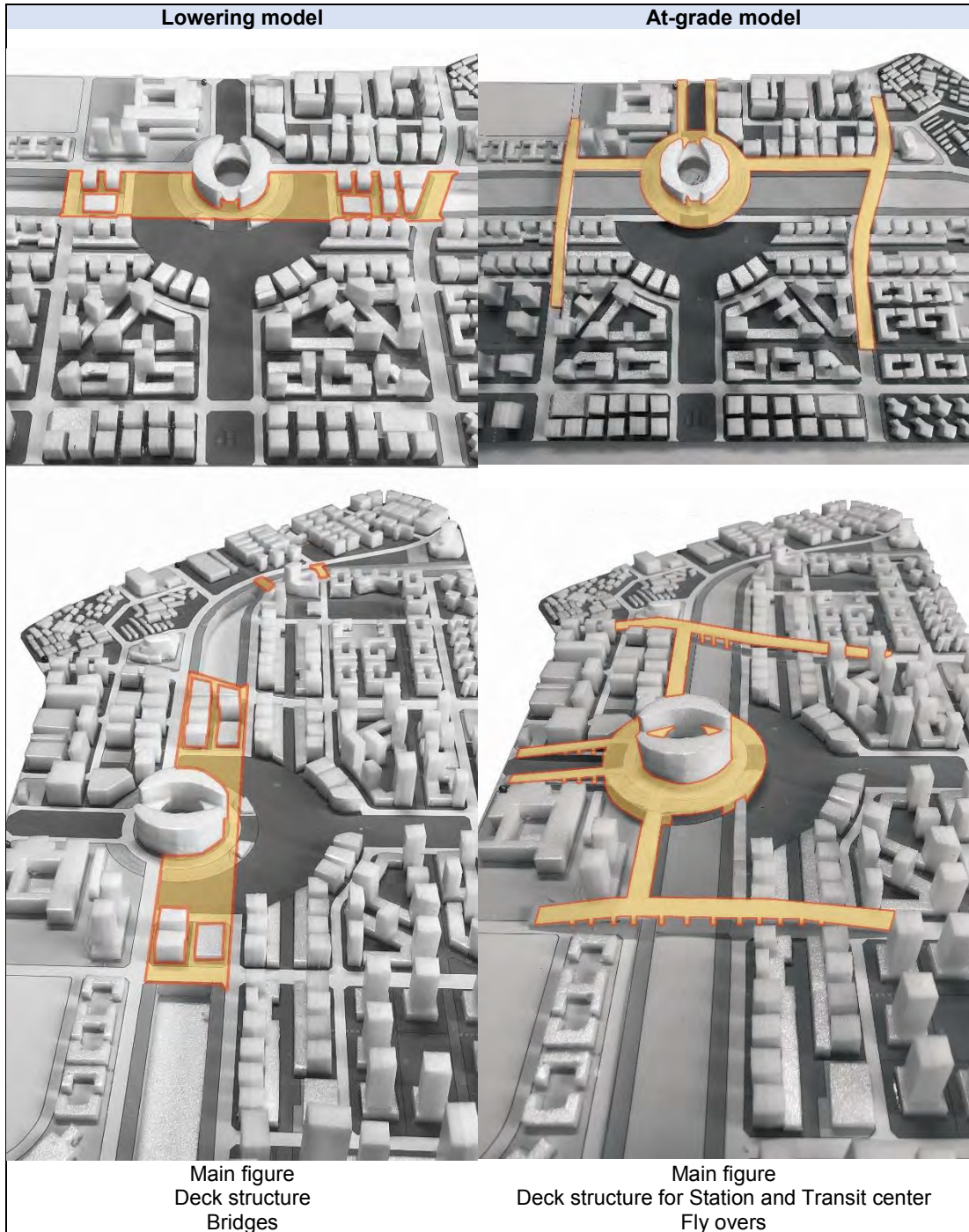
Another pilot project is a public anchor project, the National Library (Bibliotheque de France) and a University campus of 30,000 students. As an urban anchor, it provides a strong development initiative to the surrounding area.

The development process has been on-going since 1991. Diverse working, commercial, educational developments are underway. Along with this new development, old buildings rehabilitation was also done. The Old mill and the station building were transformed into the university and SME incubating place.



**Figure A-6 Image of Transition of Rive Gauche**

Note (left- 1990, right- current)



**Figure A-7 Model Study of Lowering and At-grade Scenario**

**Table A-6 Cost Breakdown of Lowering/ At-grade Scenario**

Description	LOWERED TRACK				AT-GRADE TRACK		
	Unit	Quantity	Rate KSHS	Amount KSHS	Quantity	Rate KSHS	Amount
<b>I. EARTHWORKS</b>							
Fill in soft and compact Materials	m <sup>3</sup>	52,800	1,200	63,360,000	52,800	1,200	63,360,000

Fill in hard material and compact	m <sup>3</sup>	52,800	2,500	132,000,000	52,800	2,500	132,000,000
Cut to spoil in soft material	m <sup>3</sup>	528,000	750	396,000,000	140,000	750	105,000,000
Cut to spoil in Hard material	m <sup>3</sup>	1,300,000	2,000	2,600,000,000	-	2,000	
Allow for special treatment of weak ground soil	m <sup>3</sup>	52,800	3,000	158,400,000	162,000	3,000	486,000,000
				349,760,000			786,360,000

**II. TRACK WORKS**

Provide and lay standard railway track (Plain track, 60kg/m) including concrete sleepers	km	14	40,000,000	545,360,000	14	40,000,000	545,360,000
Provide and install Turnout track (60kg/m) including concrete sleepers	set	18	6,000,000	108,000,000	18	6,000,000	108,000,000
Provide Granular Crushed stone layer	m <sup>3</sup>	14,316	4,500	64,420,650	14,316	4,500	64,420,650
Allow for track fittings (Connectors, Fish bolts, clips etc.)	km	14	850,000	11,588,900	14	850,000	11,588,900
				729,369,550			729,369,550

**III. STATION BUILDING**

Station Buildings (Passenger/Signal etc.)				23,800,000			23,800,000
Provision of Platforms	m <sup>2</sup>	16,000	3,000	48,000,000	16,000	3,000.00	48,000,000
				<b>1,800,000.00</b>			<b>71,800,000</b>

III. Superstructure		Width (m)	Length (m)	Area	Cost/sqm	Cost (Ksh)
<b>LOWERED TRACK</b>						
1	Super deck Structure	120.00	718.00	86,160.00	130,000.00	11,200,800,000
2	Bridge on Workshop Rd	28.00	120.00	3,360.00	200,000.00	672,000,000
3	Bridge on Enterprise Rd	32.00	120.00	3,840.00	200,000.00	768,000,000
4	Pedestrian Bridge	20.00	57.00	1,140.00	100,000.00	114,000,000
5	Proposed bridge 1	16.00	55.00	880.00	200,000.00	176,000,000
6	Proposed bridge 2	32.00	80.00	2,560.00	200,000.00	512,000,000
						<b>13,442,800,000</b>
<b>AT-GRADE TRACK</b>						
7	H Type Road Bridge 1	16.00	515.00	8,240.00	200,000.00	1,648,000,000
8	H Type Road Bridge 2	26.00	610.00	15,860.00	200,000.00	3,172,000,000
9	H Type Road Bridge 3	12.00	340.00	4,080.00	200,000.00	816,000,000
10	H Type Road Bridge 4	12.00	230.00	2,760.00	200,000.00	552,000,000
11	H Type Road Bridge 5	12.00	134.00	1,608.00	200,000.00	321,600,000
12	H Type Road Bridge 6	12.00	134.00	1,608.00	200,000.00	321,600,000

13	Super deck Structure (Circular)			54,739.00	130,000.00	7,116,070,000
14	Pedestrian Bridge	20.00	57.00	1,140.00	100,000.00	114,000,000
						<b>14,061,270,000</b>

### Summary

	Lowering the Track	At-grade Track
Earthworks	3,349,760,000	786,360,000
Superstructure	13,442,800,000	14,061,270,000
Track Works	729,369,550	729,369,550
Railway Station Buildings & Facilities	71,800,000	71,800,000
<b>Sum</b>	<b>17,593,729,550</b>	<b>15,648,799,550</b>

## APPENDIX 2. Index of Statutes

	<b>Statute</b>	<b>Page</b>
	The Constitution of Kenya, 2010	25
	The Physical Planning Act, Act No. 6 of 1996	26
	Civil Aviation Act, Act No. 21 of 2013	29
	The Environmental Management and Co-ordination Act, (EMCA), Act No. 8 of 1999	30
	The Urban Areas and Cities Act, Act No. 13 of 2011	32
	The County Government Act, Act No. 7 of 2012	33
	The Land Act, Act No 6 of 2012	35
	Rent Restriction Act, Cap 296 of the Laws of Kenya	36
	Landlord and Tenant (Shops, Hotels and Catering Establishments) Act, Cap 301 of the Laws of Kenya	37
	The Land Registration Act, Act No 3 of 2012	42
	The Sectional Properties Act, Act No. 21 of 1987	48
	The Traffic Act, Cap. 403 of the Laws of Kenya	56
	The Kenya Roads Act, Act No. 2 of 2007	57
	The Kenya Roads Board Act, Act No. 7 of 1999	58
	The Housing Act, Cap 117 of the Laws of Kenya	59
	Investment Promotion Act, Cap 485B of the Laws of Kenya	60
	Special Economic Zones Act, 2015	61
	Income Tax Act, Cap 470 of the Laws of Kenya	63
	Leadership and Integrity Act, 2012	63
	Anti-Corruption and Economic Crimes Act, No. 3 of 2003	64
	The Bribery Act, No. 47 of 2016	65

### APPENDIX 3. KCAA Letter about Building Height Plan

Our Ref 01883/RAN/L/38163

14 November 2018

Director General  
Kenya Civil Aviation Authority  
Aviation House, Jomo Kenyatta  
International Airport, Nairobi  
P.O Box 30163 -00100  
Nairobi KENYA

**Attn: Ground Control**

Dear Sir/Madam

**PREPARATION OF URBAN PLANS, URBAN DESIGNS, ECONOMIC/FINANCE AND IMPLEMENTATION STUDY FOR REDEVELOPMENT OF THE NAIROBI CENTRAL RAILWAY STATION AND ITS SURROUNDINGS.**

**RE-SUBMISSION OF DOCUMENTATION FOR RAILWAY CITY BUILDING HEIGHTS.**

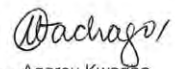
Following our telephone discussion with Capt. King'ori on 14 November 2018, we hereby re-submit our letter requesting for a no objection on the proposed building heights. The softcopy versions of the drawings in pdf format and DWG format were delivered to your office and received by Teresa Njoki on 13 November 2018.

We look forward to your response/feedback on the above.

For further enquiries please do not hesitate to contact Anastasia Ngatti through email on [angatti@gibbinternational.com](mailto:angatti@gibbinternational.com) or Telephone: 3245502 or Cell phone +254728203970.

Yours faithfully  
for GIBB Africa Ltd

  
 Anastasia Ngatti  
 Head of Department

  
 PP Aggrey Kwadua  
 Operations Manager

**GIBB**International  
**CONSULTING • DESIGN • MANAGEMENT**

**GIBB AFRICA LIMITED**  
1st Flr, Kaka House, Maua Close, off Parklands Rd  
P. O. Box 30020, Nairobi, 00100 GPO, Kenya.  
Tel: +254 (0) 20 3245000  
+254 (0) 20 3749267 / 3749359  
Fax: +254 (0) 20 3749561  
Cellphones : +254 (0) 722 206876  
+254 (0) 733 333024  
Email: [gibb@gibbinternational.com](mailto:gibb@gibbinternational.com)  
Website: [www.gibbinternational.com](http://www.gibbinternational.com)  
Dropping Zone No. 47 (Revlon Plaza - 2nd Flr, Tubman Rd)

DIRECTORS: P KAREKEZI\* (Managing) BSc MBA (NUS) MBA (UCLA) LL.M CEng REng MIEK MICE FCIArch; S WAMBWO\* BSc MSc REng MIEK  
 MIHT MASCE: M B NAMIINDA\* BSc REng MIEK  
 \*Kenyan





**REGISTERED OFFICE**  
GIBB AFRICA LIMITED  
KENYA - RE TOWERS  
UPPERHILL, OFF RAGATI ROAD  
P O BOX 44286 NAIROBI  
00100, GPO - KENYA

◀ Requesting for a no objection on the proposed building height  
(Consultant → KCAA)

19

KCAA/AGA/028 Vol. I (19)

6<sup>th</sup> November, 2018

**Head of Department  
GIBB International  
P.o. Box 30020 - 00100  
Nairobi - Kenya.**

Attention : Anastasia Ngatti

**RE: PREPARATION OF URBAN PLANS, URBAN DESIGNS, ECONOMIC /  
FINANCE AND IMPLEMENTATION STUDY FOR REDEVELOPMENT OF THE  
NAIROBI CENTRAL RAILWAY STATION AND ITS SURROUNDINGS**

Reference your letter Ref: 001883/RN L36113 dated 31<sup>st</sup> October 2018 on above subject matter.

The Authority approves heights involving constructions / developments in areas with potential of affecting the safety of aircraft operations as you have correctly put it. However, your letter does not contain any specific request and the Authority takes this opportunity to advise that for all buildings, structures etc particularly those that may undermine safe aircraft operations should be submitted for necessary approval prior to their construction.

Kindly do not hesitate to contact the Authority (KCAA) for any further clarifications that you may require.

Yours faithfully,

  
**Capt R.K. Kingori  
For : Director General**

◀ Authority approval letter about buiding heights on The Railway City  
(KCAA → Consultant)

## APPENDIX 4. Brochure of The Railway City

### LAND USE PLAN

Transit Oriented Development focusing on mixed use, green network and elaborate NMT Network

### IMPLEMENTATION PLAN

- Declaration of Special Planning Area and a project of national importance
- Establishment of Nairobi Railway City Development Authority (NRCCA)
- Commencement of enabling works
- Global outreach to investors
- Ground breaking for priority projects
  - New central railway station, road network and affordable housing

### THE NAIROBI RAILWAY CITY

#### Sustainable, Integrated and Iconic City for All

The Future of Nairobi  
Nairobi Railway City will create a greater Central Business District through the provision of an inclusive new central economic zone, integrated multi modal hub, and iconic urban space.

#### Project at a Glance

- New TOD with New Central Station
- CSD 10km from JICA
- 435 acre Development area
- 10,262 Housing Unit
- 200,299 New Employment

#### Contact information

Principal Secretary, The State Department for Housing and Urban Development  
Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works  
REPUBLIC OF KENYA  
P.O. Box 30119-00100, NAIROBI  
Tel: +254(0) 20 2734886, Email: [ps@housingandurban.go.ke](mailto:ps@housingandurban.go.ke)

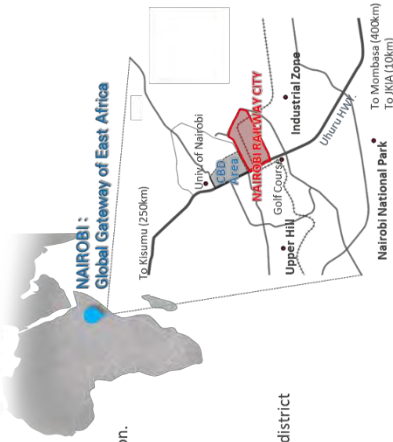
## PRIME LOCATION

Nairobi as Capital city of Kenya and Global Gateway city of East Africa region.

The Nairobi Railway city is adjacent to the current Central Business District.

Key features are;

- Nairobi Central Railway Station
- Neighboring lush golf course
- Close vicinity to Upper Hill business district
- Large open park
- Key heritage sites
- University of Nairobi
- Industrial zone



## INTEGRATED TRANSPORTATION HUB

New central station is designed to be a multi-modal hub in the CBD and ensures the seamless connection among the commuter rail, Bus Rapid Transit lines, airport connection, city bus, and Non Motorized Transport.



### 1 Kenya Railway Zone

15ha  
Kenya Cultural Center, Railway Museum, Historic Legacy Area



### 2 R&D Zone

4ha, FAR 400, 15floor  
Knowledge Industry Synergy with TUK



### 3 Street Commercial

62ha, FAR 300, 10F  
Mix use commercial, housing, Office, 2.4km shopping promenade (longest in Eastern Africa)



### 4 MICE Core

44ha, FAR 600, 45F  
Hotel, Convention, High-end Residential and Commercial



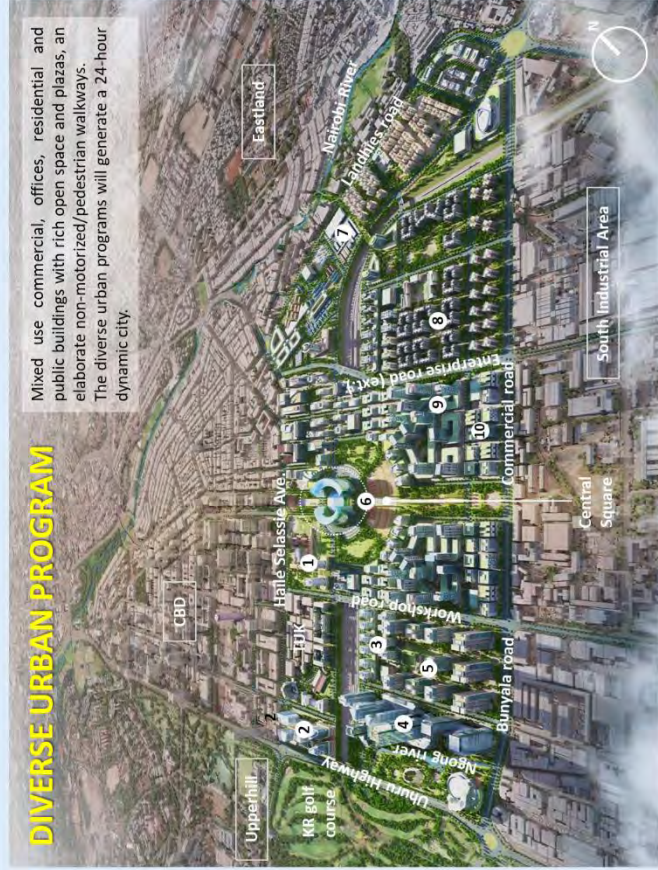
### 5 International Office

36ha, FAR 600, 25F  
Top tier Office and Working Zone



## DIVERSE URBAN PROGRAM

Mixed use commercial, offices, residential and public buildings with rich open space and plazas, an elaborate non-motorized/pedestrian walkways. The diverse urban programs will generate a 24-hour dynamic city.



### 6 Central Station as Multimodal Hub

FAR 400, 15F  
Station, Transit Center, Mixed-Use Commercial



### 7 EAST Core (New Wakulima)

12ha, FAR 250, 8F  
New Commercial, Community Center



### 8 Railway City Housing

51ha, FAR 250, 5~12F  
3,572 units (Affordable 992 units)



### 9 Center Core

49ha, FAR 500, 20F  
Mixed-Use Commercial, Offices, High-end Housing with Grand park, and Station

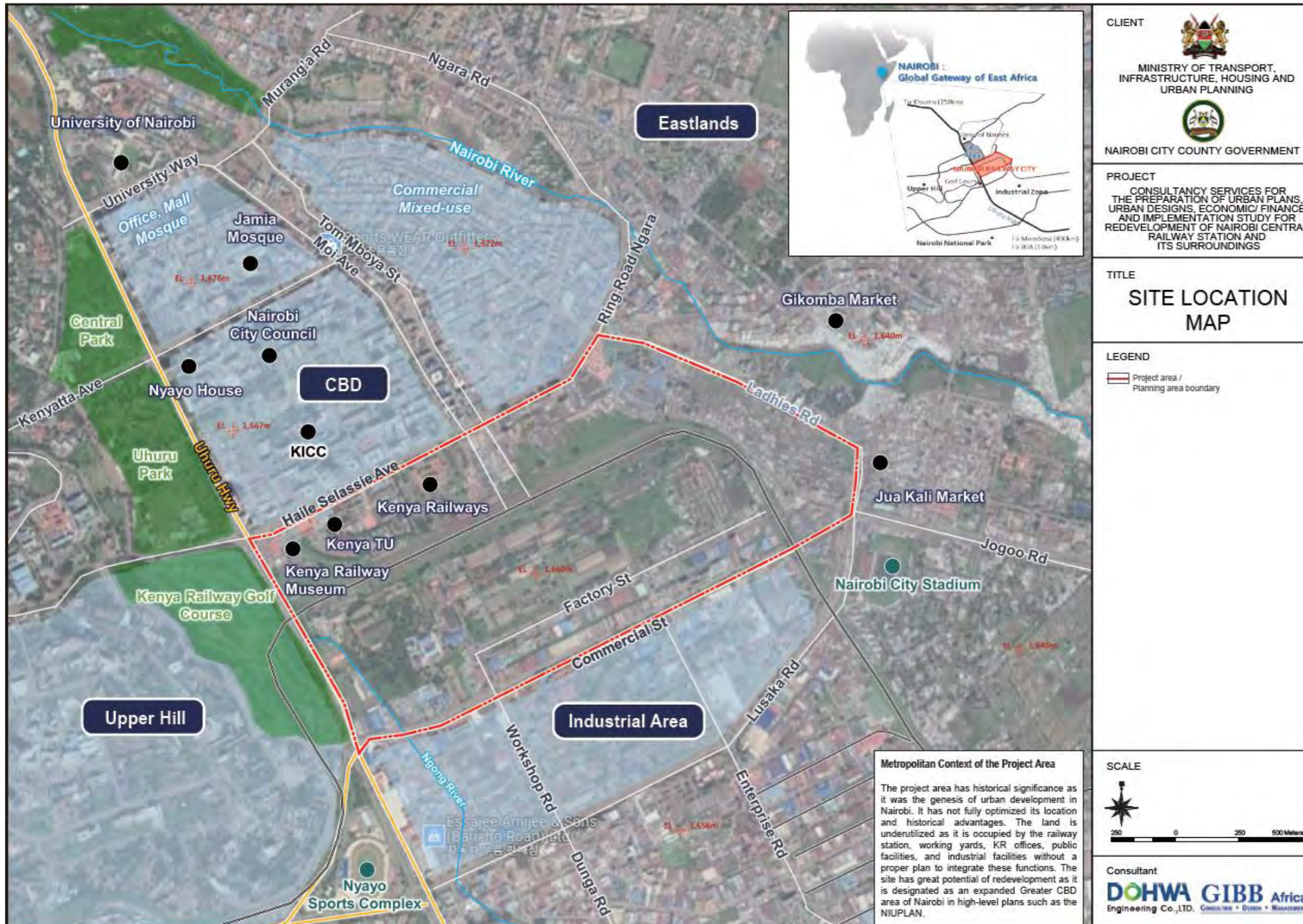


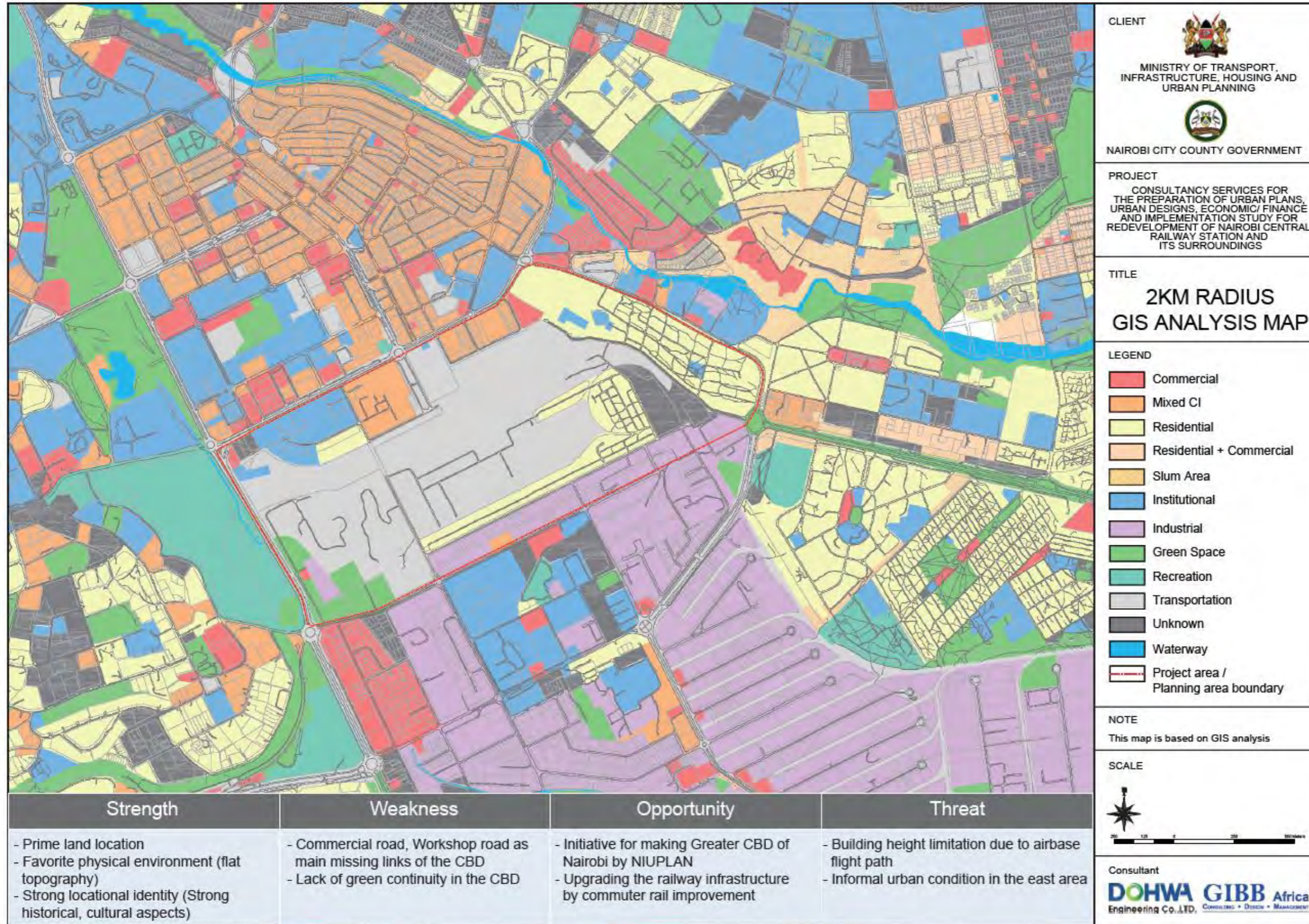
### 10 High-Tech SME

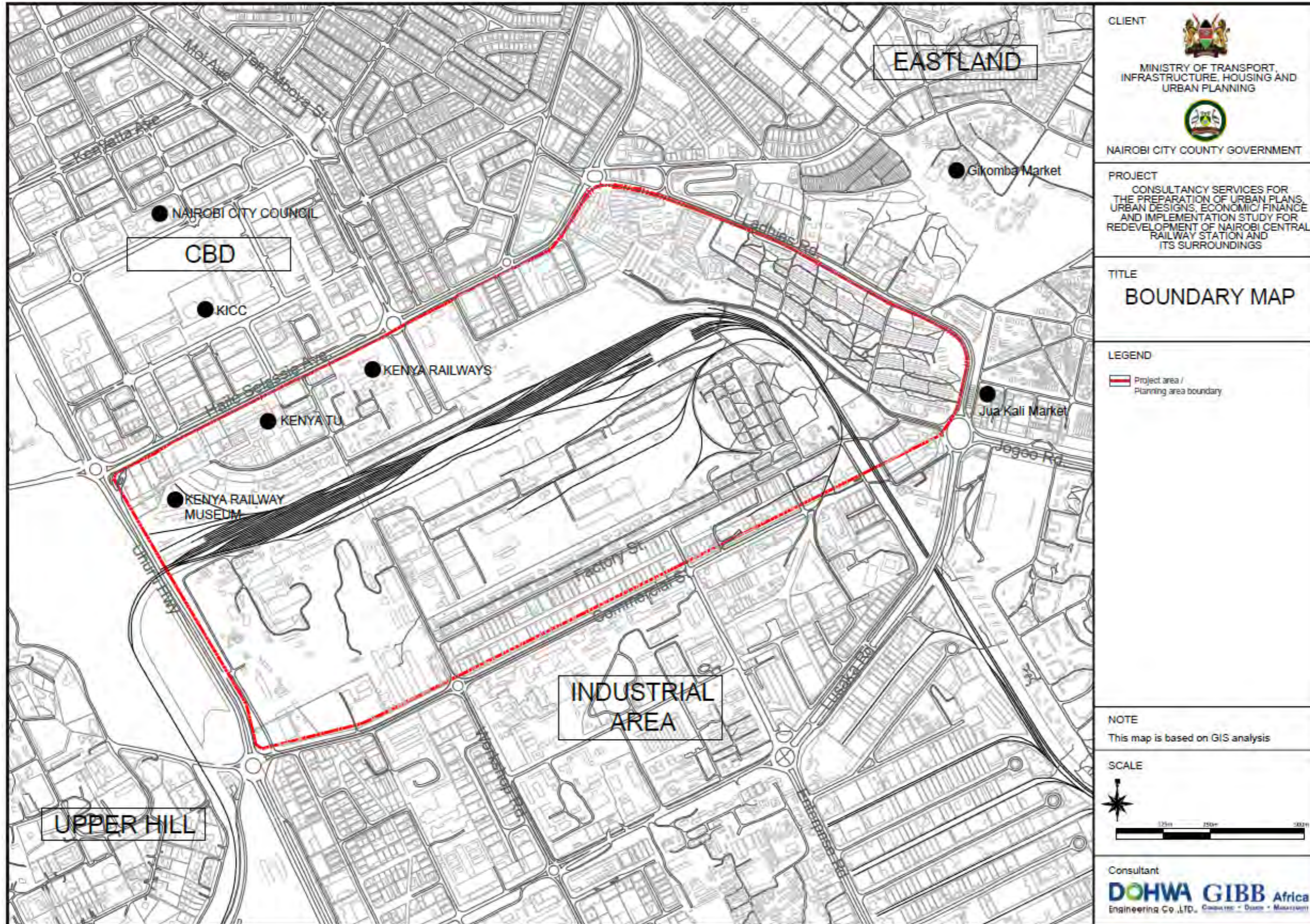
20ha, FAR 400, 10F  
High Tech Industry with SME Cluster, with Grand park



APPENDIX 5. Maps of the Plan









CLIENT  
  
 MINISTRY OF TRANSPORT,  
 INFRASTRUCTURE, HOUSING AND  
 URBAN PLANNING


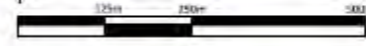
  
 NAIROBI CITY COUNTY GOVERNMENT

PROJECT  
 CONSULTANCY SERVICES FOR  
 THE PREPARATION OF URBAN PLANS,  
 URBAN DESIGNS, ECONOMIC/ FINANCE  
 AND IMPLEMENTATION STUDY FOR  
 REDEVELOPMENT OF NAIROBI CENTRAL  
 RAILWAY STATION AND  
 ITS SURROUNDINGS

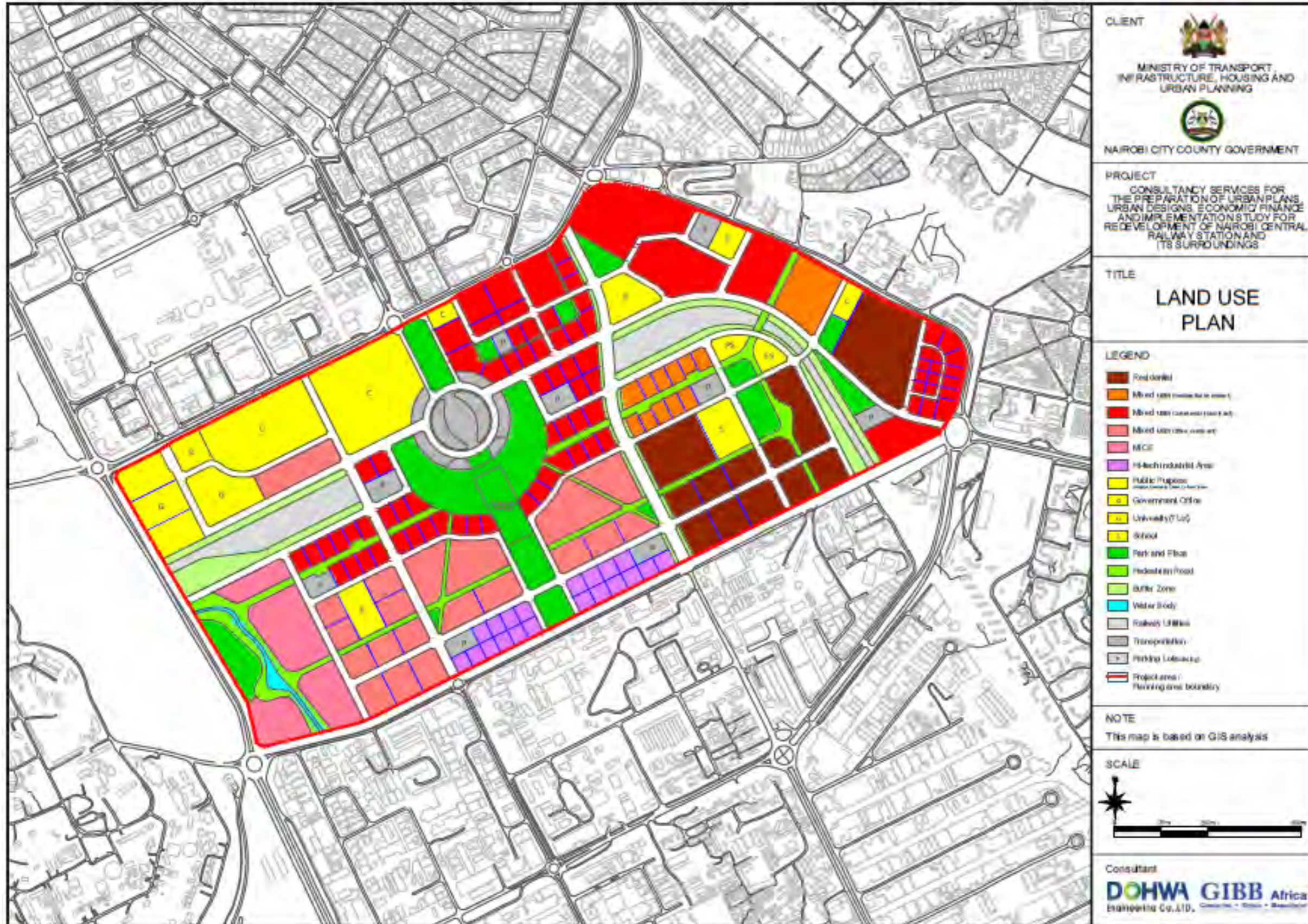
TITLE  
**BOUNDARY MAP**

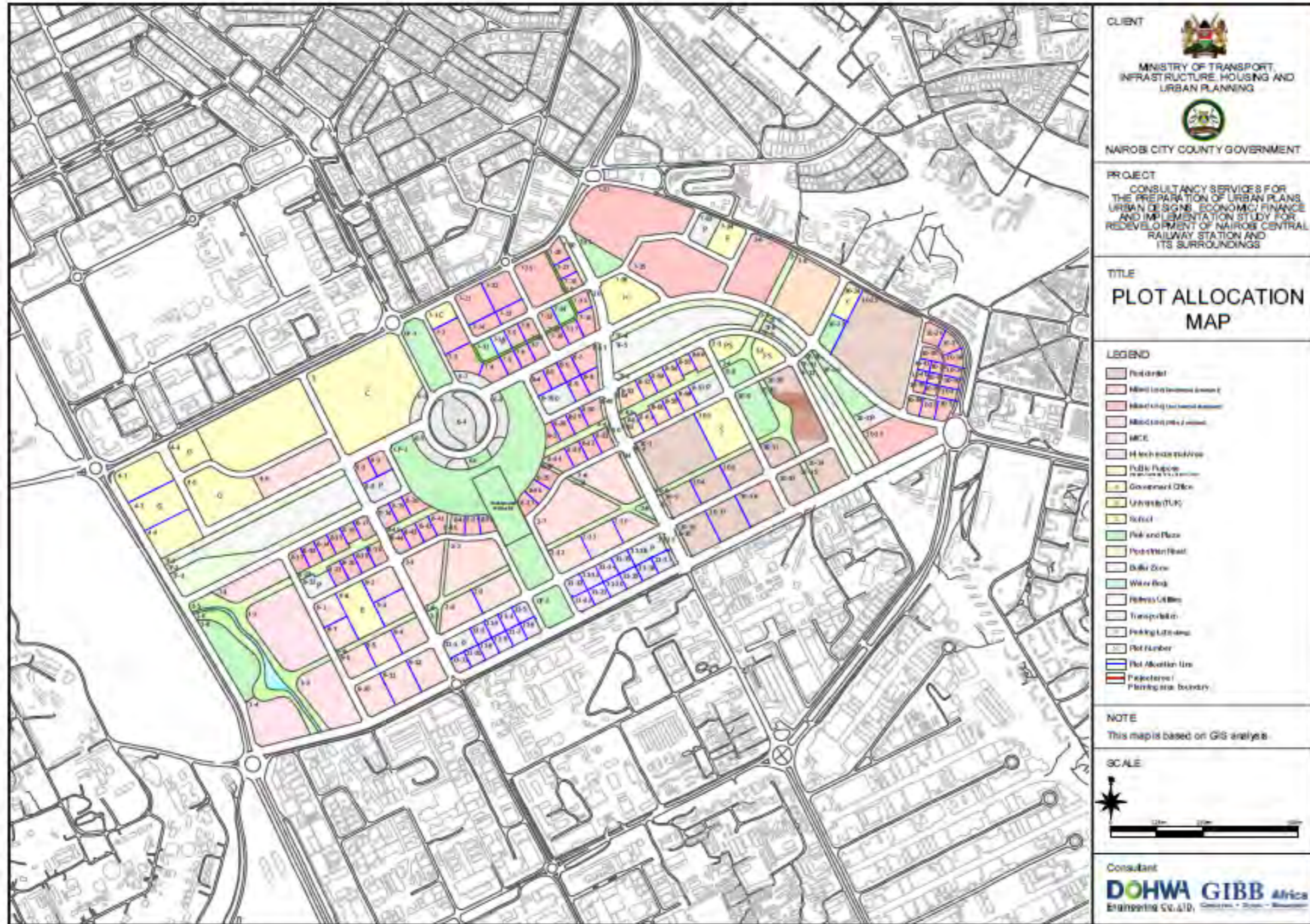
LEGEND  
 Project area /  
 Planning area boundary

NOTE  
 This map is based on GIS analysis

SCALE  
  


Consultant  
  
 Engineering Co., LTD. CONSULTING • DESIGN • MANAGEMENT







## APPENDIX 6. Bird's-eye view







**New Nairobi Central Station and Central Square**



**New Nairobi Central Station and Central Square**



**MICE Core**



**Kenya Railways Cultural Center**



**Housing Precinct**



**Street commercial Precinct**

## REFERENCES.

- Government of Kenya (Ministry). 2005. Practice Manual for Water Supply Services in Kenya
- Government of Kenya (Ministry). 2006. NUTRANS-Masterplan for Urban Transport in the Nairobi Metropolitan Area
- Government of Kenya (Ministry). 2008. Nairobi Metro 2030
- Government of Kenya (Ministry). 2009. Planning and Building Regulations
- Government of Kenya (Ministry). 2011. MRTS –Mass Rapid Transit System-study
- Government of Kenya (Ministry). 2012. Physical Planning Act
- Government of Kenya (Ministry). 2013. Spatial Planning Concept for Nairobi Metropolitan Region
- Government of Kenya (Ministry). 2014. MRTS Harmonization Study
- Government of Kenya (Ministry). 2014. Kenya Fact and Figures.
- Government of Kenya (Ministry). 2016. A Green Mall Street Bus Station in Nairobi Railway Station and its Surroundings
- Government of Kenya (Ministry). 2016. ILUT-Interdisciplinary Land-use and Transport Metropolitan Analysis within the Nairobi Metropolitan Region, final report
- Government of Kenya (Ministry). 2019. Street Design Manual for Kenyan Cities
- Government of Kenya (Ministry). Physical planning Handbook
- Kenya Railways. 2012. Railway city Masterplan by Kenya Railways
- Kenya Railways. 2013. Physical planning and Survey of the State-of-the-Art Railway station at Nairobi, Mombasa and Kisumu
- Kenya Railways. 2014. Master Layout Plan for Nairobi Railway Station (pdf)
- Kenya Railways. 2016. Development of Commuter Rail masterplan for the Nairobi metropolitan Region (ToR, pdf)
- Kenya Urban Road Authority. 2016. Nairobi Viaduct and Road Construction Project (ppt)
- Kenya Urban Road Authority. 2012. Upgrading the A104 from Likoni Road to James Gichuru Road, design report
- Nairobi City County (NCC). A guide of Nairobi city Development Ordinance and Zones.
- Nairobi City County (NCC). 2014. NIUPLAN-Nairobi Integrated Urban Plan: Part I,II,III
- Nairobi City County (NCC). 2017. Ongoing. Advisory Plan for Muthurwa (pdf)
- Nairobi City County (NCC). 2017. Ongoing. Proposed Priority Pedestrian Walkways (pdf)
- Nairobi City County (NCC). 2017. Nairobi Housing Urban Renewal Project Feasibility report
- Nairobi City County (NCC). 2017. Detailed Planning of Integrated Transport System and Loop line in the Nairobi Urban Core
- NEMA-National Environment Management Authority. 2011. Integrated National Land Use Guidelines
- Technology University of Kenya. 2017. TUK masterplan
- African Development Bank group. 2016. Rail Infrastructure in Africa – Financing policy options
- AfDB, 1997. Developed from Rietbergen-McCracken and Narayan
- AfDB, 2001. A Handbook on Stakeholder Participation and Engagement for ADB Operations
- Amsterdam City Council. 2009. Zuidas Vision Document
- Amsterdam City Council. 2016. Zuidas Vision 2016 Document Summary
- Ana Luisa Martins da Conceicao. 2015. From City's Station to Station City-an Integrated Spatial approach to the (re)development of Station areas. TU-Delft, Faculty of Architecture and the Built Environment, the Netherlands
- A.T.Kerney. 2014. Global Cities Index
- Avic. 2017. Avic International Africa Headquarters masterplan (pdf)
- Charles Miller. 2016. The Lunatic Express.
- DCC, 2010. Tatu City Guideline
- Depart of transportation of USA. 2012. Station Area planning-how to make great Transit Oriented places (pdf)
- Dohwa Engineering. 2016. Railway station and surrounding area development examples (Korean)
- Integrated Transport Planning Ltd. 2017. Nairobi BRT Five tests for Satisfactory delivery (PPT)
- KNBS, 2017. Statistical Abstract
- Korea Rail, 2012. GwangMyung Railway station area development project (Korean)

- Korea Rail, 2015. Deajun Railway station area redevelopment ToR (Korean)
- Lars Muller publishers, 2014. Nairobi Kenya: Migration shaping the city
- Mbugua wa Mungai, George Gona. 2013. (RE)membering Kenya vol1. Identity, Culture and Freedom.
- Mbugua wa Mungai, George Gona. 2013. (RE)membering Kenya vol3. Governance, Citizenship and Economics.
- OMA, 2000. Euralille Masterplan (pdf)
- Owuor S.O & Mbatia T, 2008. Post-Independence Development of Nairobi City, Kenya. Paper presented at Workshop on African Capital Cities Dakar
- Shadi Rahbaran, Manuel Herz, ETH Studio Basel. Nairobi Kenya-Migration Shaping the City. Las Muller Publishers.
- The Economist, Intelligence Unit. 2013. Hot spots 2015-Benchmarking the future competitiveness of cities.
- UN-Habitat, 2014. Urban planning for City Leaders
- UN-Habitat, 2014. State of African Cities 2014
- UN-Habitat, 2013. Planning and Design for Sustainable Urban Mobility
- UN-Habitat, 2013. Guideline for Urban Planning
- UN-Habitat, 2017. Reflections on the Nairobi Railway City Redevelopment (ppt)
- UN-Habitat, 2015. Creating a Dynamic CBD in Nairobi (ppt)
- UN-Habitat, 2015. Managing complex political process (ppt)
- World Bank. 2016. Kenya Urbanization Review
- World Bank. 2016. Doing Business in Kenya 2016
- [https:// KR.co.ke/Nairobi-commuter-rails/](https://KR.co.ke/Nairobi-commuter-rails/)
- <https://nairobi.go.ke/history/> accessed on 4 September 2019
- <https://www.allaboutsikhs.com/world-gurudwaras/sikh-temple-landia-kenya>, retrieved on 5 April 2018
- <https://oxfordbusinessgroup.com/overview/back-track-after-period-decline-tourism-sees-its-fortunes-rise>

**LOCAL PHYSICAL AND  
LAND USE DEVELOPMENT PLAN  
FOR  
NAIROBI RAILWAY CITY  
(2020-2035)**

September 2020