
**URBAN PLANNING AND DEVELOPMENT OF EASTLEIGH
DISTRICT COMMERCIAL CENTRE IN NAIROBI.**

By;

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DECLARATION

I do hereby declare that this Research Project is my original work and has not been presented for a degree in any other university.

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DEDICATION

I dedicate this work to my Husband Willy Kioko Malile and my son Allan Muthusi Kioko for they kept on inspiring me to do more than I had done before.

ACKNOWLEDGEMENT

I would like to thank my supervisors Dr. Laban Shihembetsa, and Dr. Peter A. Makachia for they tirelessly directed me towards attaining the best in my research.

Special thanks to DR. Kakumu for his valuable guidance in this research paper.

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TABLE OF CONTENTS.

Declaration.....i

Dedication.....ii

Acknowledgement.....iii

Table of contents.....iv

List of figures.....viii

List of tables.....x

List of mapsxi

List of diagramsxii

List of terminologiesxiii

List of abbreviations and acronyms.....xiv

Abstract.....xv

References.....xv

CHAPTER ONE: INTRODUCTION:

1.0. BACKGROUND TO THE STUDY1

1.1. BACKGROUND TO THE STUDY PROBLEM.....5

1.2. RESEARCH PROBLEM STATEMENT.....7

1.3. RESEARCH AIM AND OBJECTIVES.....8

1.4. RESEARCH QUESTIONS.....8

1.5. SIGNIFICANCE OF THE STUDY.....9

1.6. STUDY ASSUMPTIONS9

1.7. SCOPE AND LIMITATIONS OF THE STUDY.....10

1.8. OPERATIONAL DEFINITION OF TERMS11

1.9. STRUCTURE OF THE STUDY.....12

1.10. DISSERTATION REPORT CONCEPTUAL MODEL...14

CHAPTER TWO: LITERATURE REVIEW.

| | | |
|--------|---|----|
| 2.0. | INTRODUCTION..... | 15 |
| 2.1. | COMPREHENSIVE URBAN PLANNING..... | 15 |
| 2.1.1 | URBAN PLANNING SUMMARY MODEL..... | 17 |
| 2.2 | STRATEGIC URBAN PLANNING..... | 18 |
| 2.2.1. | CHARACTERISTICS OF STRATEGIC URBAN PLANNING..... | 18 |
| 2.2.2. | STRATEGIC URBAN PLANNING PROCESS.. | 19 |
| 2.2.3. | STRATEGIC URBAN PLANNING PROCESS MODEL..... | 23 |
| 2.3. | GRID URBAN PLANNING | 24 |
| 2.3.1. | ANCIENT GRID PLANS..... | 24 |
| 2.3.2. | THE BARCELONA EIXAMPLE..... | 26 |
| 2.3.3. | CITY BEAUTIFUL..... | 27 |
| 2.3.4. | CHANDIGARH..... | 28 |
| 2.2.5. | MILTONE KEYNES | 29 |
| 2.4. | STREETSCAPE DESIGN..... | 30 |
| 2.4.1. | THE WOONERF..... | 30 |
| 2.5. | URBAN PUBLIC SPACES..... | 31 |
| 2.6. | ZONING..... | 32 |
| 2.6.1. | ZONING SUCCESSES | 33 |
| 2.6.2. | FAILURES OF ZONING..... | 34 |
| 2.6.3. | ALTERNATIVE TO TRADITIONAL ZONING. | 34 |
| 2.6.4. | FORM BASED CODES..... | 34 |
| 2.7. | THEORETICAL FRAMEWORK | 38 |

| | | |
|-----|--------------|----|
| 2.7 | SUMMARY..... | 39 |
|-----|--------------|----|

CHAPTER THREE: METHODOLOGY:

| | | |
|--------|----------------------------------|----|
| 3.0. | INTRODUCTION | 40 |
| 3.1. | RESEARCH DESIGN..... | 40 |
| 3.2. | TARGET POPULATION..... | 40 |
| 3.3. | DATA COLLECTION INSTRUMENTS..... | 41 |
| 3.4 | DATA COLLECTION PROCEDURE..... | 42 |
| 3.5. | CONCEPTUAL FRAMEWORK..... | 43 |
| 3.6. | DATA ANALYSIS..... | 44 |
| 3.6.1. | QUALITATIVE ANALYSIS..... | 45 |
| 3.6.2. | CONTEXTUAL SPATIAL ANALYSIS..... | 45 |
| 3.6.3. | DESCRIPTIVE ANALYSIS..... | 45 |
| 3.7. | DATA PRESENTATION..... | 46 |

CHAPTER FOUR: RESEARCH FINDINGS

| | | |
|--------|---|----|
| 4.0. | INTRODUCTION..... | 47 |
| 4.1. | URBAN PLANNING AND DESIGN OF EDCC..... | 47 |
| 4.1.1. | POLICY PLANS..... | 47 |
| 4.1.2. | ZONING..... | 57 |
| 4.2. | DEVELOPMENTS IN EASTLEIGH DISTRICT COMMERCIAL CENTRE | 57 |
| 4.2.1. | PHYSICAL INFRASTRUCTURE..... | 57 |
| 4.2.2. | SOCIAL INFRASTRUCTURE..... | 64 |
| 4.2.3. | BUILDINGS..... | 65 |
| 4.3. | SUMMARY..... | 75 |

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS:

5.0 INTRODUCTION.....79

5.1. CONCLUSIONS.....79

5.2. RECOMMENDATIONS.....80

 5.2.1 POLICY MAKERS.....80

 5.2.2. DEVELOPERS.....93

 5.2.3. USERS.....93

 5.2.4. RESEARCHERS.....94

 5.2.5. PRACTITIONERS.....94

APPENDIX:

CASE STUDY PROTOCOL.

List of figures.

Figure 1.1. Eastleigh District Commercial Centre (Pg. 10)

Figure 1.2. Dissertation report conceptual model (Pg. 14)

Figure 2.1. Plan of Melitus. (Pg. 25)

Figure 2.2. Barcelona map (Pg. 26)

Figure 2.3. Barcelona's blocks (Pg. 26)

Figure 2.4. The resultant urban form of Barcelona example. (Pg. 27)

Figure 2.5. 1909 Plan of Chicago. (Pg. 27)

Figure 2.6 plan of Chandigarh. (Pg. 29)

Figure 2.7 A one square km sector in Milton Keynes framed by major roads on a grid. (Pg. 30)

Figure 2.8. Theoretical framework conceptual model (Pg. 38)

Figure 4.1. Road network for EDCC (Pg. 58)

Figure 4.2. Rehabilitated General Waruingi Street. (Pg. 59)

Figure 4.3. Drainage system at junction of First and Fifth Avenues. (Pg. 59)

Figure 4.4. Rehabilitation of Second Avenue. (Pg. 60)

Figure: 4.5. Rehabilitation of General Waruinge road. (Pg. 60)

Figure 4.6. Motorized transport system in Eastleigh to the CBD. (Pg. 61)

Figure 4.7. First Avenue encroachment by hawkers. (Pg. 62)

Figure 4.8: Dumping along Major Jackson Muriithi road. (Pg. 63)

Figure 4.9: Sold out CCN market land and first avenue encroachment by Hawkers. (Pg. 65)

Figure 4.10. Building developments in EDCC. (Pg. 66)

Figure 4.11. Illustrations of development slender on plan (Pg. 67)

Figure 4.12. Illustrations of development slender on plan (Pg. 67)

Figure 4.13. Illustrations of development slender on plan (Pg. 68)

Figure 4.14. Illustrations of development square on plan (Pg. 69)

Figure 4.15. Urban form of EDCC (Pg. 70)

Figure 4.16. Vacant land ready for development. (Pg. 71)

Figure 4.17. Cross sectional analysis of urban form. (Pg. 71)

Figure 4.18. Cross sectional analysis along General Waruingi Road between First Avenue and Second Avenue. (Pg. 72)

Figure 4.19. Analysis across General Waruingi. (Pg. 72)

Figure 4.20. Analysis from First Avenue facing Sargent Major Kamugobe Street. (Pg. 72)

Figure 4.21. Analysis along General Waruingi Road between First Avenue and Second Avenue. (Pg. 73)

Figure 4.22. Analysis along First Avenue showing high level developments (Pg. 73)

Figure 4.23. Malls on First Avenue. (Pg. 74)

Figure 5.1. Proposed reorganization of traffic transport system (Pg. 84)

Figure 5.2. Proposed Section through 21 Meter wide internal road (Pg. 85)

Figure 5.3. Proposed section through 18 Meter wide internal road (Pg. 85)

Figure 5.4. Proposed section through 12 Meter wide internal road (Pg. 86)

Figure 5.5. Proposed section through a 6 Meter wide internal road (Pg. 86)

Figure 5.6. Proposed public transport systems (Pg. 87)

Figure 5.7. Proposed plan and elevation through 25 meter access road (88)

Figure 5.8. Proposed design of First Avenue Street (Pg. 89)

Figure 5.9 Proposed design of Second Avenue and Second Street (Pg. 90)

List of tables.

Table 1.1: Zoning ordinance for zone 2 of Nairobi (Pg. 05)

Table 3.1. Data collection instruments (Pg. 42)

Table 4.1. EDCC zoning ordinance (Pg. 57)

Table 4.2. Strategic issues in 2008 Policy paper for EDCC (Pg. 75)

List of maps.

Map 1.1. Nairobi boundary changes (Pg. 01)

Map 1.2. The Plan of Nairobi as depicted in the 1948 Master Plan (Pg. 02)

Map 1.3. The Plan of Nairobi as depicted in the 1973 MDG (Pg. 03)

Map 1.4. Kenya and Nairobi location maps. (Pg. 04)

Map 1.5. Map of Eastleigh. (Pg. 04)

List of diagrams

Diagram 2.1. Urban planning conceptual model (Pg. 17)

Diagram 2.2. Strategic urban planning model. (Pg. 23)

Diagram 3.1. Research variables. (Pg. 44)

List of terminologies

Urban planning

Urban design

The grid plan

Strategic urban planning

Form based code

List of Abbreviation and Acronym

| | |
|---------|---------------------------------------|
| EDCC | Eastleigh District Commercial Centre. |
| CBD | Central Business District. |
| FBC | Form Based Code. |
| CCN | City Council of Nairobi. |
| MDG | Millennium Development Goals. |
| NMT | Non-Motorized Transport. |
| KURA | Kenya Urban Roads Authority. |
| NAWASCO | Nairobi Water and Sewerage Company. |
| MoE | Ministry of Energy. |
| MoW | Ministry of Water. |
| MoH | Ministry of Health. |
| CSP | Case Study Protocol. |

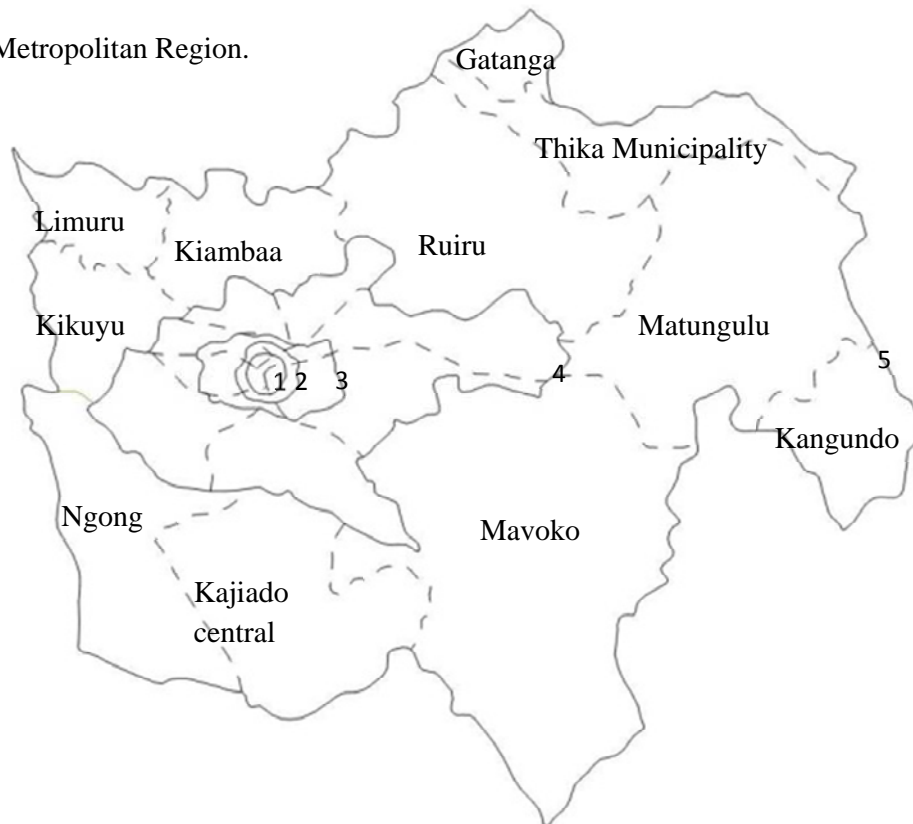
ABSTRACT:

There is an implementation gap between the urban planning and design framework of Eastleigh District Commercial Centre (EDCC) with the development of the centre leading to higher building densities and deteriorating infrastructural provision rendering both physical and social infrastructure inadequate to support the high building densities and the development of EDCC as an integrated secondary commercial center. This problem was the basis of the aim of my research drawing lessons for planning and design of EDCC based on compliance of developments to the planning ordinances. Different samples were studied in physical infrastructure, social infrastructure and buildings. Samples studied in the physical infrastructure included road and drainage system, water and sewerage system, solid waste management. Those of social infrastructure included business activities in space, education facilities, health facilities, housing facilities, and markets facilities. Building densities as controlled by plot ratio, plot coverage and building line were the elements I studied in building developments. I chose the above samples randomly. From my field work analysis, I found out that the 2008 policy plan was not implemented hence both physical and social infrastructure is not efficient as envisioned in the policy paper. The building densities surpass the ordinance densities. This influenced my conclusions that developments in EDCC do not comply with the planning ordinances. Therefore, I recommend inclusion of other stakeholders like developers, architects, planners, urban designers, and private sector to be part of the planning team and follow the strategic planning process to the latter. The planning team should also consider developing form based codes to be used in parallel with zoning ordinances as literature shows there is better compliance with three dimensional form based codes than two dimensional zoning ordinances.

1. CHAPTER ONE: INTRODUCTION.

1.0. BACKGROUND TO THE STUDY.

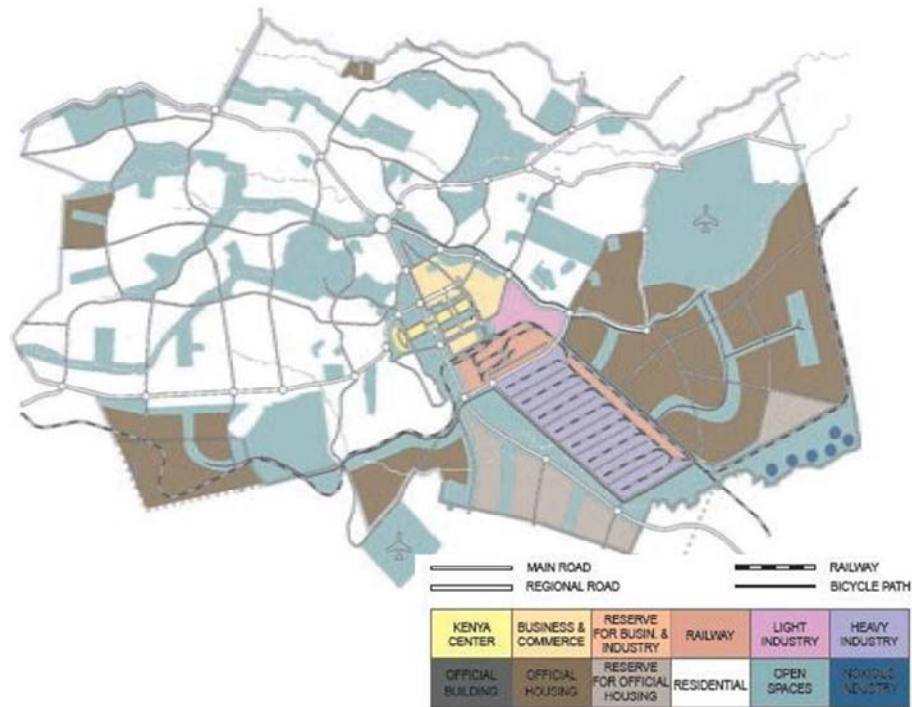
Planning and design of urban areas is important to ensure conformity and balance of the built environment (Bailey 1975). Nairobi has been planned using the comprehensive urban planning approach. Comprehensive urban planning is used as a ‘design’ where by the planners are seen as architects who develop comprehensive master plans (Taylor, 1998). The master plans that have guided the development of the city of Nairobi include: 1. the plan for a railway town in 1906 (Emig and Ismail, 1980), 2. 1927 plan for a settler capital, 3. 1948 master plan for a colonial capital, 4. The Nairobi Metropolitan Growth Strategy of 1973 and 5. The current Nairobi Metropolitan Region.



Map 1.1. Nairobi boundary changes. Source: digitized by author from Obudho and Aduwo (1992:53) and [www/http://na.unep.net](http://na.unep.net)

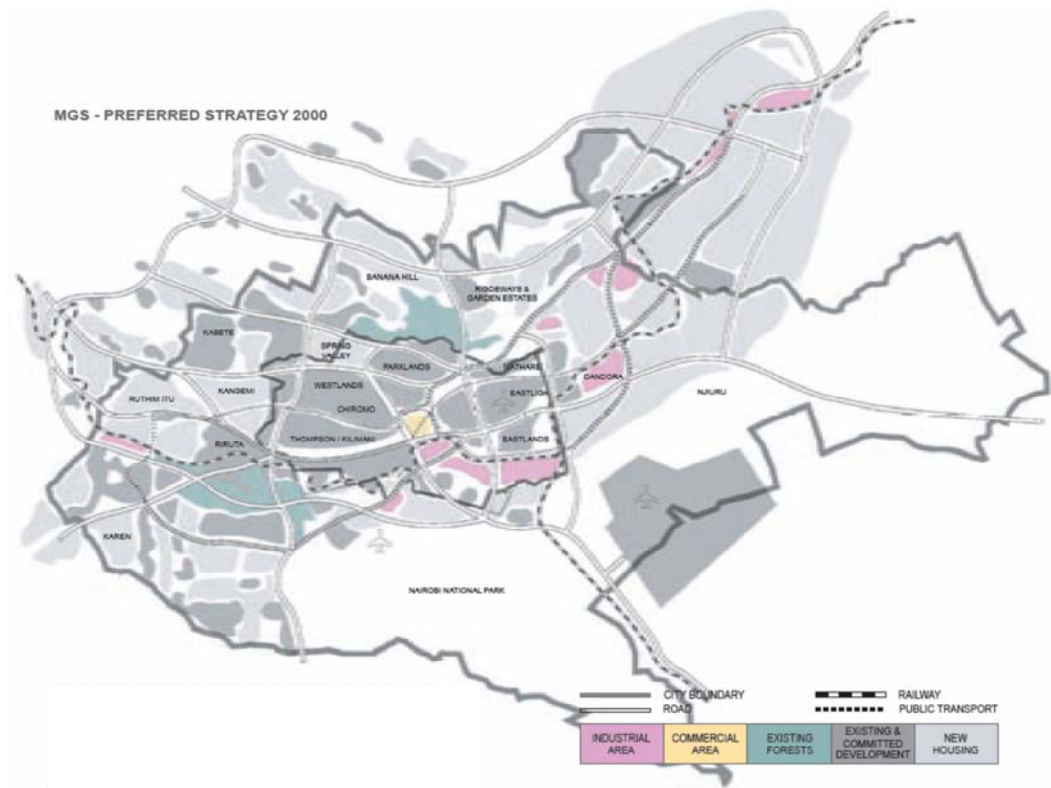
The master plans for the city of Nairobi which have had an impact in urban planning and designing of Eastleigh District Commercial Centre are the 1948 master plan and 1973 Nairobi Metropolitan Growth Strategy.

In the 1948 master plan, Nairobi was classified into zones with functionalism as the main principle for the zoning. Racial zoning was rationalized as “the need to achieve a disease free environment with minimum of public expenditure (Amis 1980:86). This factor led to Eastleigh district to be dominated by Kenyan Somalis where they had been moved in 1920 following the 1914 Simpson report after the plague in the Indian bazaar recommending segregation of the races that had congregated in Nairobi.



Map 1.2. The Plan of Nairobi as depicted in the 1948 Master Plan. Source: ETH studio Basel, History of Urban Planning in Nairobi by Martina Vogel.

The 1973 Nairobi Metropolitan Growth Strategy proposed decentralization and development of alternative service centers within the different districts of the city to reduce the high (employee) density in the Central Area. Associated with each of the main areas for new housing would be one or more industrial areas and a large commercial center. The creation of the large commercial centers was emphasized for EDCC in 1989 policy plan through the Eastleigh district centre strategy of 10th May, 1989 where an area for Eastleigh District Commercial Centre was created.

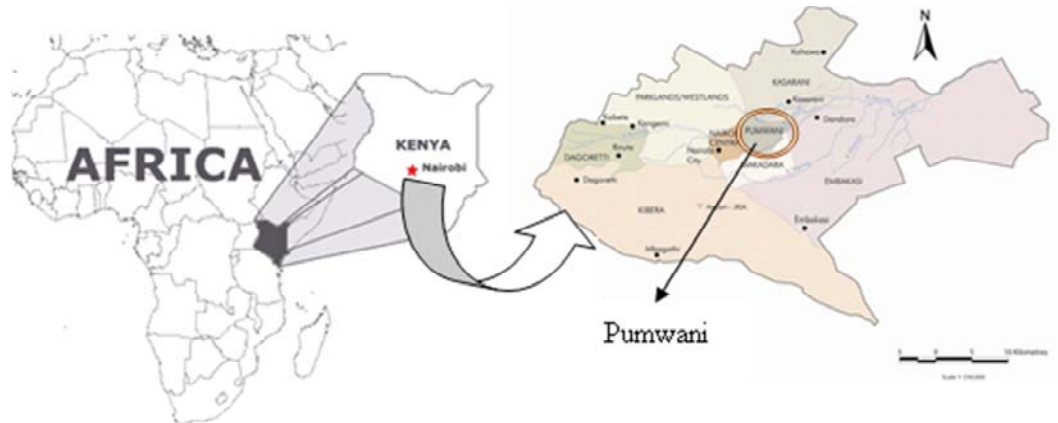


Map 1.3. The Plan of Nairobi as depicted in the 1973 Millennium Development Goals.

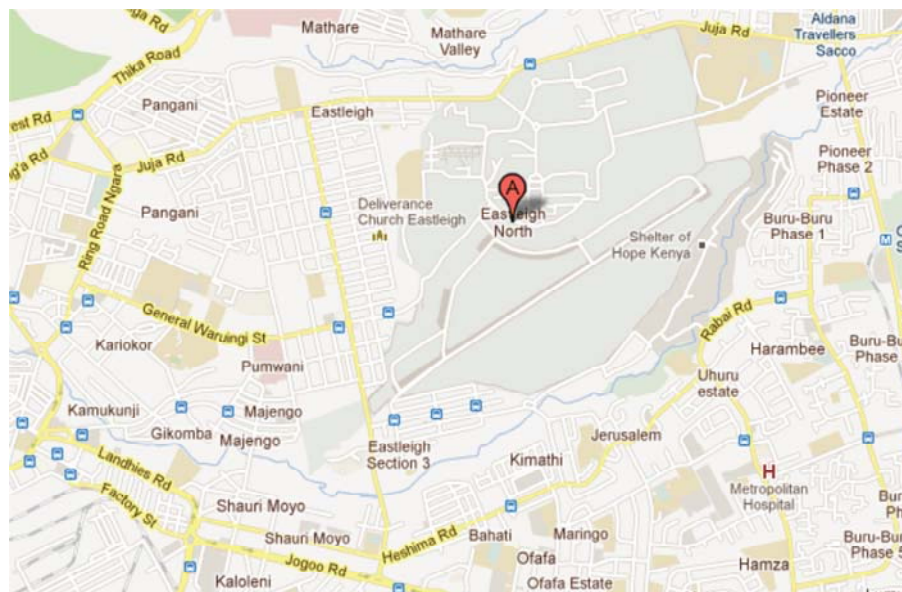
Source: ETH studio Basel, History of Urban Planning in Nairobi by Martina Vogel.

Eastleigh is located in the Eastern part of Nairobi within Pumwani and Kamkunji divisions of Nairobi. At the intermediate scale it is surrounded by high density residential areas to the West and East and is within two

major primary roads (Juja and Jogoo). It lies approximately 4 km east of the City Centre and covers a total area of about 120 hectares. It is bounded by Moi 82 Air Base to the East, Juja Road to the Northwest, Nairobi River to the South and New Pumwani Estate to the West.



Map 1.4. Kenya and Nairobi location maps.



Map 1.5. Map of Eastleigh. Source ([www.google](http://www.google.com) maps.com)

The current urban planning and design policy for Eastleigh District Commercial Center is the policy paper of 2008 whose implementation has not been completed as planned by City Council to date. Nevertheless, the

Nairobi City Council has developed zoning ordinances for all the zones in Nairobi City with Eastleigh District Commercial Center being in zone 2 with the following ordinances:

Table 1.1: Zoning ordinance for zone 2 of Nairobi.

| Zone | Areas covered | GC % | PR % | Type(s) of development allowed | Min. Area (Ha) |
|------|-----------------------------|---------|---------|--------------------------------------|----------------------|
| 2 | Eastleigh | | | Commercial / | 0.05 |
| | Eastleigh District Centre | 80 | 250 | Residential | |
| | EastleighComm / Residential | 60 | 240 | (High-rise flats) | |
| | Pumwani / Califarnia | 60 | 240 | | 0.05 |
| | Ziwani / Starehe | | | Commercial / | |
| | Commercial | 80 | 150 | Residential | |
| | Residential | 35 | 75 | (High Rise flats) | |

Source: Adopted from CCN department of City planning by Author.

1.1 BACKGROUND TO THE STUDY PROBLEM:

It is evident that comprehensive urban planning and design has been used in urban planning and design of EDCC through strategic urban planning in developing policy plans. The urban structure of EDCC is on a grid plan and zoning ordinances are used to guide developments in the study area. This study is therefore based on a background of problems associated with the compliance of developments with the above urban planning and design approaches.

Globally, there are challenges associated with comprehensive urban planning and master plans. Comprehensiveness and rationality in urban planning try to define future end-states and goals that strongly depart from the current situation (Lindblom and Bay Brooke, 1963). It is difficult for planners to predict effects of alternatives that depart strongly from the current situation and a master plan is not flexible enough to take into account other developments in future. The master plan's two dimensional nature causes the problem of unifying it with architecture pattern and form which is three dimensional. Comprehensive urban planning focuses too much on design leaving the social, political and economic aspects of the urban society.

Additionally, strategic urban planning used in developing the policy plans for EDCC has theoretical problems. Theoretically, strategic urban planning was adapted from the military to business sector before its use in public planning. Private and public arenas have different settings in the political arena, public arena and control and monitoring mechanisms. As a result of these differences strategic planning concepts from the business sector can be used in the public sector, on condition that planners take into account the political arena, the public arena and the formal processes and regulations that ensure democratic decision-making (Nutt and Backoff 1995; Stone, Bryson and Einsweiler, 1988)

As stated by Bernstein 1994, implementations of the master plans and policy plans are affected by the general inefficiency associated with majority of the developing countries' land policies, and the absence of

secure tenure, adequate land management capacity, inappropriate instruments and weak institutional measures, (Bernstein; 1994).

The grid urban planning applied in EDCC has its theoretical problems. According to Camillo Siite (Camillo, 1889) grids lack variety and, consequently, are uninteresting and can become oppressive by their monotony. Grid system causes congestion at intersections and vulnerability of pedestrians. The long travel distances in grid urban planning consumes large pieces of land with the inherent high street and intersection frequencies producing large areas of impermeable surfaces in street pavement and sidewalks.

1.2. RESEARCH PROBLEM STATEMENT:

There is an implementation gap between the urban planning and design framework of Eastleigh District Commercial Centre with the development of the centre. Lack of implementation of the policy plans and zoning ordinances in the development of the Centre is leading to higher building densities and deteriorating infrastructural provision rendering both physical and social infrastructure inadequate to support the high building densities and the development of EDCC as an integrated secondary commercial center.

In particular physical infrastructure including roads and drainage system, water and sewerage system, solid waste management system have not been developed as planned in the 2008 policy plan. Additionally, social infrastructural services like business activity spaces, education facilities, health facilities, housing facilities, market facilities have not been provided as planned in the 2008 policy plan. Building densities including

plot coverage and plot ratio, building lines and setbacks are happening in disregard to the urban zoning ordinances.

1.3. RESEARCH AIM AND OBJECTIVES

The aim of this study is to compare the urban planning and design frameworks with the developments of EDCC by analyzing the urban planning and design approaches used in EDCC through reviewing the urban planning and approaches, assessing developments in EDCC against the urban planning and design approaches and thereof drawing lessons for urban planning and design practice of EDCC. To attain this aim, the following were the objectives of the study;

- i. To review the urban planning and design approach used in Eastleigh District Commercial Centre.
- ii. To assess the developments against the urban planning and design approaches of Eastleigh District Commercial Centre so as to establish the degree of compliance.
- iii. To bring up the implications of the degree of compliance and the lessons for urban planning and design approaches thereof established.

1.4. RESEARCH QUESTIONS:

To attain the above aims and objectives the study sought to answer the following research questions:

- i) Which urban planning and design method is used in planning and designing EDCC and how is it being applied?
- ii) Are the developments in EDCC compliant to the urban planning and design ordinances of EDCC?

iii) What lessons can we learn from the planning and development outcomes in the study area?

1.5. SIGNIFICANCE OF THE STUDY:

The comparison of urban planning and design framework with the developments of EDCC is significant to the planning team in assessing the degree of success in guiding the development of the commercial centre. The urban planning and design lessons hereof brought out can be used by the planning team as guidelines on developing urban planning and design framework for Eastleigh District Commercial Centre and other commercial Centers in Urban areas in Kenya. In addition, the lessons thereof learned become essential contribution to urban planning and design in general.

1.6. STUDY ASSUMPTIONS

The study assumed that urban planning and design of EDCC is manifested in physical infrastructure, social infrastructure and buildings in the area. Simple random selection method of physical infrastructure elements including roads and drainage system, water and sewerage system and waste disposal was done to be utilized in this research. The same was done for social infrastructure elements including education facilities, health facilities, housing and markets. Buildings for study and analysis were also chosen randomly.

1.7. SCOPE AND LIMITATIONS OF THE STUDY:

The study covered a geographical area referred to as Eastleigh District Commercial Center as delineated by the 1989 policy plan for zone two which was defined by the Eastleigh District strategy of 10th May, 1989. It

was recommended that the area bounded by Muratina Street to the West, General Waruingi Street to the South, 82 Airforce to the East and Juja Road to the North be declared the Eastleigh District Commercial Centre.

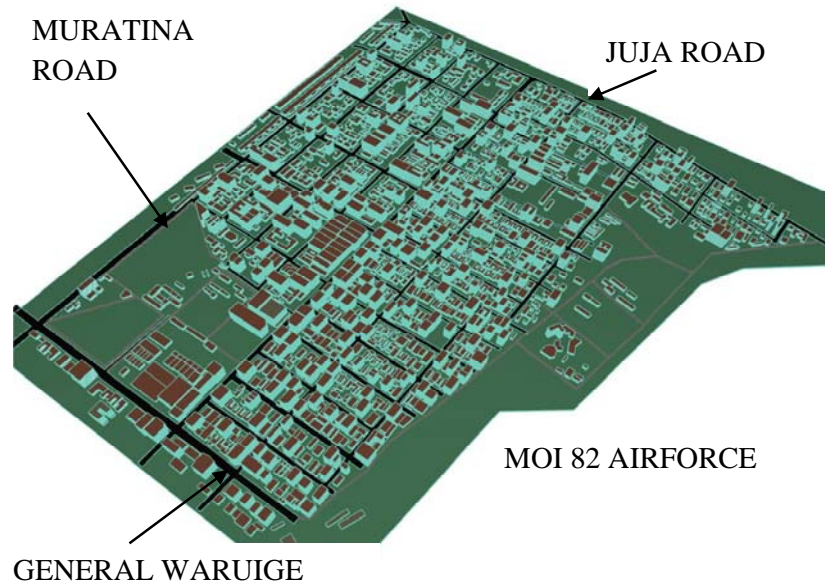


Figure 1.1. Eastleigh District Commercial Centre. Digitized by author from GIS maps.

This research was carried out within a limited time and resources. The religion; Islam, of a majority of the people in Eastleigh District Commercial Centre hinders interaction with my gender hence getting the information from them was not easy. My academic background was also limiting because I am not privy to urban planning ideologies having been trained as an architect. I overcame this limitation by indulging into deep literature review of urban planning theories through the guidance of my tutors.

1.8 OPERATIONAL DEFINITION OF TERMS

Urban planning is a technical and political process concerned with the control of the use of land and design of the urban environment, including transportation networks, to guide and ensure the orderly development urban environment.

Urban design is the collective term used to describe the process of designing and shaping cities and towns. It addresses the larger scale of groups of buildings, streets and public spaces to make urban environment functional and attractive.

The grid plan is a type of urban plan with a focus on plans in which the street networks run almost or at right angles to each other, forming a grid of network.

Strategic urban planning is a type urban planning process that involves interdependency of all stakeholders including public participation with planning experts in coming up with regulations guiding the built urban environment considering strengths, weaknesses, opportunities and threats of the process and outcome.

Form based code is a land development regulatory tool with a focus on shapes, forms and image, that places primary emphasis on the physical form of the built environment with the end goal of producing a specific type of place.

1.9 ORGANISATIONAL STRUCTURE OF THE STUDY:

This research document is structured into six chapters each containing specific items which are interrelated to make one document. The chapters are designed to contain the following:

Chapter one **Introduction:** An introduction to the study subject is made in this chapter with some background of the study being elucidated. A succinct statement of the study problem is made, research questions stated, objective and justification of the study are made in this chapter. This chapter is terminated with definitions of terminologies used in the dissertation.

Chapter two **Literature review:** The review has focused on comprehensive urban planning with emphasis on strategic urban planning as a comprehensive planning process. Urban design theories have also been reviewed with emphasis on grid urban plans because EDCC has a grid urban structure. A theoretical background of Zoning has also been presented because EDCC has a zoning ordinance development by city Planning department of NCC that guides developments of the area.

Chapter three **Methodology:** This chapter of the report presents a description of the methods that were applied in carrying out the research study. It describes the research strategy, research design, research

instruments, data collection, data analysis and presentation techniques.

Chapter four

Research findings: Urban planning and design practices in the case study area are presented in this chapter as the basis for presentation and analysis of the data collected in the field concerning developments in EDCC's against the urban planning and design approaches. It is an assessment of the degree of the developments compliance with the planning policies and the zoning ordinance.

Chapter five

Conclusions and recommendations: Conclusions on urban planning and design of Eastleigh District Commercial Center with all theoretical background reviewed and findings thereof obtained are presented in this chapter in a summary format. Guidelines of developing an implementable urban planning and design framework are given and areas of further research suggested.

1.10. DISSERTATION REPORT CONCEPTUAL MODEL

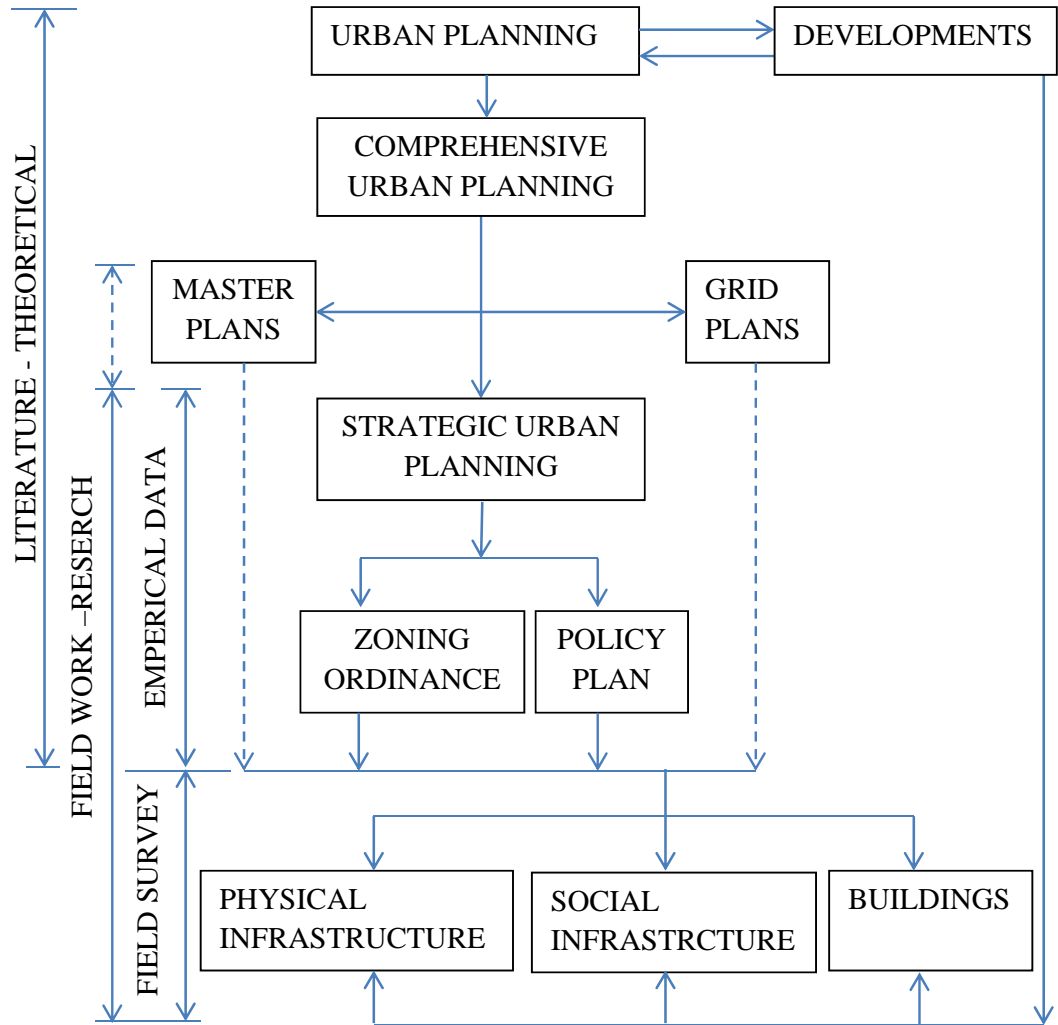


Figure 1.2. Dissertation report conceptual model by author.

2. CHAPTER TWO: LITERATURE REVIEW:

2.0 INTRODUCTION:

This chapter contains a theoretical background of urban planning and design approaches used in EDCC including comprehensive urban planning through strategic urban planning used in development of the policy plans for EDCC; grid plan following the design of the street system of EDCC and zoning following the zoning ordinance for zone two of Nairobi City where EDCC is found.

A background of the evolution of urban planning from comprehensive urban planning to strategic urban planning is reviewed. Following the strategic urban planning approach used in developing the different planning policies for EDCC a literature review of strategic urban planning is presented.

With reference to infrastructural design of Eastleigh District commercial Centre which is a grid plan, literature review on grid plan was done to give insights into the different approaches used to overcome the problems associated with grid plans.

It has already been noted in the introduction part of this dissertation that the city planning department in NCC has developed zoning ordinances for the different zones of Nairobi City including EDCC which falls in zone 2. This necessitated literature review on zoning as a tool used in comprehensive urban planning and emerging trends that give insights on achieving implementable zoning ordinances like the Form based Codes.

2.1. COMPREHENSIVE URBAN PLANNING

Comprehensive urban planning is the oldest known urban planning approach in which planners are seen as architects who developed comprehensive master

plans (Taylor, 1998; Van Vught, 1979; Kreukels, 1980). The underlying theory is that of planning as design. Just like buildings can be build based on detailed blueprints, so too can a town be developed by reference to its master plan”. Kent (1964).

Due to different problems associated with master planning like social blindness, Bouer (1969), inflexibility, definition of future end-states and goals that strongly departed from the current situation (Lindblom and Baybrooke, 1963) other urban planning approaches evolved. They were based on either continuation of the comprehensive planning or reaction to it.

Lack of political considerations of rational comprehensive planning led to rational process planning led by Chicago school. Its inflexibility led to incremental planning by Lindblom while the short term nature of incremental planning led to mixed scanning approach by Etzioni (Etzion, 1967)

Nevertheless, ideas of comprehensiveness and rationality in planning were continued with planning theory being divided into focus on the object of planning; the city, and the planning process. The city was considered as a system of different parts resulting into systems planning and on the other hand, planning process was being considered resulting to advocacy planning for planning process as political process, transactive planning as process of change, communicative planning as a process of communication between all stakeholders, interactive planning as a process of working with and learning from the stakeholders and later strategic planning as a process of interdependency within the stakeholders.

2.1.1. URBAN PLANNING SUMMARY MODEL

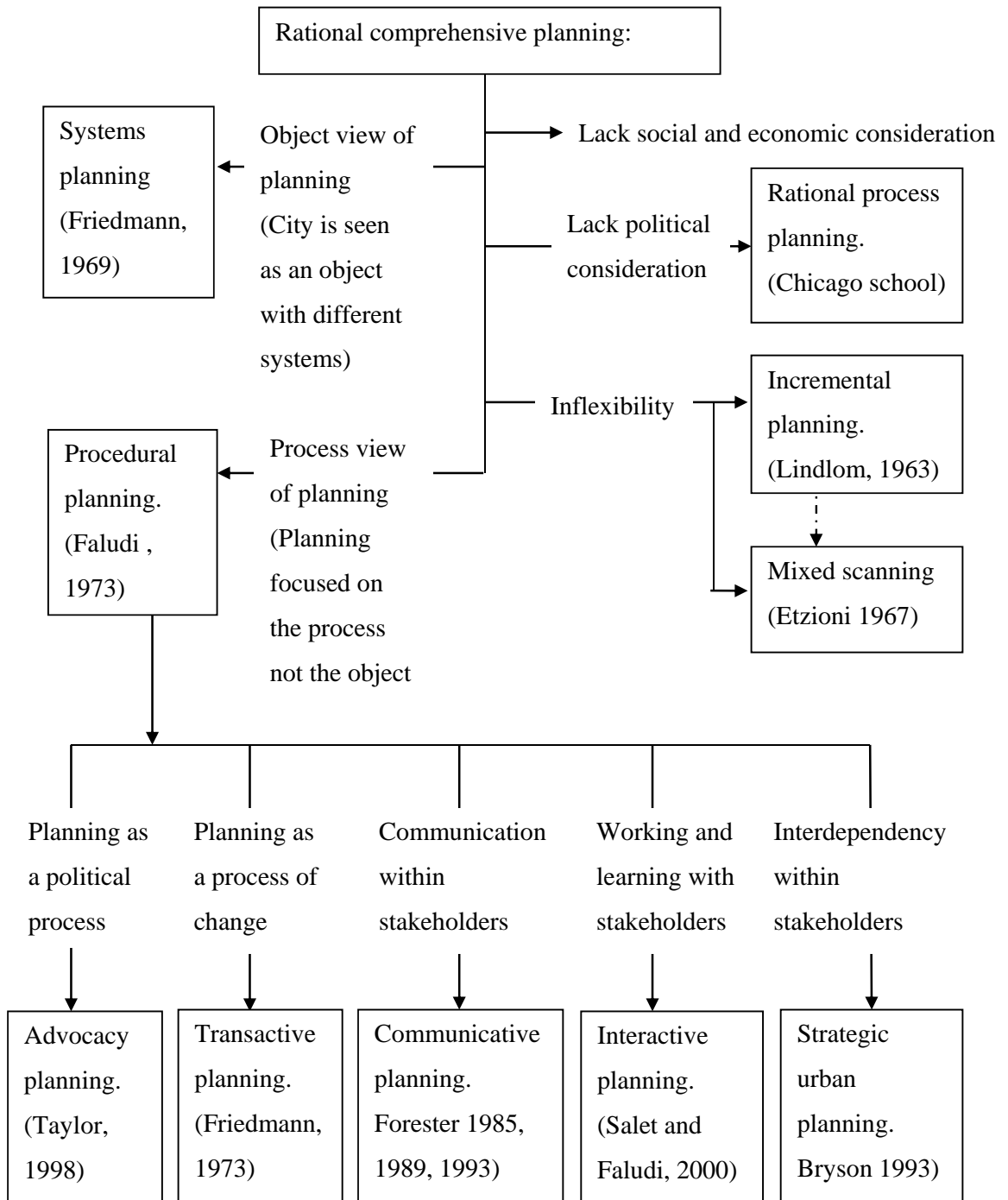


Diagram 2.1. Urban planning summary model developed by author

2.2. STRATEGIC URBAN PLANNING:

At the end of the seventies, early eighties, theorists from the business sector saw the possibilities of strategic planning for the public sector (Eadie, 1983; Sorkin, Ferris and Hudak, 1984; Toft, 1984; Denhardt, 1985; Ackoff, 1970; Ansoff, 1980). They recognized that strategic planning provided concepts, procedures and tools that could be 'imported' into public planning. Public planners also saw the benefits (Bryson, 1993; Bryson and Einsweiler, 1988; Bryson and Roering, 1988; Nutt and Backoff, 1995; Bryson, Van de Ven and Roering, 1987). Strategic planning is seen as a learning process in which organizations are viewed as open systems that are interconnected with, and dependent on, other systems.

2.2.1. CHARACTERISTICS OF STRATEGIC URBAN PLANNING:

Regulation of urban development is entrepreneurial not managerial' (Harvey 1989). Hence Planners in strategic urban planning should create an urban environment encouraging for economic growth. Hall (2002, 379)

Public-private partnerships are the primary vehicles to promote, organize and finance urban development (e.g. Fainstein 2001).

Urban strategy is expressed through major strategic projects (Healey 2010, 170). This 'planning through projects' (Carmona 2009) implies a move from a territorial to a network approach to the city (Burgess/Carmona 2009, 26), with interventions being limited to those areas and / or aspects which have the potential to make 'a difference to the fortunes of an area over time' (UN-HABITAT 2009a).

Strategic urban planning entails a holistic attitude, and it shifts the focus from the governing of urban processes to their governance (Albrechts et al. 2003).

Ideas about the future development of a city are 'lodged in the 'hearts and minds' of the actors who command key resources' (Healey 2010, 170),

The strategic planning process creates a more cooperative approach to urban policies and new agencies in the planning.

2.2.2. STRATEGIC URBAN PLANNING PROCESS:

This process is based on a model developed by Bryson and Einsweiler (1988). It is a normative model of how organizations in the public sector can engage in strategic planning. However, for use in this research, the model is adapted and refined by adding two arenas: the public and the political arena, and by adding controlling mechanisms: the deliberately designed prescribed procedures and regulations.

I) Initial agreement

According to Bryson and Einsweiler (1988) "the process begins with an initial agreement (or plan for planning) among decision-makers whose support is necessary for successful plan formulation and implementation. The goals of these decision-makers should be aligned in order to reach some basic agreement about the purpose of the effort, the topics to address, the form and timing of reports and the stakeholders to be involved. Careful analysis is needed to identify how much agreement there is between the multiple key decision-makers.

II) Mandates

The second step is to get insight into the mandates or constraints confronting the planning team (Bryson and Einsweiler, 1988). There are mandates that come from the political arena, the public arena, legally established formal procedures imposing restrictions on the strategy formulation process and

existing policy which are often stated in documents that have legal binding status and that the planning team has to meet. Related to the mandates is 'control' from controlling bodies and constituencies (Smith Ring and Perry, 1985; Nutt and Backoff, 1995; Montanari and Bracker, 1986; Stone et al., 1999; Hendrick, 2003

III) Mission and values

According to Bryson and Einsweiler (1988): The process draws attention in particular to similarities and differences among those who have stakes in the outcome of the process and in what the government's or agency's mission ought to be in relation to those stakeholders. Stakeholder is defined as any individual, group, or other organization that can place a claim on the organizations attention, resources, or output or is affected by that output.

Often, mission, values and core-values are transmitted across more generations of organizational members (Stone et al., 1999) and across multiple internal disciplines that exist in large public government organizations (Rainey, Backoff and Levine, 1976). Hence, there can be conflicting interests within the organization itself. As a consequence, planners must consider both external interests from the public and political arena and interests from the internal organization.

IV) External opportunities and threats

The distinction between what is inside and what is outside hinges on whether the organization controls the factor which places it inside, or does not, which places it outside (Pfeffer and Salancik, 1978). To identify opportunities and threats one might monitor a variety of political, economic, social and technological forces and trends as well as various stakeholder groups,

including clients, customers, payers, competitors, or collaborators." the public arena and the political arena need to be given more attention, because they are characterized by a diverse set of stakeholders with changing and often conflicting interests.

Other external forces that can influence the strategy formulation process are related to the organization's financial dependency on higher government bodies. The final external force is competition (Montanari and Bracker, 1986). At first, competition from other governments, this means competition for funds or resources and 'Private Sector Substitutes'; this concerns those private parties who may do the tasks that were always considered public sector ones. Private parties might be threats because they may be able to perform certain tasks more efficiently and effectively.

V) Internal strengths and weaknesses

Strategic planning focuses on achieving the best fit between an organization and its environment. This is concerned with getting sufficient resources (input) to be able to carry out the plans. It concerns sufficient capacity, skilled personnel; a clear structure of authority with leader behavior (process) related to the goals to be achieved (performance). There is need for internal coalitions (Montanari and Bracker, 1986) and a difference in internal culture (Stone et al., 1999; Hendrick, 2003).

VI) Identifying strategic issues

Strategic issues are fundamental policy questions affecting the organization's mandates, mission values, product or service level and mix, clients or users, cost, financing, or management. Usually, it is vital that strategic issues be dealt with expeditiously and effectively if the organization is to survive and

prosper. Failure to address a strategic issue typically will lead to undesirable results from a threat, failure to capitalize on an important opportunity or both. In the analysis of strategic issues, it is about the confrontation between the external opportunities and threats and the internal or organizational strengths and weaknesses. Through this confrontation it becomes clear what the main problems are, or will be in the future, and if the organization is able to cope with these opportunities and strengths." (Bryson and Einsweiler, 1988).

VII) Developing strategies

Strategy development begins with the identification of practical alternatives for resolving the strategic issues. Then it moves to the enumeration of barriers to the achievement of those alternatives, rather than directly to development of proposals to realize the alternatives. (Bryson and Einsweiler, 1988). When strategies are developed in the public sector the emphasis is focused on how organizations can move toward high responsiveness coupled with appropriate action (Nutt and Backoff, 1995). The basic idea of formulating a strategy is to find the optimal fit between the opportunities and threats and the strengths and weaknesses. An effective strategy in public organizations is concerned with responding to the perceived needs of the stakeholders.

VIII) Description of organization in future

This description is the organization's vision of success, an outline of how the organization would look if it successfully implemented its strategies and achieved its full potential. Typically included in such descriptions are the organization's mission, its basic strategies, its performance criteria, some important decision rules, and the ethical standards of the organization's employees."(Bryson and Einsweiler, 1988).

2.2.3. STRATEGIC URBAN PLANNING PROCESS MODEL

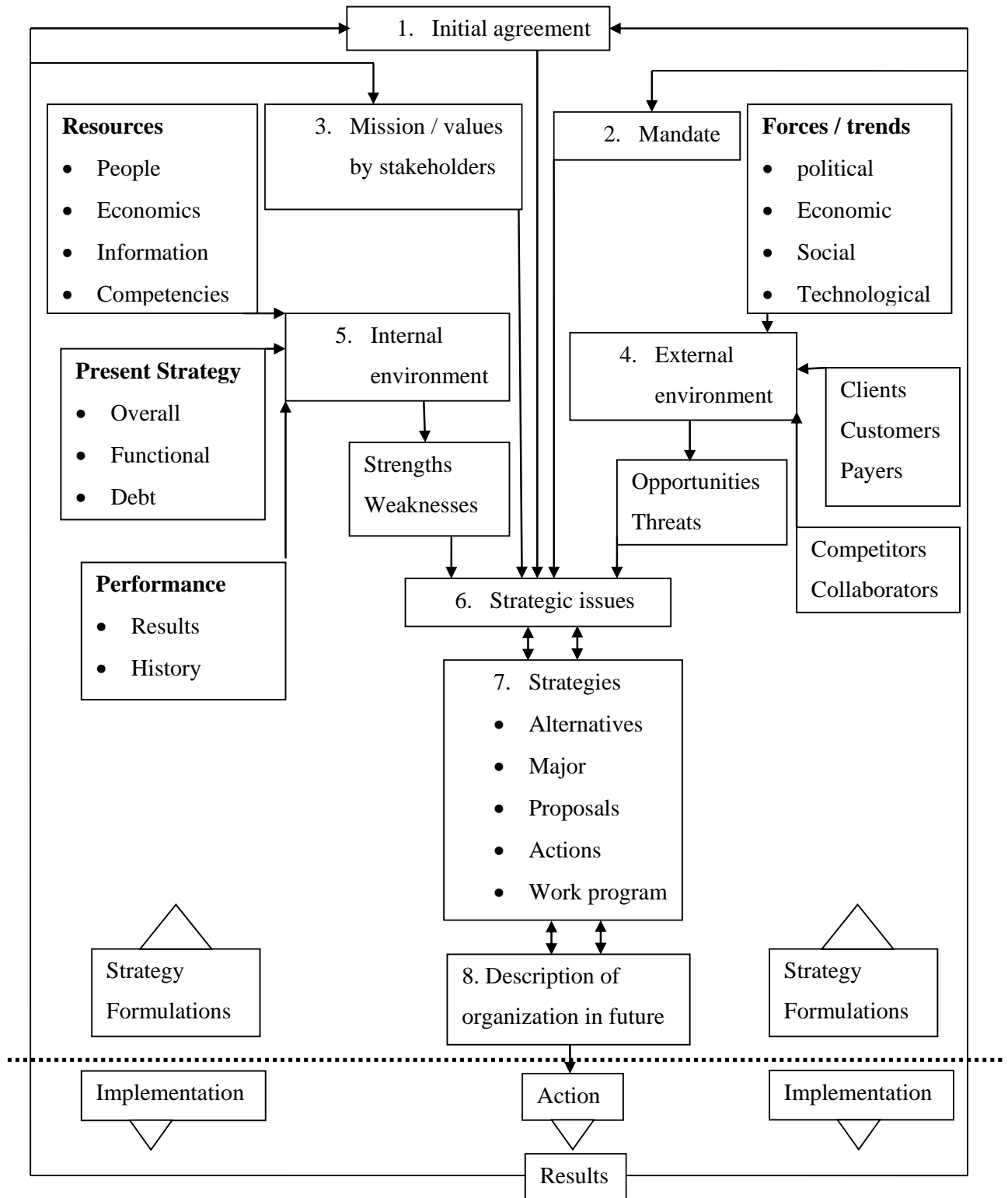


Diagram 2.2. Strategic urban planning model. Source; adapted from Bryson and Einsweiler (1988) by author.

Today, there is more and more attention given to strategic planning approaches in planning theory (Albrechts, 2001; 2004; Kreukels, 2000; Bryson, 2000). Several authors recognize that strategic planning provides methods and concepts that are more market oriented, more pragmatic, and more realistic than other planning approaches. It is increasingly assumed that the solutions to the complex problems that confront planning depend on the ability to combine strategic vision and short-term operational activities with a deeper focus on the various stakeholders or 'clients' of planning (Albrechts, 2001; Albrechts, 2004).

In the nineties, Nutt and Backoff (1995) mentioned that rapidly changing environments require organizations to apply entrepreneurial strategies, which means that local governments need to form partnerships with private sector agencies and developers to accomplish things they would be unlikely to achieve if they worked on their own (Taylor, 1998). Fainstein (1991) mentions that in the United States, city planners in the seventies were confronted with a substantial reduction in federal support for urban redevelopment. And because planning has little implementation power of its own (Salet and Faludi, 2000), city planners needed to make arrangements with private developers who had the resources for the successful implementation of the plans.

2.3. GRID URBAN PLANNING

2.3.1. ANCIENT GRID PLANS:

The grid plan has been used for the purposes of its practicality in military control from ancient times. The most established grid plans were those of Greek and Roman, which were spread by way of trade and conquest

(Stanislavski, 1946). The Greek Hippodamus (c. 407 BC) has been dubbed the "Father of City Planning" for his design of Miletus; The Hippodamian, or grid plan, which was the basis for subsequent Greek and Roman cities (J Kenneth, 1985).

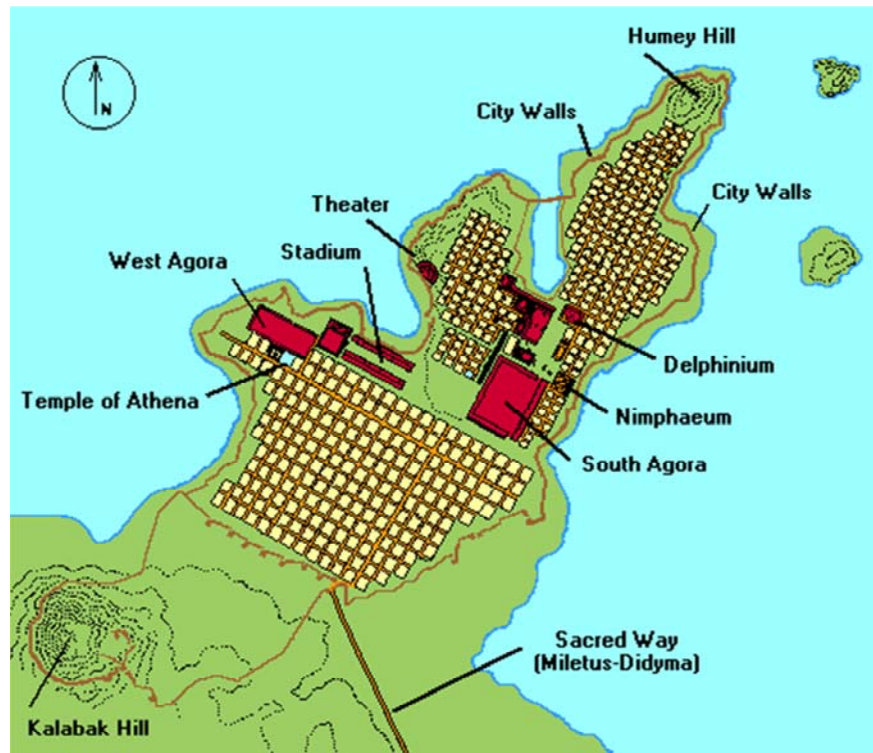


Figure 2.1. Plan of Miletus. Source J keneth 1985.

The Roman grid was designed on the basis of being practical. Roman castra were often sited on flat land, especially in close proximity to or on important nodes like river crossings or intersection trade routes, (H. Hannah (2009). The dimensions of the castra were often standard, with each of its four walls generally having a length of 2150 feet. Outside of the castra, large tracts of land were also divided in accordance with the grid within the walls. These were typically 2400 feet per side containing 100 parcels of land each (Gelernter, Mark; 2001), the decumanus maximus and cardo maximus extended from the town gates out towards neighbouring settlements. These

were lined up to be as straight as possible, only deviating from their path due to natural obstacles that prevented a direct route. (Gelernter, Mark; 2001),

2.3.2. THE BARCELONA EIXAMPLE:

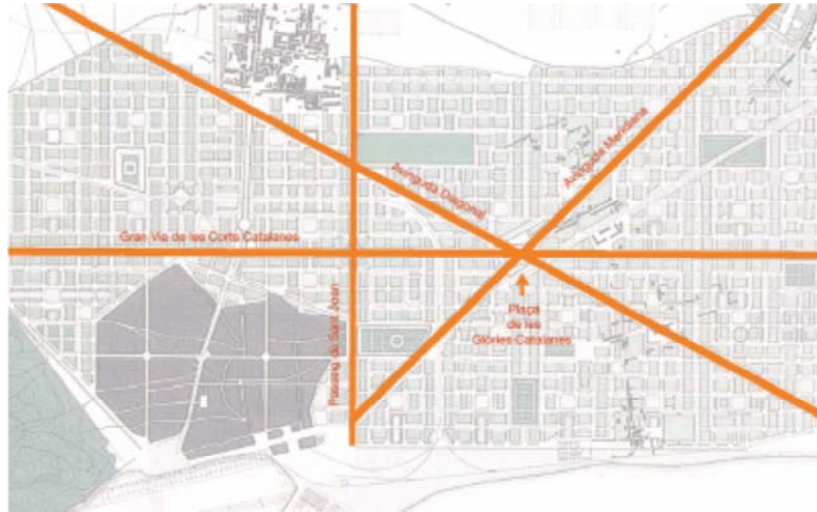
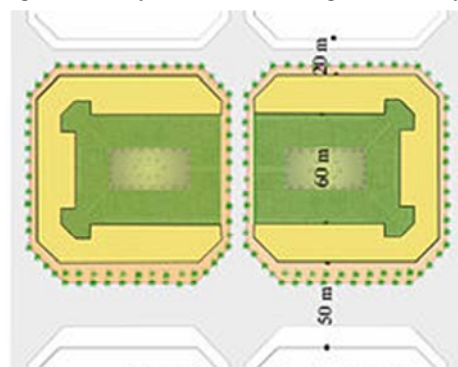


Figure 2.2. Barcelona map. Source: http://en.wikipedia.org/wiki/Grid_plan

Functionality as a principle of grid planning was further emphasized Ildefons Cerdà who defined a concept of urban planning with innovations, based on the grid and applied to the Barcelona Eixample. The Eixample had a very large block measuring 113 meters by 113 meters (370 x 370 feet) to enable the creation of a quiet interior open space (60 m by 60 m) and allow ample sunlight and ventilation to its perimeter buildings; a 20 m (66 feet) road width (right of way) to sustain high mobility; square blocks with truncated corners



to facilitate turning of carts, coaches and vehicles on fixed rails and major roads perpendicular and diagonal measuring 50 m (164 feet) in width.

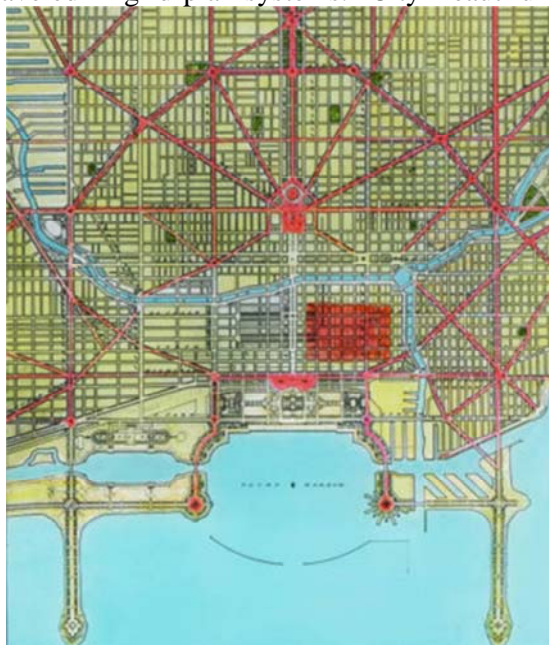
Figure 2.3. Barcelona's blocks. Source http://en.wikipedia.org/wiki/Grid_plan



Figure 2.4. The resultant urban form of Barcelona example. Source http://en.wikipedia.org/wiki/Grid_plan

2.3.3. CITY BEAUTIFUL

This was a reaction to the grid system of urban planning where by diagonals were introduced to the existing urban grid to shorten the long distances traveled in grid plan systems. City Beautiful movement originated from the



attempts to recreate World's Columbian Exposition at Chicago fair coordinated by Daniel. (Wilson, 1989). Burnham and Edward Bennett's plans for Chicago (1909) were among the retreaters of the fair.

Figure 2.5. 1909 Plan of Chicago. Source http://en.wikipedia.org/wiki/city_beautiful_movement

2.3.4. CHANDIGARH:

The plan of Chandigarh was developed by Le Corbusier using grid system with interpenetration of green landscape and a loose grid pattern of primary roads defining super blocks. The super blocks or sectors have proportions based on the Golden Section. They are communities oriented inward, so that the primary traffic roads have little street life.-Each block is bisected lengthwise by one major local street, which along with a market street form a linear shopping system.

The master plan did not have high buildings so as to keep view of the social economic conditions and living habits of the people. The primary module of city design is a sector, a neighbourhood unit of 800metres by 1200 meters. It is a self-sufficient unit having shops, schools, health center and places of recreation and worship. Each sector is introverted and allows only four vehicular entries into its interior.

There is hierarchy of roads ranging from arterial roads (V1), major boulevards (V2), sector definers (V3), shopping streets (V4), neighbourhood streets (V5), access lanes (V6), pedestrian paths (V7) and cycle tracks (V8). There is also hierarchy of open spaces with leisure valley and special gardens at the city level, the central green at sector level, parks around which houses are arranged at community level and each dwelling has a courtyard at the front and rear side as the smallest category of the open spaces.



Figure 2.6. Plan of Chandigarh Source <http://chandigarh.gov.in>

2.3.5. MILTONE KEYNES

One very famous use of the grid system was in the British new town of Milton Keynes. In this planned city, which began construction in 1967, a system of ten horizontal and eleven vertical roads at 1 km intervals was used with roundabouts at each intersection. The horizontal roads were all given names ending in 'way' and H numbers (for 'horizontal', 'e.g. H3 Monks Way'). The vertical roads were given names ending in 'street' and V numbers (for vertical', e.g. V6 Grafton Street). Each grid road was spaced roughly one kilometre along from the next, forming squares of approximately one square kilometre. Each square and roundabout was given its own name. The system provided very easy transport within the city, although it confused visitors who were unfamiliar with the system. Note the 'grid squares thus formed are far larger than the city blocks described earlier, and the road layouts within the grid squares are generally 'organic' in form — matching the 'street hierarchy model described above. A one square km sector in Milton Keynes framed by major roads on a grid configuration. The road network within the sector uses cul-de-

sac streets complemented by bike and foot paths which connect the entire sector and beyond



Figure 2.7. A one square km sector in Milton Keynes framed by major roads on a grid. Source http://en.wikipedia.org/wiki/Grid_plan

2.4. STREETSCAPE DESIGN:

All too often “streetscape design decisions are made in isolation treating the streetscape as residual space” (Eichner & Tobey, 1987: p. 276). Concern over this issue was raised as far as 1927 when Clarence Stein, while designing Radburn in New Jersey, proposed a “radical revision of relation of houses, roads, paths, gardens, parks, blocks, and local neighborhoods”. During the 1970’s and early 80’s, Appleyard made powerful and influential arguments against auto-centric design with his research relating to traffic and transportation to significant impacts on quality of life (Appleyard, 1981).

2.4.1. THE WOONERF

Woonerf principles advocate for shared spaces with literature emphasizing the use of “gateways” at transition points (Hamilton-Baillie, 2004; Pressman, 1987). Features such as road texture, width, lighting, and alignments change to emphasize the new driving context and encourage the driver to engage with

his or her surroundings. The Woonerf therefore accommodates cars yet makes them feel fundamentally unwelcome” (Pressman, 1987).

I) Safety

There is significant qualitative research suggesting that pedestrians and cyclists discomfort quickly rises adjacent to traffic traveling faster than 32 km/h (Hamilton-Baillie, 2004). As a result, most Woonerf schemes depend on very low speed limits (usually 30 km/h). As mentioned, the British Government found that “no accidents at all had been recorded on shared surface roads” (Department of the Environment & Department of Transport, 1992: p. 13 cited in (Biddulph, 2003).

II) Spirit of Place

Effective Monderman design demands consideration of local history, architecture, movement patterns and urban form to seamlessly integrate the surrounding buildings, roadways, and landscape (Hamilton-Baillie, 2004). Monderman advocates using public art at gateway’s marking entry and exit points to the redeveloped streets. Hierarchy, and priorities are essential to the functioning of public space, it appears that speed may be a factor in urban quality in a wider context than simple safety and accident reduction. (Hamilton-Baillie, 2004).

2.5. URBAN PUBLIC SPACES

Nowadays, the concept of “public space” in complex urban matrix is not limited only to the urban parks and preserves but also non park-non-natural-places. Public spaces such as streets, school yards, outdoor sport complexes, cemeteries, and public squares are important open spaces (Hall, 1998). These

areas are open to full spectrum of the society and their sound planning and design make them more attractive.

Baines (1999) recognizes the value in waste lots, the derelict, and gap sites awaiting redevelopment but not currently managed. According to Thompson (Thompson; 2002) these areas are indeterminate areas of open space and these function specific spaces are as much necessary as decorative parks. Ecologically sound planning and design of such spaces aids in establishing ecological networks (Cook, 2000, Cook 2002) in the urban matrix. Chiesura (2004) suggests taking into account the variability in the open space types to fulfill the needs and expectation of all the segments of the population.

Non-domestic physical sites that are distinguished by their relative accessibility such as dance clubs, parks, restaurants, bars, cafes, the street, etc. (Lofland, 1998; McCarthy, 2001) have also been considered as public spaces. While some would delimit public spaces to non-commercial physical sites of congregation like parks or plazas (Carr 1992). As Zukin (1995) argues, there is an increasing commodification of public spaces in urban centers; thus using a broader definition of public space, which includes semi-public sites of consumption, more accurately reflecting the everyday practice of urban life away from home and work.

2.6. ZONING:

According to Abeles, the term “zoning” denotes the process of dividing a community into a set of distinct zones in which specific land uses are either allowed or prohibited (Abeles, 1989). Local governing bodies (county, city, town, townships, etc.) prescribe regulations for each zone addressing three general issues: *Use*, *Intensity*, and *Bulk* (Kelly, 1993). For each zone,

ordinances indicate allowed (“of right”), special (“conditional”), and prohibited uses. The underlying objective seeks to keep incompatible uses apart from one another.

Zoning also regulates building intensity. Intensity refers to the amount of a particular use on a designated piece of land. Floor-area ratios (FAR) regulate intensity for commercial and industrial zones. For all intents and purposes, the FAR acts as a multiplier (Barnett, 2003).

Bulk refers to the actual volume of space or massing of a building. Building setback regulations and maximum building coverage requirements address bulk issues (Kelly, 1993). Height restrictions may also be used to regulate a building’s bulk.

2.6.1. ZONING SUCCESSES:

Zoning proved an appropriate governmental policy response to combat the ills of early industrial cities. A functionalist interpretation of land use emerged, with each distinctive function placed in the appropriate zone (Wickersham, 2001). Its structure allows for development predictability, certainty, and administrative accountability and objectivity Kwartler (1989) and protects both personal property investments and public rights. Zoning’s inflexible regulations pledge accountability. It provides direct land use control at the most local of levels (Gordon and Richardson, 2001). Finally, zoning costs virtually nothing to municipal governments (Levy, 1995). Aside from basic administrative costs or occasional legal costs, zoning proves far cheaper than public ownership of land or the purchase of easements, which could instill the same amount of control or greater (Levy, 1995).

2.6.2. FAILURE OF ZONING:

Euclidean zoning's framework separates, for the most part, residential and commercial uses. Critics of zoning argue that the separation of these basic daily uses, albeit well intentioned, manifests itself as sprawl (Wilson, et al, 1998; Wickersham, 2001). The very ordinances designed to protect citizens from bad development, actually prevent the creation of good neighborhoods, towns, and cities (Ferrell & Madden, 2002).

Jane Jacobs (1961) argues that zoning is overly rigid in dividing cities into uniform, low-density, singular-use districts. Conversely, zoning has been overly soft (or permissive) in its failure to establish design standards for streets and buildings that would promote interaction within the public realm.

Further, many suggest that current zoning ordinances are incomprehensible to the common citizen, and require legal expertise to decipher. Finally, zoning impedes the creation of mixed-use development. As such, "livable communities" are impossible to create.

2.6.3. ALTERNATIVE TO TRADITIONAL ZONING:

In an effort to create more livable communities based upon good urban design practices within the framework of traditional Euclidean zoning, planners have created new tools to augment or replace current development regulations. Some of these tools include: bonus/incentive zoning, inclusionary zoning, the transfer of development rights (TDR), planned unit developments (PUD), cluster zoning, performance zoning, and the form-based code (FBC).

2.6.4. FORM BASED CODES:

Form-Based Codes represent multi-disciplinary codes that connect the design of circulation and public space networks to the design of building form

(Altman, et al, 2003). They regulate fewer elements than typical zoning regulations because the provisions do not constrain every possible combination of setback and density (Dover, 2003). As Form-Based Codes consider physical design to be paramount, these codes specify through graphic illustrations what types of development are most appropriate for a particular area (Dover, 2003). Most often, this includes building alignment on the street, the space between buildings, and relative heights, which are expressed as ranges of acceptable values.

The Form-Based Code functions as a template whereby having clear controls on building form, landowners and their neighbors can easily predict what future development would look like (Chael, 2003; Ferrell & Madden, 2002). Design standards directed by FBC do not limit a building's usage (Kucharski, 2003). Because use is a secondary consideration, the market directs the appropriate use to the site based upon the prescribed building form.

To achieve the community vision, experienced code practitioners lead stakeholders in what is called a "charrette." A charrette is the process by which local stakeholders develop a physical plan for their community. In doing so, community members are provided with maps of the areas and divided into working groups. These groups then use the maps to explain in great detail what they would like to see developed or preserved (Dover, 2001). The charrette helps to ensure that the proposed plan is feasible, assists in formulating a consensus among key stakeholders, including residents, major institutions, government officials, developers, and builders; about expected objectives of the physical plan. (Baltimore County, 2003). The Form-Based Code then codify this community-based physical plan

I) Components of FBC

Form-Based Codes usually consist of three primary components (and one optional component) that are employed to implement a community's vision-based physical plan. These components include: Regulating Plan, Building Envelope Standards, Definitions, and the optional Architectural Standards (Katz & Ferrell, 2003).

a) The Regulating Plan

The Regulating Plan provides the coding key for the building envelope standards, and specific information for the character of each building site

b) Building Envelope Standards

The Building Envelope Standards guide basic parameters regulating building form. These parameters are illustrated in a series of cross sections specifying key dimensions (Katz, 2003; Katz & Ferrell, 2003), height, siting, elements, and uses.

c) Definitions

This component allows for a full explanation of all vital design elements of the Form-Based Code. Items included in the definitions section are used in very specific ways, and may differ from common usage interpretations (Katz, 2003; Katz & Ferrell, 2003).

d) Architectural Standards

Architectural Standards relate primarily to aesthetics of a community, and are only included in a Form-Based Code at the discretion of the local stakeholders (Katz, 2003; Katz & Ferrell, 2003). Admittedly, architectural standards also prove to be very subjective, which explains why property owners may be reluctant to engage in such an agreement.

Other components that can be included in FBC include public space standards, administration, landscape standards, signage standards, environmental resource standards and annotations.

II) Applying Form-Based Codes

Four components are necessary to the successful implementation of a Form Based Code (Lewis, 2003). First, clear and concise standards specifically link design standards to measurable objectives and results. Secondly, Form-Based Codes should be style neutral. This prevents “over-designing” a particular community. Generally, Form-Based Codes represent a more permissive style than conventional appearance regulations associated with zoning. “Good urbanism can triumph bad architecture,” (Lewis, 2003). Thirdly, codes should be easily understood. Simple graphics and photos of acceptable parameters lend support to good codes. Finally, permitting should be streamlined. Controlling an efficient and predictable permitting process saves times and money for all parties.

Form Based Codes can be incorporated into local government’s development regulations through mandatory codes, optional (parallel) codes and floating zone codes. In mandatory codes the FBC can be contained within a planning document called a “specific plan” which can completely override the zoning ordinance for a given geographical area. Compliance is required. Optional (parallel) codes serve as an alternative to current zoning but does not replace it and compliance is voluntary. A floating zone code does not contain a regulating plan but includes instructions and standards for developers to follow when they prepare a regulatory plan for their property.

2.7. THEORETICAL FRAMEWORK:

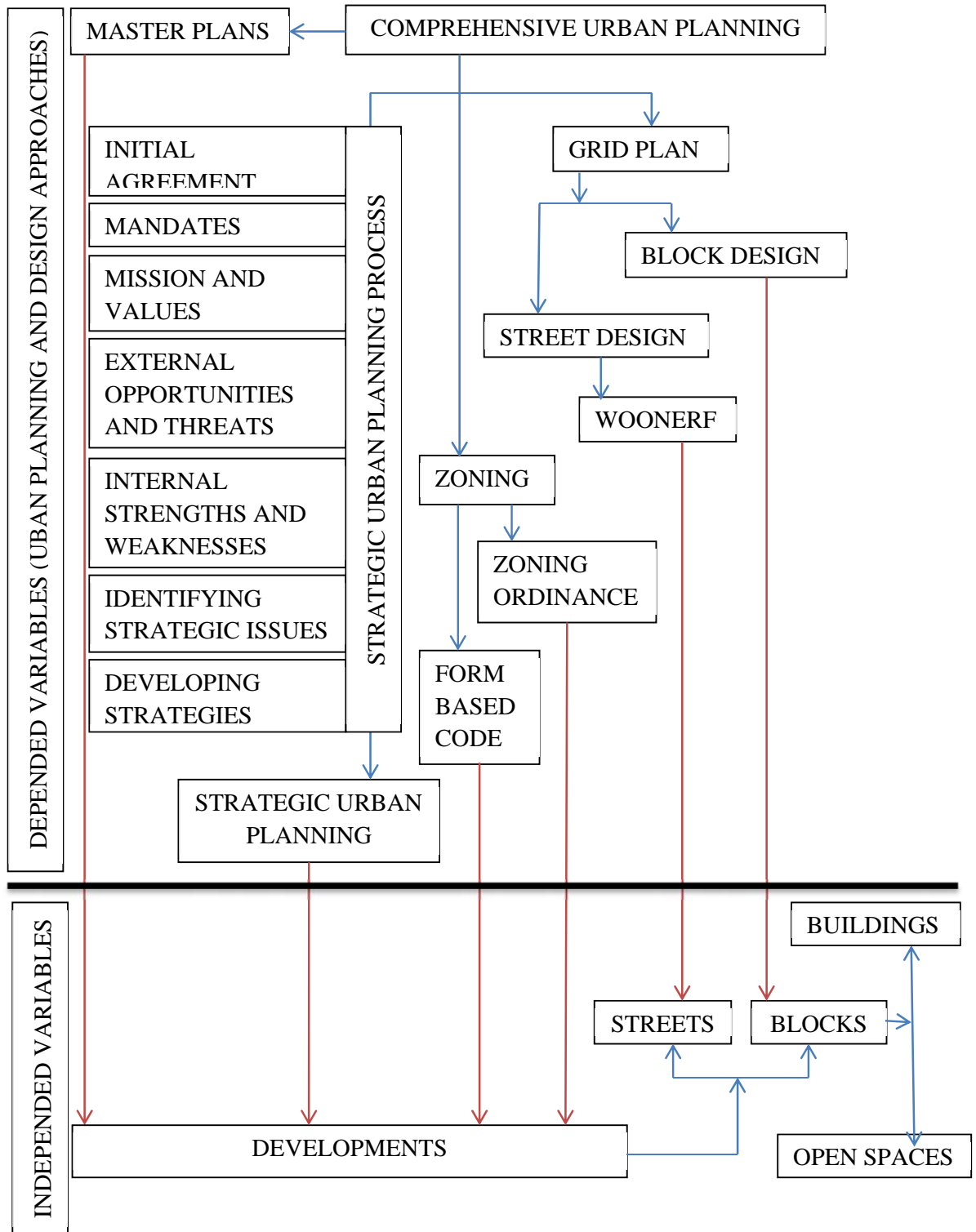


Figure 2.8. theoretical framework conceptual model by author.

2.8. SUMMARY

The choice of literature that was reviewed in this dissertation depended on the urban planning and design approaches used in the study area. This included comprehensive urban planning through strategic urban planning approach, grid planning and zoning.

Comprehensive urban planning which was the earliest urban planning approach has evolved to current strategic urban planning which is mostly used by Municipalities amongst other urban planning approaches. The process of urban strategic planning is very important to ensure fruitful results in urban planning and design.

The grid plans was used from the ancient Greek and Romans for its practicality in military for troops movement. It's used in urban planning and design has been emphasized over time including Barcelona Eixample, by Ildefons Cedar, Urban planning and design of Chandigarh, by Lectorbusier and that of Milton Keynes. To curb the problems of long distanced traveled in Grid plans, movements like the city beautiful came up introducing diagonals on existing grid plans. This was proofed impractical due to destruction when introducing the diagonals on existing urban structure. Congestion at intersections could be resolved by creating over passes or underpasses. In relation to grid planning, the researcher reviewed current trends in the design of streets and public spaces and reported on the woonerf approach of design.

The study area also uses zoning ordinance to guide private developments. The literature reviewed showed that current trends in urban planning and design are utilizing form based codes along with zoning ordinances for a more implementable approach in guiding urban developments.

3. CHAPTER THREE: METHODOLOGY.

3.0 INTRODUCTION:

A research method can either be qualitative or quantitative. In qualitative research studies that do not attempt to quantify their results through statistical analysis are undertaken. Qualitative research involves interviews and observations among other research instruments without formal measurements (Marczyk 2005). This chapter describes the methods that were applied in carrying the research study. The strategy used in this research is case study whereby an in depth study of urban planning and designing Eastleigh District Commercial Centre has been done. See appendix 01 of a case study protocol adopted for the study

3.1. RESEARCH DESIGN:

The function of research design is to provide for the collection of relevant evidence with minimal expenditure of effort, time and money Kothari (1985, P.17). The research design used in this study was exploratory whereby the urban planning and design methods; including comprehensive urban planning in form of strategic urban planning, grid plan and zoning ordinances, used in guiding the development of EDCC were explored against the contemporary developments of EDCC and theoretical background of strategic urban planning, grid planning and zoning. The study focused on two units of analysis, the 2008 policy plan and the current zoning ordinance of zone 2.

3.2. TARGET POPULATION:

Eastleigh District Commercial Centre was delineated in the 1989 policy paper. The centre comprises of both physical and social infrastructure whose current

development guidelines are contained in the 2008 policy paper. Development of buildings found in this area is guided by zone two zoning ordinances.

The study was on urban planning and design of EDCC which is manifested in physical infrastructure, social infrastructure and buildings in the area. Simple random selection method of physical infrastructure elements like roads and drainage system, water and sewerage system and waste disposal was done to be utilized in this research. The same was done for social infrastructure elements including education facilities, health facilities, housing and markets. Buildings for study and analysis were also chosen randomly.

3.3. DATA COLLECTION INSTRUMENTS:

According to (Kombo and Tromp, 2006 P.99), data collection refers to the gathering of information to prove a point. The procedure employed in data collection during the study were; primary and secondary data. Primary data is firsthand information, collected afresh and for the first time. While secondary data are those from previous studies conducted on the same or similar to the study and act as guides in the study. Secondary data was important in the theoretical understanding of the study. Interviews were used to provide qualitative insight into the data thereof collected. These qualitative insights were used for elements that don't have standard measures like opinions. Observation, sketching and photography during physical survey of the study area were more instruments utilized during this research. Secondary research instruments including literature review of published and unpublished data were also used.

A summary of the data collection instruments used in the research are presented below

Table 3.1. Data collection instruments

| INSTRUMENT | DATA NEEDS | DATA SOURCE | VARIABLE ACCESSED |
|----------------------------|---|---|--|
| Interviews observation: | Efficiency of physical infrastructure in EDCC as recommended in the 2008 policy paper | NCC Site plans GIS maps | Road and drainage system Water and sewerage system Solid waste management |
| | Efficiency of social infrastructure in EDCC as recommended in the 2008 policy paper | Photography Sketches Architectural drawings | Business activities space Education facilities Health facilities Housing facilities Markets facilities |
| | Buildings compliance with zone 2 zoning ordinance | | Plot ratio Plot coverage Building line Lot sizes |

Table 3.1. Data collection instruments by Author.

3.4 DATA COLLECTION PROCEDURE

Following the aforesaid data collection instruments and items, secondary research was initially undertaken to provide basis for the primary research. A review of the urban planning and design approaches used in EDCC was undertaken establishing that in urban planning and design of EDCC comprehensive urban planning, strategic urban planning, grid planning and

zoning ordinances are used. Literature review of comprehensive urban planning, strategic urban planning, grid planning and zoning were then undertaken guided by the established urban planning and design approaches in EDCC.

This background was used to develop a research model which was used in primary data collection. I based my interview elements for primary research on this background which were a question and answer session consisting of a list of specific questions. All the questions were about the efficiency of physical and Social infrastructure as planned in the 2008 policy paper and compliance of private developments to EDCC zoning ordinance.

The interviewer did not deviate from the list or inject any extra remarks into the interview process. I encouraged the interviewee to clarify vague statements or to further elaborate on brief comments. I tried being objective and did not influence the interviewer's statements. I did not share my own beliefs and opinions. I used maps, photographs and sketches from field survey as the check list for the answers provided in the interview.

3.5. CONCEPTUAL FRAMEWORK:

The following conceptual framework was a tool used by the researcher to develop awareness and understanding of the situation under scrutiny and to communicate the same. Urban planning and design of EDCC is manifested in the provision of Physical and social Infrastructure as recommended in the 2008 policy paper and the buildings found in EDCC as guided by the zoning ordinance for EDCC in zone two. The elements studied under physical infrastructure, social infrastructure and buildings are presented in the model.

In this conceptual framework, the researcher has developed a relationship of variables in the study. There are two major variables: independent and dependent variables. The independent variables are the causes which are factor that explain variations in the dependent variable while dependent variable is the outcome the research is attempting to predict or explain (Kombo and Tromp 2006 p.21). In the current study, social infrastructure, physical infrastructure and buildings are the independent variables while urban planning and design of EDCC is the dependent variable.

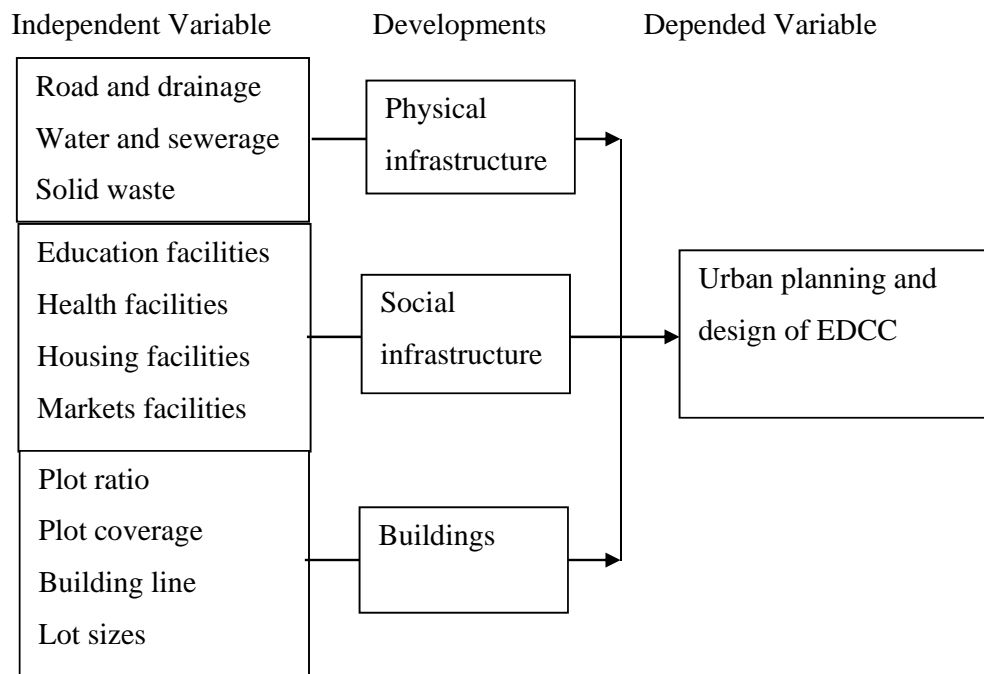


Diagram 3.1. Research variables by author

3.6. DATA ANALYSIS:

In this research, data analysis entailed data verification and representation which was done through qualitative analysis. According to Yin (2003), familiarity with various tools and manipulation techniques in case study is helpful. Each case study should have a general analytic strategy defining

priorities for what to analyze and why. Yin (2003) highlighted three strategies including theoretical propositions, rival explanation framework and developing case descriptions. This research relied on theoretical propositions strategy.

3.6.1. QUALITATIVE ANALYSIS

This form of research involved description seeking to describe and analyze urban planning and design of EDCC. Qualitative research was appropriate to emphasize the development of EDCC in disregard to the urban planning and design framework for the zone. This included computation of maps, photographs, diagrams and textual write-ups, designed to refine and distill the data collected. Data analysis techniques used are as follows;

3.6.2. CONTEXTUAL SPATIAL ANALYSIS

This involved physical mapping of EDCC using geographical information system (GIS), site plans sketches and photographs to bring out the site plan of the Commercial Centre with the developments which have come up in the Commercial Centre.

3.6.3. DESCRIPTIVE ANALYSIS:

A description of the development process for 2008 policy paper was done following strategic urban planning process highlighting areas that needed improvements to enable implementation of the policy plan. In addition, a description of the ways in which the EDCC zoning ordinances are violated using the plot coverages, plot ratios, building lines, setbacks and lot sizes in EDCC .

3.7. DATA PRESENTATION

The collected data is presented using architectural graphics based on the planning standards and building controls established from the literature review. The presentation covers planning and building elements with cross sections of roads, buildings, urban profiles; development perspectives and maps.

4. CHAPTER FOUR: RESEARCH FINDINGS:

4.0. INTRODUCTION:

The data collected and analyzed is presented in this chapter in three sections. The first section is the empirical data on policy plans and zoning ordinances for the study area. Collected data is analyzed and reported on the process of developing the policy plans in the study area with emphasis on the 2008 policy plan which is the most current. The process of developing the 2008 policy paper is analyzed against the strategic urban planning process from literature. The second section presents data collected and on the 2008 policy plan and analyzed against the data collected on the current infrastructural development of the study area. The third section presents a comparative analysis of the data collected on the zoning ordinances against data collected on a sample of buildings in the study area.

4.1. URBAN PLANNING AND DESIGN OF EDCC:

4.1.1. POLICY PLANS:

I) Initial policy plans

The policy framework that has over the years guided development in Eastleigh can be traced back to 1959 when the then City Council of Nairobi realized the need to come up with a definite policy regarding establishing of commercial enterprises in the area. In the initial period the concern was with the demand for land to accommodate the commercial activities which had not been planned for as well as responding to the needs of the growing population. The continued growth led to a policy on extension of the commercial area in 1968 in Minute no 9 of 11th December, 1968.

II) Minute No. 38 of 23rd November, 1984

This policy envisaged a catchment population of 200,000 people by the year 2000 that would depend directly on Eastleigh for their shopping needs. It had been observed that Eastleigh Area was experiencing rapid growth particularly in commercial activities. This called for policy intervention for purposes of sustainable development recommending that: the existing linear commercial development in Eastleigh to be left intact, but further ribbon development to be discouraged and curtailed; Commercial development to be confined within the nucleated centres indicated on the plan; supplement the proposed commercial centres by maintaining plots fronting Juja Road to serve the nearby Mathare and Huruma areas; servicing of the plots fronting Juja Road to be from the back lane to avoid traffic congestion along Juja Road; Traffic flow along 1st and 2nd Avenues and other nodal centres to be reorganized; street parking to be provided and road widening to be carried out as was indicated on the plan; Plot ratios and ground coverage to be increased from 0.75 and 0.35 to 1.5 and 0.6 respectively so as to limit the height of the buildings to a maximum of four floors and the former Eastleigh Treatment Plant site to be developed for Primary school and high rise residential accommodation.

III) 1989 POLICY PLAN:

The role of Eastleigh as explained above was re-emphasized by the Eastleigh District Centre strategy of 10th May, 1989. It was recommended that the area bounded by Muratina Street to the West, General Waruingi Street to the South, 82 Air force to the East and Juja Road to the North be declared the District Centre for Eastlands. This centre was meant to accommodate low

level commercial activities that could not find a place at the CBD. It was estimated that a population catchment of 432,000 was adequate to support a Secondary Commercial centre. Various recommendations were made for expansion of infrastructure and specifically roads to be able to support these commercial activities. The policy recommended various measures such as setbacks and road widening, which were specific for certain road.

IV) 2008 POLICY PAPER

A collaborative approach was employed where private public partnership was used in determining the contributions, limitations and flows of previous policy plan, current problems and strategies to combat them with actors drawn from the partnership.

a) Initial agreements

2008 policy plan was to steer the development of Eastleigh as an integrated secondary centre by Nairobi City Council.

b) The stake holders involved:

The Nairobi City Council department of forward planning was the planning team. It involved other stake holders in the planning process including community leaders, Landlords, tenants, Business men, Matatu drivers, Religious Institutions, Community Base Organizations (CBO), General public and the council staff in the wards and local levels.

c) Mandates:

Different groups have got mandates imposing their will on the planning team:

i) Political arena:

This was represented by the Mayor and elected Councillors within the study area and other departments within NCC including forward planning, City Engineering and environmental departments.

ii) Private arena:

The mandates of the private stakeholders was represented by community leaders, Landlords, tenants, Business men, Matatu drivers, Religious Institutions, Community Base Organizations (CBO), General public

iii) Legally established procedures

The Local Government Act Cap 265 of the laws of Kenya passed by the national assembly in 1977 regulates planning in local authorities. It allows local authorities that have public works, town planning and markets departments to handle planning, control and regulation of land use; buildings and development control; roads and bridges, public access; traffic signs; packing controls; preparation of strategic plans, planning and design of markets. Hence this mandates the Nairobi city council to prepare strategic plans for the area it has jurisdiction over.

iv) Existing policies

The planning team depended a lot on the prior policies including Minute No. 9 of December, 1968; the 1984 policy plan and the Eastleigh District center strategy of 10th May, 1989.

d) Mission and values

The missions and values of the planning team were consolidated and presented in the 2008 policy plan.

e) External Opportunities and threats

i) Lack of financial control:

Former policies had failed partly due to lack of budgetary support from the government structures hence lack of financial control was a major external threat to the planning team.

ii) Competition with other government organs and private organizations:

The type and quality of housing and commercial facilities being provided by the private sector are posing high competition to the planning team because of their limited resources.

f) Internal strengths and weaknesses

i) Resources inputs:

The planning team utilized dons from the University of Nairobi in the research to add on the skilled force in the planning process.

ii) Internal coalitions:

Poor internal coalitions e.g. the city engineer was not aware of the planned reorganization of the traffic and referred the researcher to Kenya Urban Roads Authority; affected the implementation of the planned policy.

g) Identifying strategic issues:

The strategic issues that were identified by the planning team covered physical and social infrastructure including the following:

1. PHYSICAL INFRASTRUCTURE:

i. Road network & Drainage system

The policy outlined problems of traffic congestion, narrow roads, poor state of roads, inadequate parking space, poor drainage network and poorly defined pedestrian walkways. This had been caused by encroachment on road reserves,

on-street loading and offloading, lack of road widening and expansion, trading on road reserves, undisciplined road use by public transport, lack of pedestrian walkways and lack of investments on roads and drainage.

ii. Water & Sewerage network

The policy identified the problem of pollution, contamination and water loss due to leakage and burst of water pipes and sewers, irregular supply of water, low expansion of water and sewer network. It had been caused by lack of regular maintenance of the system, inadequate coordination between demand & supply actors, lack of investments in water & sewer systems and illegal water use.

iii. Solid waste

There was lack of adequate waste dumping sites, inadequate waste management systems in entire area and indiscipline of residents in dumping of wastes which had been caused by increased waste generation by growing population, lack of investment in waste disposal services, inefficient waste disposal service delivery and negative attitude by residents on waste management.

2. SOCIAL INFRASTRUCTURE

i. Economic Base and District Centre

There was a problem of inadequate space for business activities, high rate of growth and new upcoming business enterprises and encroachment of informal and formal business activities on road reserves & service lanes. These were caused by encroachment on planned areas for business activities, failure to acquire requisite planning permission and high demand and supply of goods and services due to low commodity prices.

ii. Housing

There were inadequate housing units, disregard to building & construction standards, encroachment by buildings on road reserves, high costs of rent and informal settlements. The causes for the above was found out to be high demand due to increased population growth, weak enforcement of building regulations, urban poverty, high cost of housing construction and inadequate land for new housing investments.

iii. Education

The policy document highlighted that there was inadequate educational facilities, unregulated mushrooming of private schools and informal schools, inadequate land for provision of new and expansion of schools and poorly maintained & old structures. Such had been caused by encroachment on land planned for educational facilities, weak enforcement of standards regarding schools development, lack of maintenance & upgrading of old existing educational facilities, a rapidly growing population and free primary education.

iv. Health

The health sector had problems of inadequate health facilities, unregulated mushrooming of private health facilities, poorly equipped health facilities, perennial inadequate water supply in some of the health facilities and high demand. This had been caused by high population, weak enforcement of the standards guiding establishment of health facilities and inaccessibility due to poor roads.

v. Markets

There were inadequate market facilities and congestion in the existing markets because of encroachment on land planned for markets and a large population served by Eastleigh commercial centre.

h) Developing strategies:

The strategies there of developed addressed the physical and social infrastructural services including:

1. PHYSICAL INFRASTRUCTURE:

i. Road network & Drainage system

The policy proposed to revitalize the road and drainage network system for efficient functioning through investments in roads and drainage by undertaking comprehensive road widening, repair and maintenance of dilapidated roads & expansion and drainage network, reclaiming all road reserves and parking spaces, construction and provision for elaborate pedestrian and cyclist paths. This was to be acted upon by city Engineer, city planning, developers and community initiatives.

ii. Water & Sewerage network

The policy proposed to upgrade the water and sewerage system to acceptable standards commensurate to demand through undertaking new investments in expansion of water and sewerage network, stopping all illegal water and sewer connections and use and establishing an efficient regular maintenance mechanism. The above was to be achieved by NCC, NAWASCO, residents, business community and Athi water

iii. Solid waste

The policy undertook to improve and re-establish effective and functional solid waste management systems for a healthy environment by Engaging community-based initiatives on waste management, promoting use of desegregation of waste, applying the three Rs (reduce, recycle, and re-use), strengthening private solid collection systems and arrest illegal dumping. The above was to be carried out by environment department in city Planning, private waste collection companies, business community and residents.

2. SOCIAL INFRASTRUCTURE

i. Economic Base and District Centre

The policy had an objective of streamlining the economic activities and operations on space and strategized on constructing of markets within the District centre, strict enforcement of planning law and regulations and implementation of road widening and parking proposals of previous policy. This was to be acted upon by NCC, traders associations, residents and entrepreneurs

ii. Housing

The policy objectified to restore and establish sustainable and standard housing provision mechanism through promotion of the use of low-cost housing development, strict implementation/enforcement of building codes, facilitate upgrading of informal settlements and densification of public housing areas. This was to be implemented by City Planning, Social Services, Ministry of Housing, Non-Governmental Organizations, residents and private developers

iii. Education

The policy objectified to enhance provision of adequate and quality educational facilities demanded by the population. Such would be achieved through claiming land planned for expansion of educational facilities, allocation of more land for expansion of educational facilities, strict enforcement of standards for establishment of educational facilities and upgrading & maintain existing facilities. The NCC, MoE, MoH, MoW, residents and private investors would ensure the above happened

iv. Health

The policy proposed to enhance/facilitate provision of adequate and quality health facilities to serve the escalating population by upgrade some of the existing health facilities to provide specialized services, strict enforcement of the licensing standards and establishment of new health facilities. City Planning, MoH, NGOs, Private investors and CBOs were responsible for ensuring the policy strategy is achieved.

v. Markets

The policy undertook to provide system of adequate functional markets by protecting spaces planned for markets, acquisition of more spaces through purchase by City Council for markets, Public Private Partnerships in provision of markets and upgrading the existing markets to accommodate more business enterprises. This would be acted upon by City Planning, Social Services, residents, private developers, Ministry of Nairobi metropolitan and Ministry of Local Government.

4.1.2. ZONING

The department of City planning in NCC has developed a guide of Nairobi City Development Ordinance and Zones with a summary of planning ordinances to ensure that development control, and indeed the wider planning agenda is being implemented effectively across the city. In this Summary EDCC is part of Zone Two with the following Ordinances:

Table 4.1. EDCC zoning ordinances.

| Zone | Areas covered | GC % | PR % | Type(s) of development allowed | Min. Area (Ha) |
|------|------------------------------|---------|---------|---|-------------------|
| 2 | Eastleigh District Centre | 80 | 250 | Commercial / Residential (High-rise flats) | 0.05 |

Table 4.1. EDCC zoning ordinance adopted from NCC, City planning department by author.

4.2. DEVELOPMENTS IN EASTLEIGH DISTRICT COMMERCIAL CENTRE:

4.2.1. PHYSICAL INFRASTRUCTURE:

1. ROAD NETWORK AND DRAINAGE SYSTEM

The road network of the study area is planned in a grid system with a hierarchy of the network width sizes. Drainage system is set along the road networks.

The 2008 policy plan found there was traffic congestion, poor drainage system with narrow roads and inadequate parking space. The plan proposed widening and repair of the system, reclamation of road reserves and parking spaces, construction and provision for pedestrian and cyclist paths. They also

proposed a reorganization of the traffic flows as proposed in the former policy plans road system.

The researcher set out to establish if the above proposals were implemented and the analysis is as follows:

The road network of the whole study area is represented below

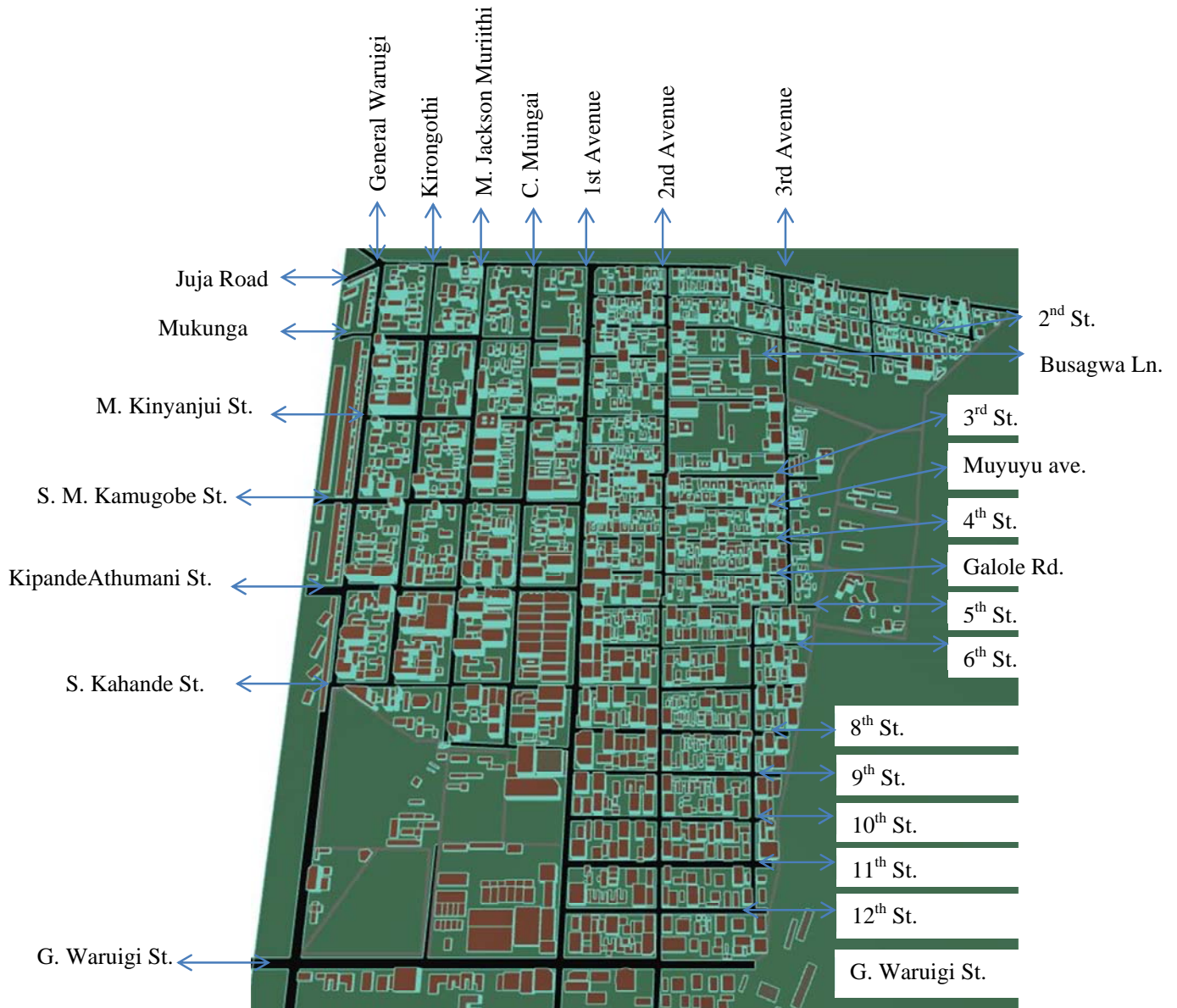


Figure 4.1. Road network for Eastleigh District Commercial Centre. Digitized by author from GIS maps.

a) Design and traffic reorganization.

An interview with the Roads City Engineer in CCN revealed that, the engineer was not privy to the proposed reorganization of traffic in EDCC. Instead, he referred the researcher to Kenya Urban Roads Authority saying that KURA had embarked on rehabilitation of the road networks in the study area and the researcher carried out a site survey of the same.



Figure 4.2. Rehabilitated General Waruingi street. Source: Photographed by author

As depicted in the illustrations above, KURA is constructing marrum roads with open drains at the side. These roads will not be usable after a rain season hence the performance of the same is questionable. It is evident that construction and provision for pedestrian and cyclist paths is not being done. It is also evident that design of drainage system is completely neglected.



Figure 4.3. Drainage system at junction of first and Fifth Avenue by author

Nevertheless, KURA is redeveloping First Avenue, Second Avenue and general Waruinge road to good standards using cabro as illustrated in the pictures below.



Figure 4.4.Rehabilitation of Second Avenue. Photograph by author



Figure: 4.5. Rehabilitation of General Waruinge road. Photograph by Author

b) Motorized transport

Eastleigh is served by public transport vehicles with a terminus at Garissa Lodge mall in First Avenue, St. Teresa and Mlango Kubwa in Juja road as illustrated below. Having only one drop off and pickup point is insufficient therefore picking and dropping of people happen on the roads especially along general Waruige road and first avenue. This results to traffic congestion in these particular roads. Muratina road is also being used as a public transport road after renovations by Kenya Urban Roads Authority.



Figure 4.6. Motorized transport system in Eastleigh to the CBD. Source:

www.Jambonairobi.co.ke/area-guide/eastern-suburbs/eastleigh/

c) Non-Motorized circulation

In the 2008 policy paper for development in Eastleigh, the need for NMT was proposed. A project launched by KURA in 2012; whose construction will be completed after 2013 is said to contain footpaths on either side (www.kura.co.ke) with no bicycle lanes as envisaged in the 2008 policy plan.

d) Encroachment

An interview with an assistant development control official in the City Council revealed that, one of the challenges they face in controlling development in area is the failure of the developers to give 1.5 meter surrenders as required by planning policy in fear of losing their right of land ownership.

A tour through the study area revealed that, several roads are overgrown with weeds and are impassable. Informal businesses have encroached on to the road reserves rendering them unusable.



Figure 4.7. First Avenue encroachment by hawkers. Photograph by author

2. WATER AND SEWERAGE:

The developers and Architects the researcher interviewed indicated that water provision was not adequate hence bore holes were being drilled. The City Council sewer is being used for the sewerage system of the study area.

3. SOLID WASTE MANAGEMENT:

The interviews showed that there were no mechanisms for Solid waste disposal by the city council hence solid was being disposed privately. The institutions like Easleigh High School was burning away the refuse and decomposing the decomposable part of the waste. This is despite the 2008 policy plan proposing to employ the three Rs; reduce, recycle and reuse. None of the three R's has been implemented.



Figure 4.8: Dumping along Major Jackson Muriithi road. Photograph by author

4.2.2. SOCIAL INFRASTRUCTURE

1. ECONOMIC BASE AND DISTRICT CENTRE

Economic activities and operations of space are not yet complete. The CCN is physically chasing away hawkers from the road reserve.

2. HOUSING AND SOCIAL AMENITIES

The strategy of providing low cost housing developments in the area has not been implemented yet nor has the process started.

3. INSTITUTIONS (EDUCATION AND HEALTH FACILITIES)

The strategies to address the problems of scarcity of institutions have not yet been accomplished including reclaiming land made for the institutions, expansion of the institution facilities and upgrading of the existing facilities.

4. MARKETS

There exists some land hoarded for community market on site. The researcher visited the site and was informed that the land had been sold by City Council of Nairobi to a private developer and now the new owner was planning to develop a shopping mall. This was despite the fact that a huge sign post depicting that the site was for hawkers market being developed through Private Public Partnership between the NCC and a Private developer.

Hawkers are using the road reserves to market their wares especially on First Avenue.

Land for CCN market that is already sold to a private developer



Figure 4.9: Sold out CCN market land and first avenue encroachment by Hawkers.
Photograph by author.

4.2.3. BUILDINGS:

The buildings in the study area constitute of one to two story Indian houses, up to seven story flats, shopping malls, hotels, garages and bakeries. Schools, colleges, hospitals, banks, churches and mosques also exist at different areas within EDCC. Therefore densities of up to seven story buildings are mixed with up to two level schools and play grounds; one story churches and garages or go downs in a mixed urban space.

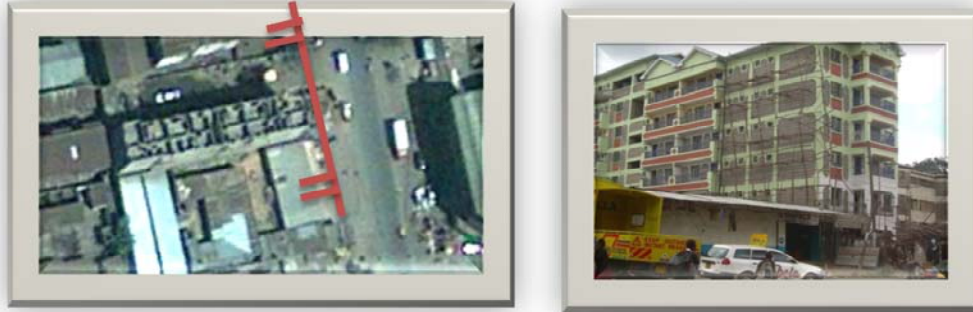


Figure 4.10. Building developments in Eastleigh District Commercial Centre by author

i) Single building typologies:

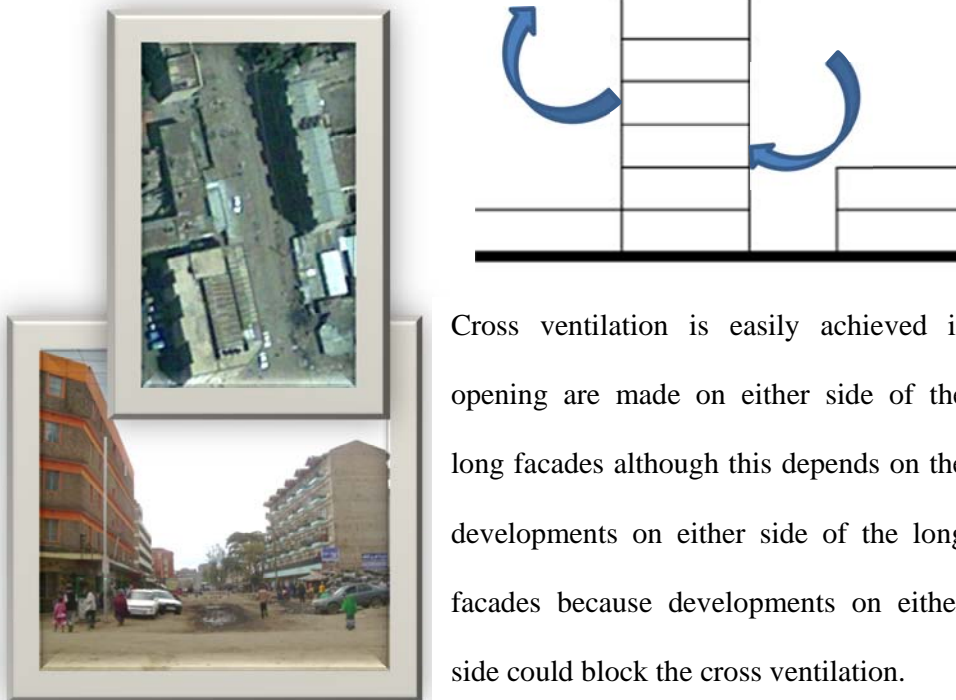
Eastleigh has developed adaptively where an urban grain for residential developments have been used for mixed use. The resultant commercial buildings on residential plots have broadly two characteristics. Either slender on plan or square on plan.

a) Slender on plan



Mixed use development along First Avenue.

Figure 4.11. Illustrations of development slender on plan by author



Cross ventilation is easily achieved if opening are made on either side of the long facades although this depends on the developments on either side of the long facades because developments on either side could block the cross ventilation.

Figure 4.12. Illustrations of development slender on plan the junction of Major Kinyanjui Street and Major Jackson Muriithi road by author

The case of Mecca Plaza:

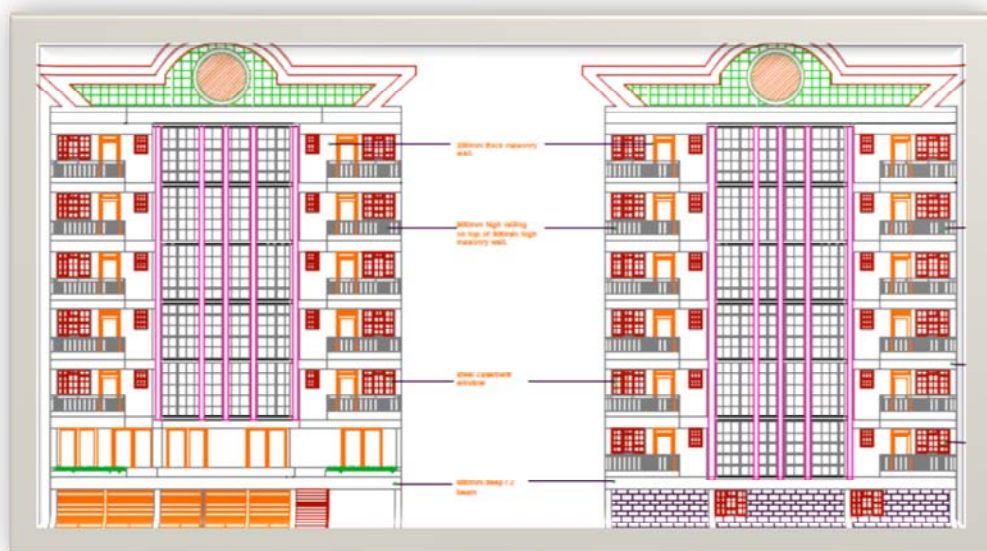
This development is found at the junction of first avenue and general Waruinge street. In an interview with the architect for this development, it was pointed out that the requirements of the client to develop a mixed use development necessitated a 95% plot coverage which is above the stipulated

coverage. Voids were created for ventilation on the apartment floor and not necessarily lighting.



Typical commercial layout plan:

typical apartment floor plan



Elevation one

Elevation two.

Figure 4.13. Illustrations of development slender on plan by author

b) Square on plan



The case of Madina Mall

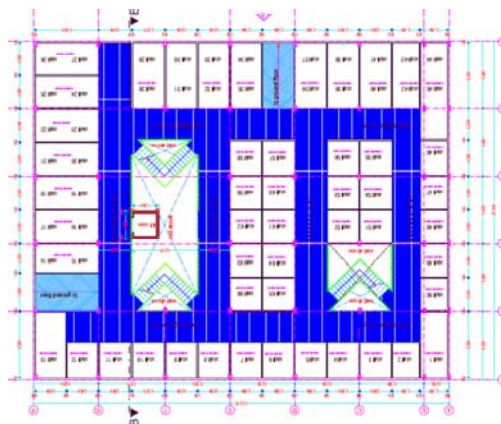
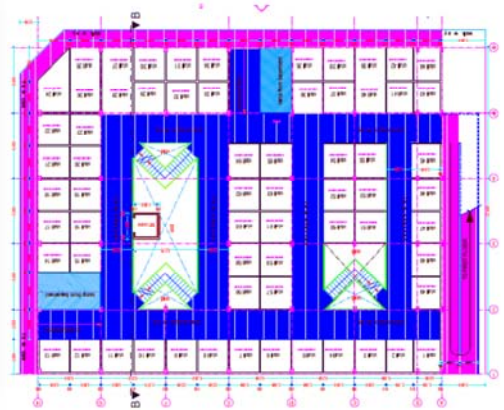


Figure 4.14. Illustrations of development square on plan by author

The plot coverage is here superseded due to the client's requirements. Voids provided inside are more of ventilation rather than lighting.

ii. Combined building types



Figure 4.15. Urban form of Eastleigh District Commercial Centre by author

The urban form of the Eastleigh Business District Centre resulting from the different building typologies can be classified as follows as the following illustrations.

a) Vacant land ready for development

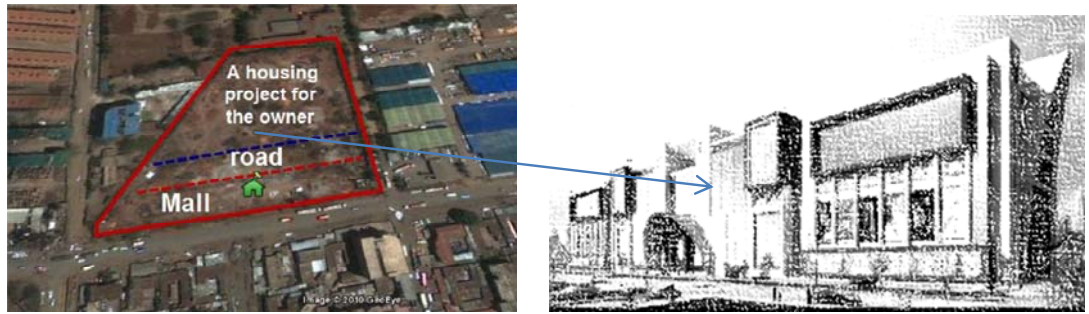


Figure 4.16. Vacant land ready for development by author

Proposed new developments of bare land along General Waruingi road

The little development land in EDCC is privately owned with planned developments in the near future. Interview with the deputy principal Eastleigh High school revealed that, the above plot belonged to a theological school and was overgrown with trees. The new owner cut down all the trees for the above proposed development.

b) Residential bungalow (Informal) and 7 story flats

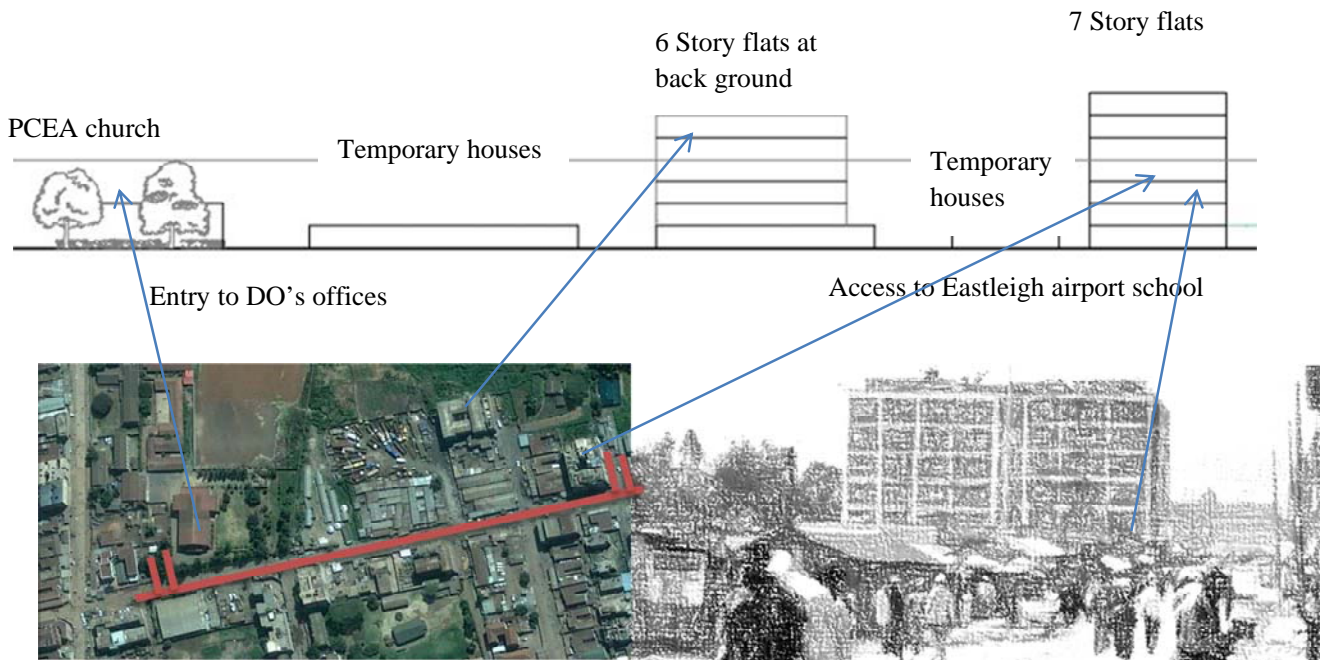


Figure 4.17. Cross sectional analysis of urban form by author

c) Commercial developments of low and high levels

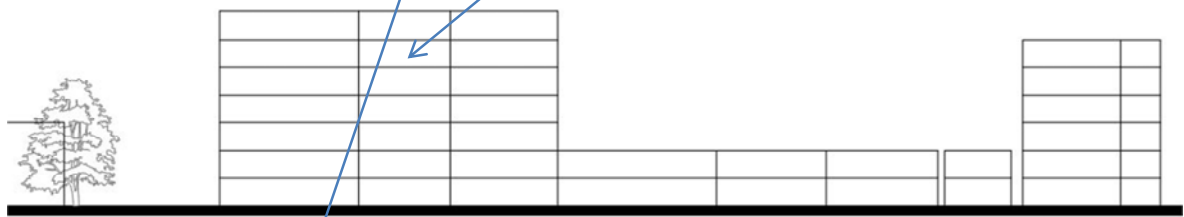
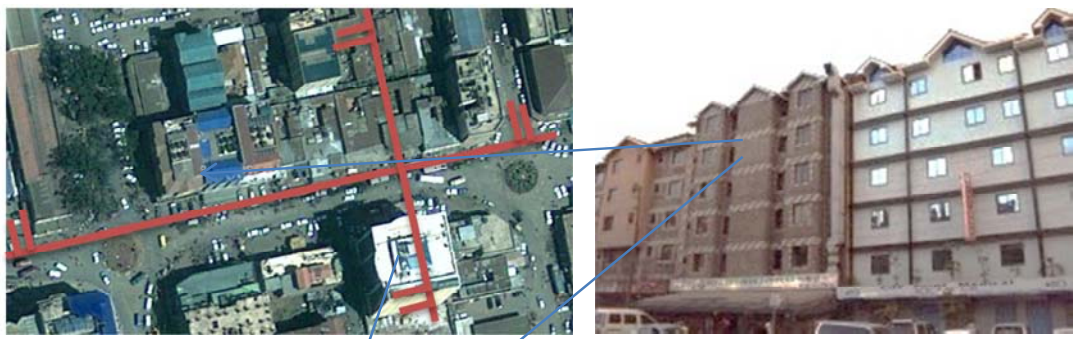


Figure 4.18. Cross sectional analysis along General Warungi Road between First Avenue and Second Avenue showing a mix of high and low developments by author

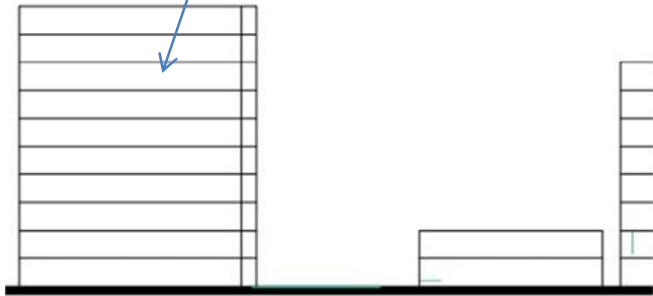


Figure 4.19. Analysis across General Warungi by author

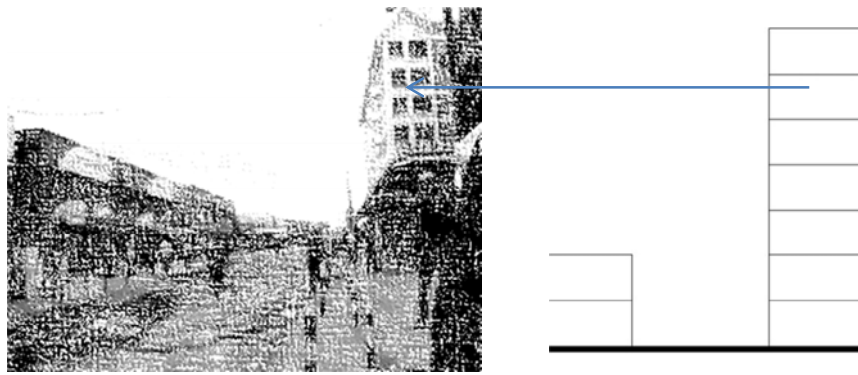


Figure 4.20. Analysis from First Avenue facing Sargent Major Kamugobe Street.

d) Commercial mixed medium and high levels

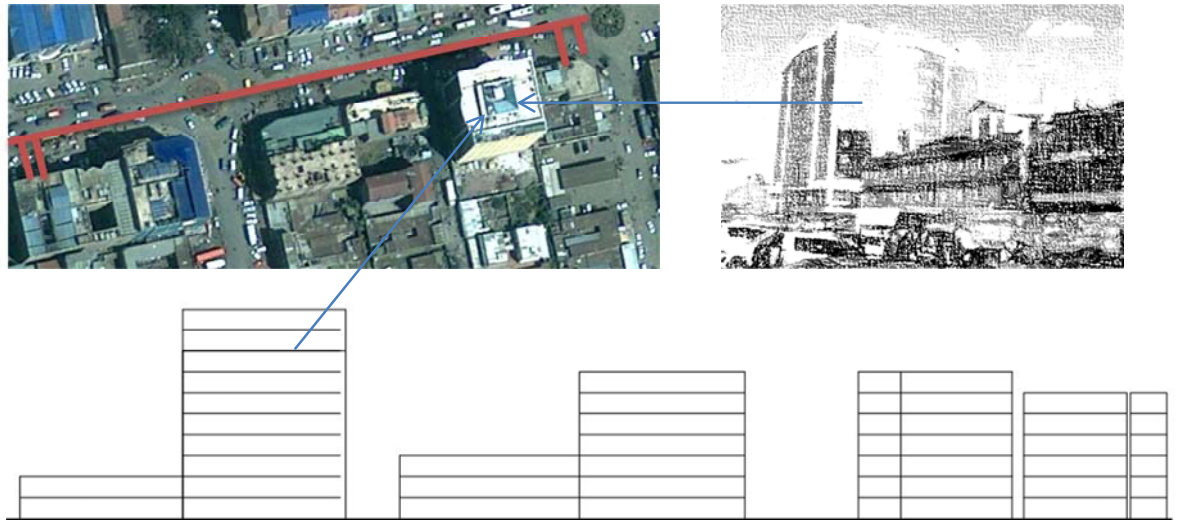


Figure 4.21. Analysis along General Waruingi Road between First Avenue and Second Avenue showing a mix of medium and high developments by author.

The ten story hotel has been marked for demolition because it has surpassed the allowed density and it is at flight path. It has been marked for demolition but the owner went to court. The case is yet to be finalized

e) High level commercial and or flats

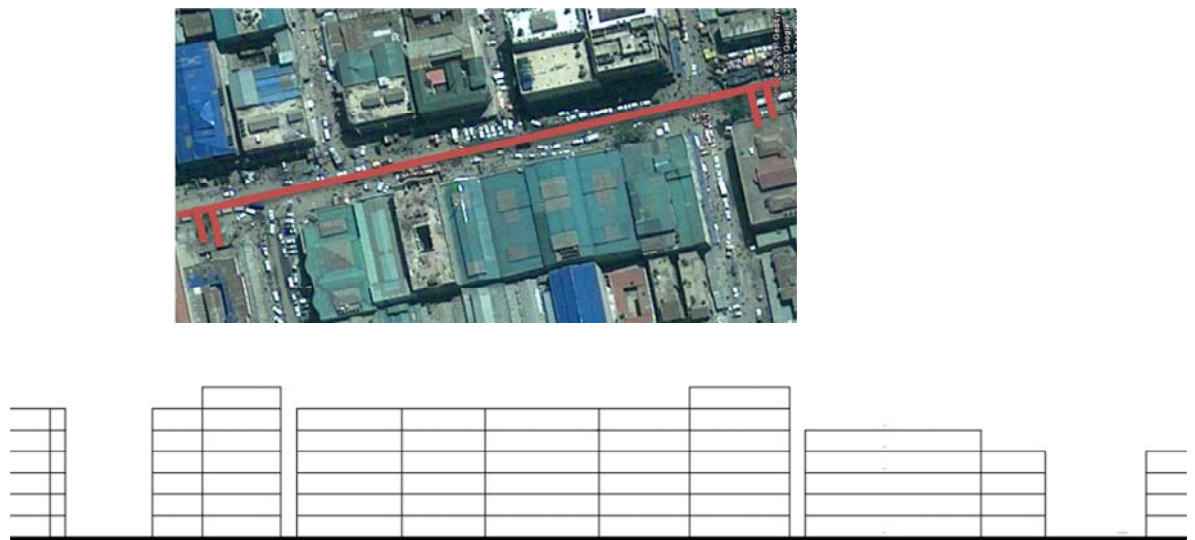


Figure 4.22. Analysis along First Avenue showing high level developments by author

iii. Transition spaces between buildings and networks:

Façade treatments relate very well with the streets as the designs have allowed porosity both visually and physically. The ground floors of many mixed use developments have many entry points along the streets fronting them. In addition, temporally staircase access to several first floors in the shopping malls link people from the street to the first floor. Openings in other levels are left open without glazing and display of goods is done on the openings. These provide visual connectivity from the street below.



Figure 4.23. Malls on First Avenue showing relationship of buildings and road network photograph by author

4.3. SUMMARY:

Different urban planning and design measures for the development of EDCC have been developed over time in form of policy plans. The 2008 policy paper on planning and designing EDCC identified problems in physical and social infrastructure that the policy plan proposed different measures to resolve them. Besides the 2008 policy paper, the NCC city planning department has developed zoning ordinances with EDCC falling in zone two. The zoning ordinance guide building developments. Particular zoning ordinances for EDCC include 80% plot coverage, 250 % plot ratio, minimum area per lot of 0.05 Ha and the developments allowed are commercial and residential high rise flats

The data collected and analyzed shows that, despite urban planning and design measures in form of 2008 policy plan for EDCC and the zoning ordinance, development of EDCC is not compliant with the policy plan and the zoning ordinance. From the Analysis, the 2008 policy plan has failed in guiding the development of Eastleigh as an integrated secondary commercial centre. Developments continue outside the guidance of the plan and the zoning ordinance.

The strategic issues and strategies to address the issues as contained in the 2008 policy paper are presented in the following table:

Table 4.2. Strategic issues and strategic plan in 2008 Policy paper for EDCC:

| | | Strategic issues | Strategic plan | |
|--------------------------------|---|--|---|-----------------|
| Physical infrastructure | Road network and drainage system | Traffic congestion, poor drainage system with narrow roads and inadequate parking space. | <ul style="list-style-type: none"> i. Widening and repair of the system ii. Reclamation of road reserves and parking spaces iii. Construction and provision for pedestrian and cyclist paths. | Not done |
| | Water and sewerage system | Poor water and sewerage system. | <ul style="list-style-type: none"> i. Expansion of the system. ii. Stopping illegal connections iii. Establishing a maintenance mechanism. | Not done |
| | Solid waste management | Poor solid waste management | <ul style="list-style-type: none"> i. Desegregation of waste, ii. Application of the three Rs (reduce, recycle, and re-use), iii. Private solid collection systems iv. Arresting illegal dumping. | Not done |
| Social infrastructure | Business activities space | Inadequate space for business activities. | <ul style="list-style-type: none"> i. Construction of markets within EDCC ii. Enforcement of planning regulations. iii. Implementation of road widening and parking proposals of previous policy. | Not done |

| | | | | |
|--|------------------|---------------------------------|--|-----------------|
| | Housing | Inadequate housing | <ul style="list-style-type: none"> i. Low-cost housing development. ii. Enforcement of building codes. iii. Upgrading of informal settlements. iv. Densification of public housing areas. | Not done |
| | Education | Inadequate education facilities | <ul style="list-style-type: none"> i. Claiming educational facilities land. ii. Allocation of more land for expansion of educational facilities, iii. Enforcement of standards for establishment of educational facilities iv. Upgrading & maintain existing facilities. | Not done |
| | Health | Inadequate health services | <ul style="list-style-type: none"> i. Upgrade some of the existing health facilities to provide specialized services, ii. Enforcement of the licensing standards. iii. Establishment of new health facilities. | Not done |

| | | | | |
|--|----------------|--------------------|---|-----------------|
| | Markets | Inadequate markets | <ul style="list-style-type: none"> i. Protecting spaces planned for markets. ii. Acquisition of more spaces through purchase by City Council for markets, iii. Public Private Partnerships in provision of markets iv. Upgrading the existing markets to accommodate more business enterprises. | Not done |
|--|----------------|--------------------|---|-----------------|

Table 4.2. Strategic issues in 2008 Policy paper for EDCC adopted by author from CCN, department of forward planning.

5. CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS:

5.0 INTRODUCTION:

The conclusions and recommendations of urban planning and design of EDCC are based on the objectives of this study which were based on the urban planning and design of the study area. The objectives covered the urban planning and design practices; policy plans and zoning ordinances, compliance with the urban planning and design measures and lessons thereof brought up for the study area and the general urban planning and design practice. This is followed by the recommendations on guidelines of developing an implementable urban planning and design framework for the development of EDCC. Not only can these guidelines be used for guiding development of EDCC, but also can be used in other zones of Nairobi and in urban planning and design practice.

5.1. CONCLUSIONS:

As reported in chapter four, urban planning and design of EDCC has been done using comprehensive urban planning approach through strategic urban planning and zoning ordinance. The urban structure of EDCC is a grid system which was informally developed. The field work research reported in the same chapter shows that development of EDCC has happened in disregard to the planning and zoning requirements. In terms of physical and social infrastructure, the policy plans have not been implemented.

The failures of implementation of the policy plans has resulted to traffic congestion, poor drainage system with narrow roads and inadequate

parking space, poor water and sewerage system, poor solid waste management, inadequate space for business activities, inadequate housing, inadequate education facilities, inadequate health services and inadequate markets. Developments with higher plot ratios and plot coverage's have led to accommodation of higher population densities adding into the inadequacy of the physical and social infrastructure.

This research has brought out the fact that implementation of policy plans is important so as to curb the strategic problems affecting the urban environment. Failure to implement the policy plans and comply with the set ordinances leads to persistence of the urban problems in this case inadequacy of the infrastructural services, both physical and social.

5.2. RECOMMENDATIONS

After the conclusions made above, I came up with recommendations influenced by the lessons learned in the field work research and theoretical background of comprehensive urban planning through strategic urban planning and zoning as follows:

5.2.1. POLICY MAKERS:

The policy makers should incorporate form based codes to the zoning ordinances in the urban planning and design of EDCC. This will enhance the relationship of the ordinances and the resultant three dimensional developments as supported by literature. They should also follow the strategic urban planning process fully and involve all relevant stake holders as recommended below:

I) INITIAL AGREEMENTS:

a) Plan proposal

The goal of developing Eastleigh as an integrated secondary commercial centre is fine and attainable.

b) The stake holders involved:

The planning team needs to involve all stakeholders effectively from the level of tokenism to the level of citizen power this means that the planning team should move from ‘informing’ the stakeholders to ‘partnership, delegated power’ and ‘even citizen control’’. Other stakeholders often left out in the planning process are the Professionals. In the researchers view, professionals in the private sector including Architects and urban designers should be involved in the planning process to give insights. They are affected by the planning results because they are guided by the same when developing plans for the clients.

II) MANDATES:

All parties with mandates to impose their will on the planning team including government organs like KURA and NAWASCO, should be carefully considered and integrated into the planning team. Other parties in the private sector including developers, users and Politian’s should also be considered in the planning team.

III) MISSION AND VALUES:

The missions and values of different stakeholders should be carefully considered, evaluated and combined into one. This is after consideration of all the stakeholders as presented to have mandate on the planning team.

IV) EXTERNAL OPPORTUNITIES AND THREATS

a) Lack of financial control

The implementation of the 2008 policy plan has failed partly due to lack of budgetary support from the government structures. The researcher recommends Public Private Partnership in terms of financing the proposed plans.

b) Competition with other government organs and private organizations:

To minimize competition in the government organs, all such organs should be considered and strategies for curbing their competition developed in the planning process.

The planning team should take the type and quality of housing and commercial facilities being provided by the private sector as case studies of the typologies they should be providing for the same. This will enhance a healthy competition among the private and public sectors.

V) INTERNAL STRENGTHS AND WEAKNESSES

Strategies to maximize on internal strengths should be developed alongside strategies to curb the internal weaknesses. This research recommends the following:

a) Resources inputs:

In the 2008 policy plan, the planning team utilized university researchers in developing the plan proposals and it is highly recommendable. Researchers in the different field affected by the planning outcome should also be used.

b) Internal coalitions:

The planning team should coordinate effectively all CCN departments so that there are no contradictory views about the plan proposals.

VI) IDENTIFYING STRATEGIC ISSUES:

The strategic issues developed for physical and social infrastructure are good enough. Nevertheless, there is need to propose implementable plans. For instance, the policy plan on markets proposes protection of existing market places and yet because the same council is selling the vacant land for market to private developers.

VII) DEVELOPING STRATEGIES

The strategies developed in the 2008 policy plan are commendable but implementation of the strategies failed. The strategic planning process should be followed to the later to eliminate the problems encountered by the planning team in implementation.

I recommend that the strategies should be developed in terms of standards that can easily be interpreted by the developers and users. I recommend different strategies with some standards for the different development typologies starting with physical infrastructure, social infrastructure and buildings as follows:

1. PHYSICAL INFRASTRUCTURE:

i) Road network and Drainage System

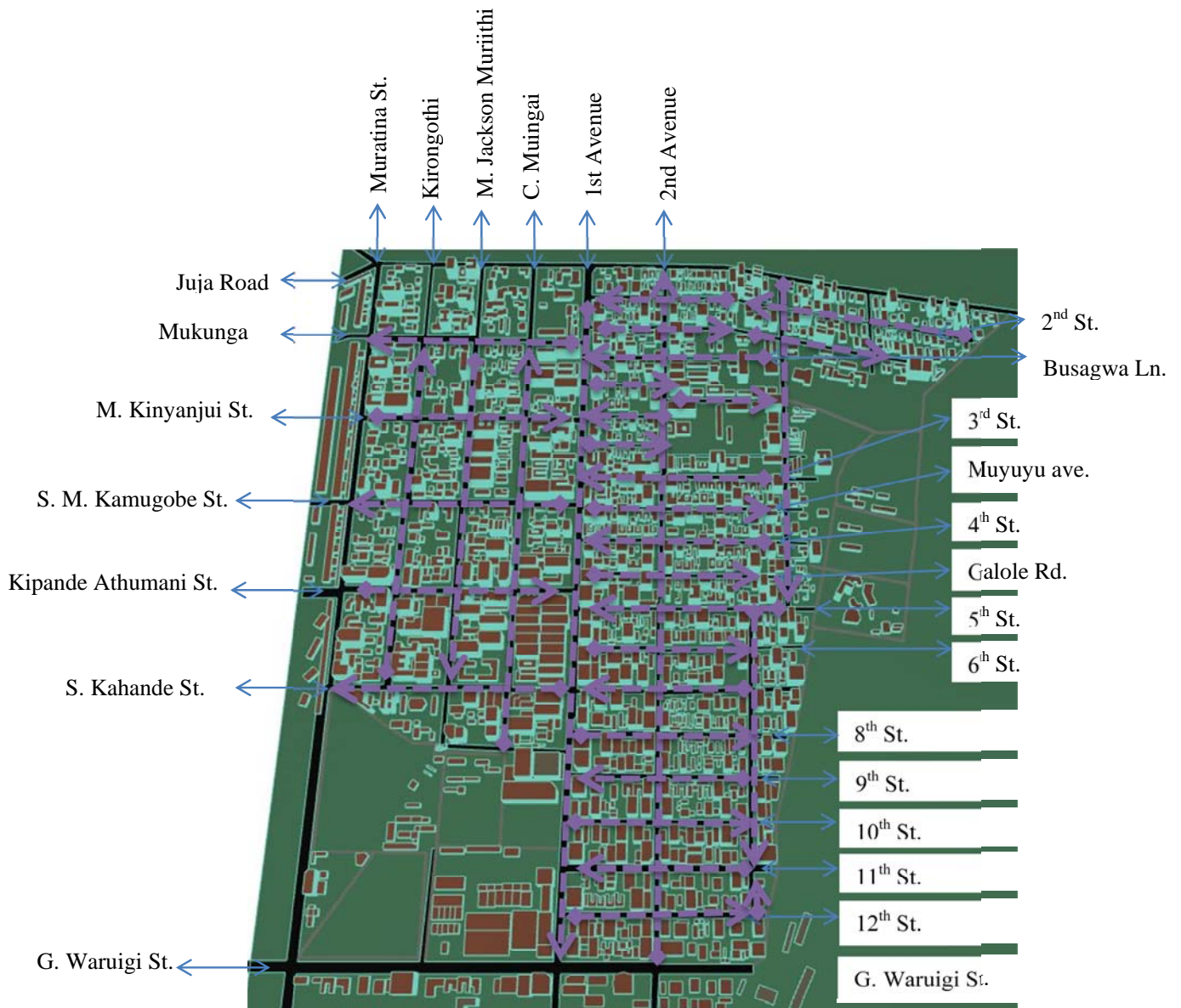


Figure 5.1. Proposed reorganization of traffic transport system by author.

a) Design

The researcher recommends reorganization of the road network by making all internal roads one way as illustrated above. Woonerf design principles including bicycle and pedestrians lanes, green belt and commercial zone be used as recommended and illustrated as follows in the internal streets:

i) 21 meter wide internal road:

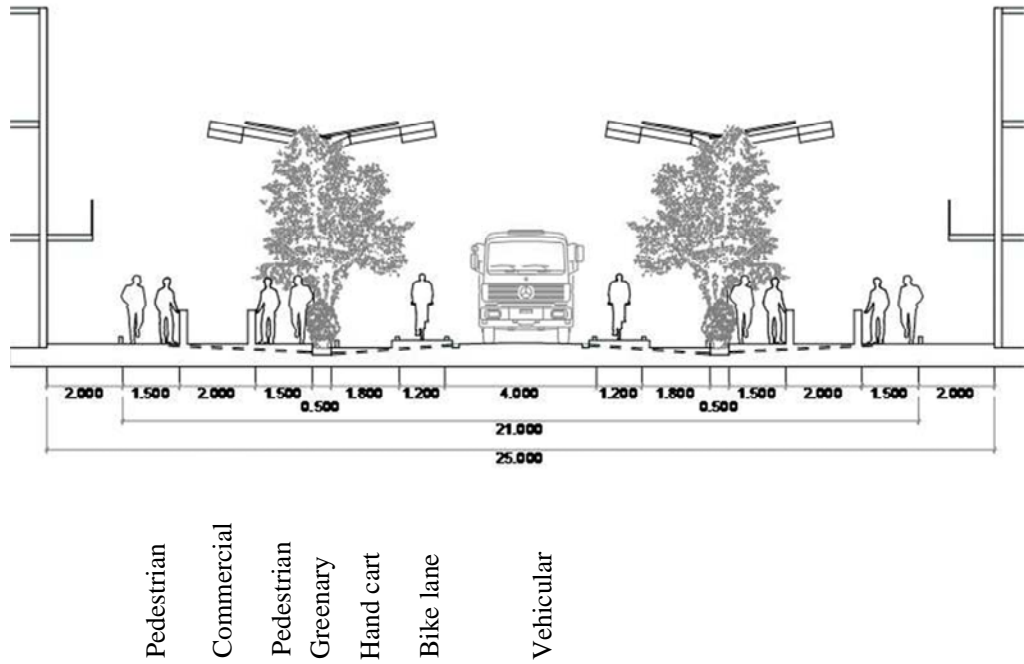


Figure 5.2. Proposed Section through a 21 Meter wide internal road e.g. Kirongothi street. Source: Author

ii) 18 meter wide internal road

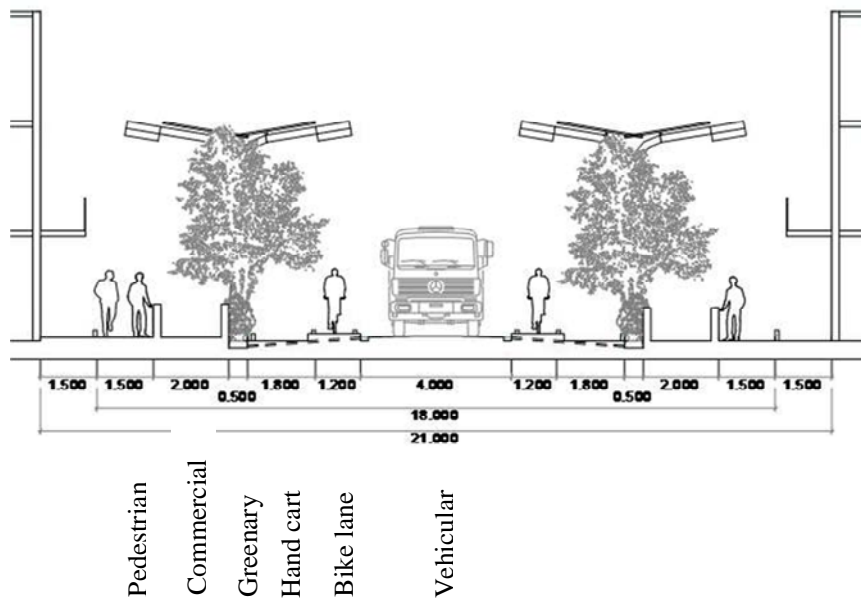


Figure 5.3. Proposed section through a 18 Meter wide internal road e.g. Kipande Athumani street. Source: Author

iii) 12 meter wide internal roads

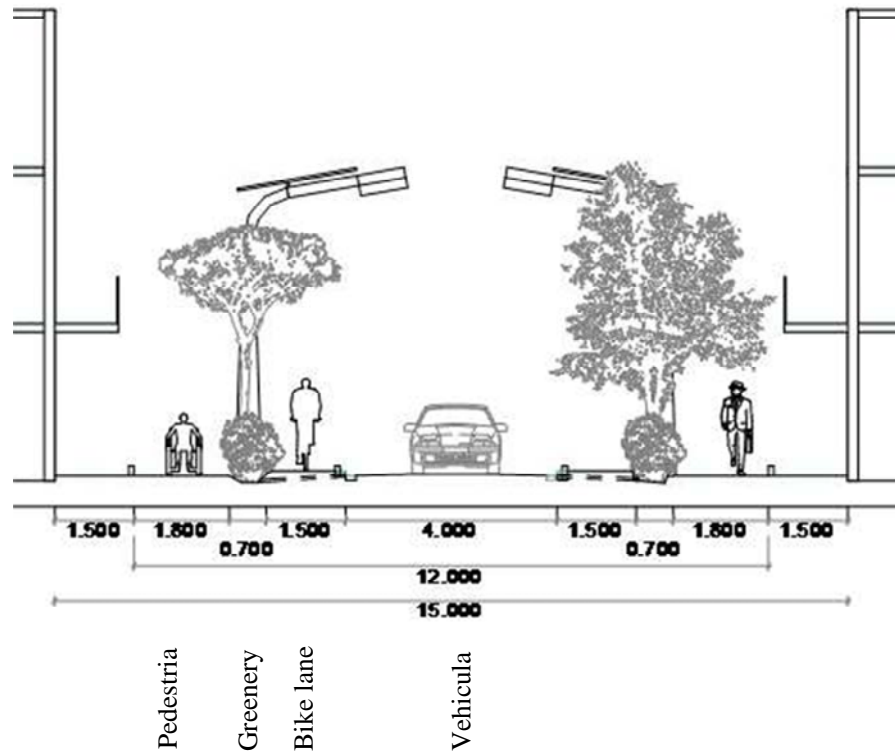


Figure 5.4. Proposed section through a 12 Meter wide internal road e.g. Serget Major Kamugobe Street. Source: Author

iv) 6 meter wide internal roads

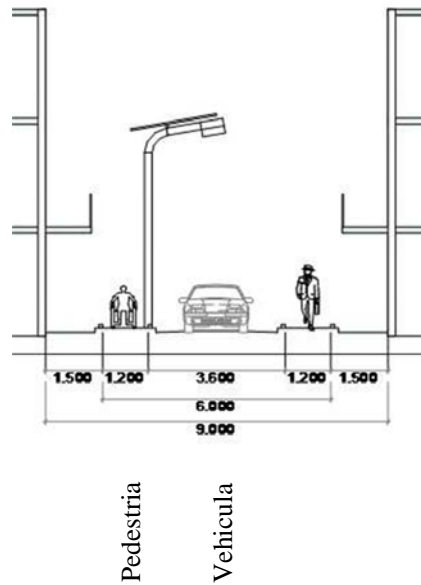


Figure 5.5. Proposed section through a 6 Meter wide internal road e.g. Muyuyu Avenue by author

b) Motorized public transport



Figure 5.6. Proposed public transport systems by author

The researcher proposes two types of public transport arteries including two way carriage access roads including General Waruigi Street and Muratina Street; and one way internal circulation loop through Second Avenue, Second Street and First Avenue. The design of the above streets will entail Woonerf design principles as illustrated below

i) Access road:

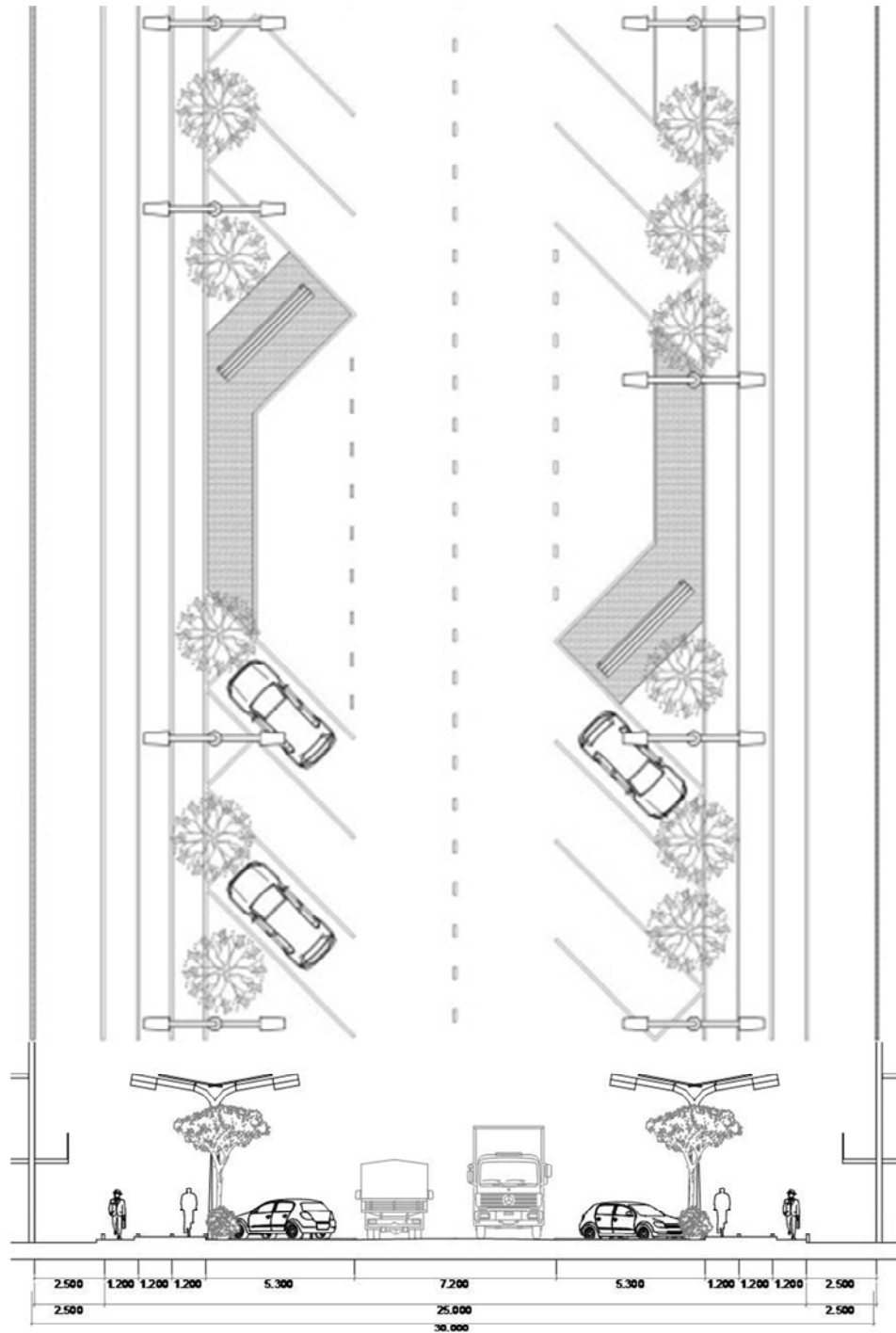


Figure 5.7. Proposed plan and elevation through 25 meter access road. Source: Author.

This is the proposed typical design of General Waruingi and Muratina streets.

ii) Circulation loop – first avenue

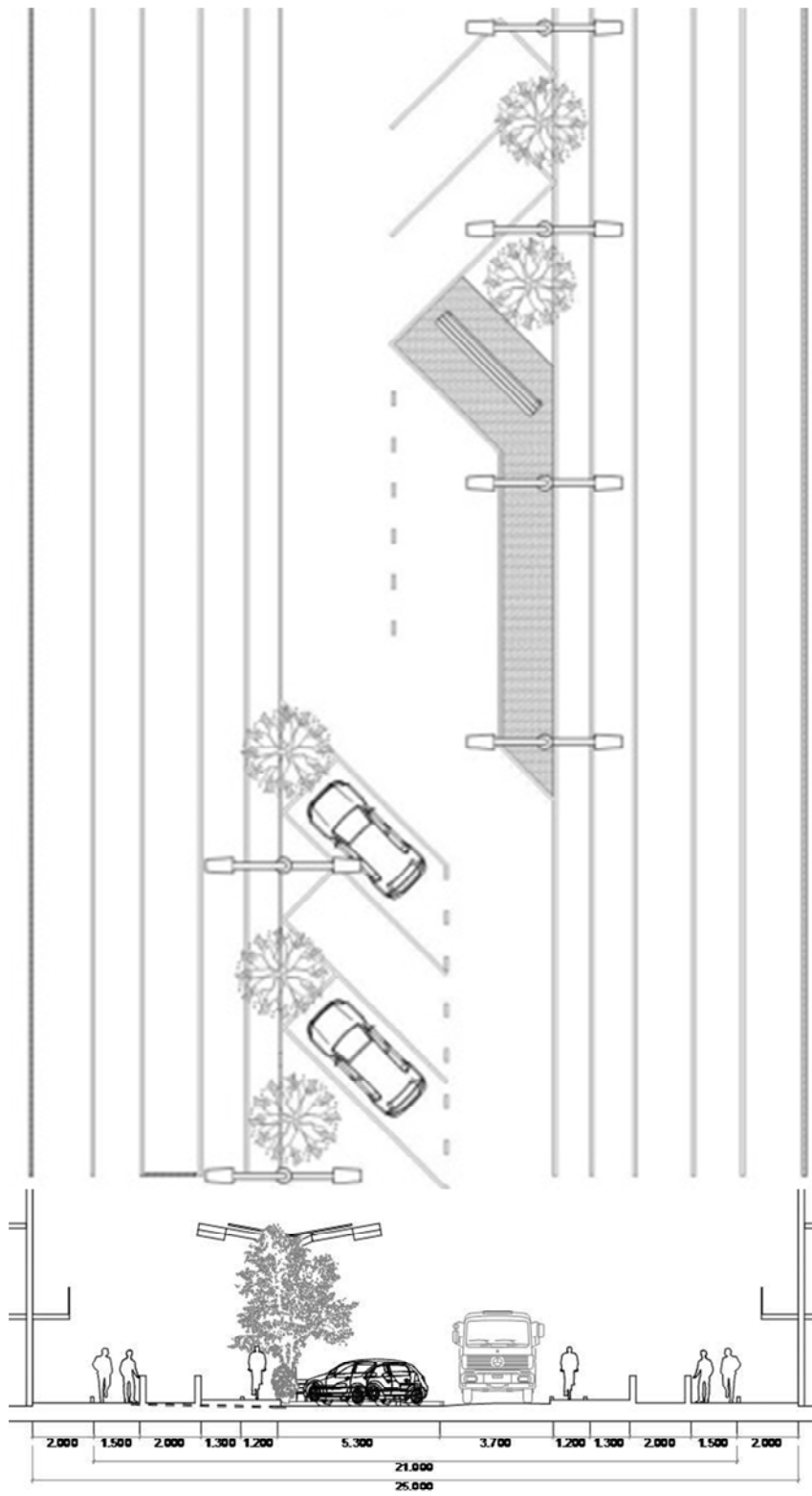


Figure 5.8. Proposed design of First Avenue Street. Source: Author

ii) Circulation loop – Second Avenue and Second Street

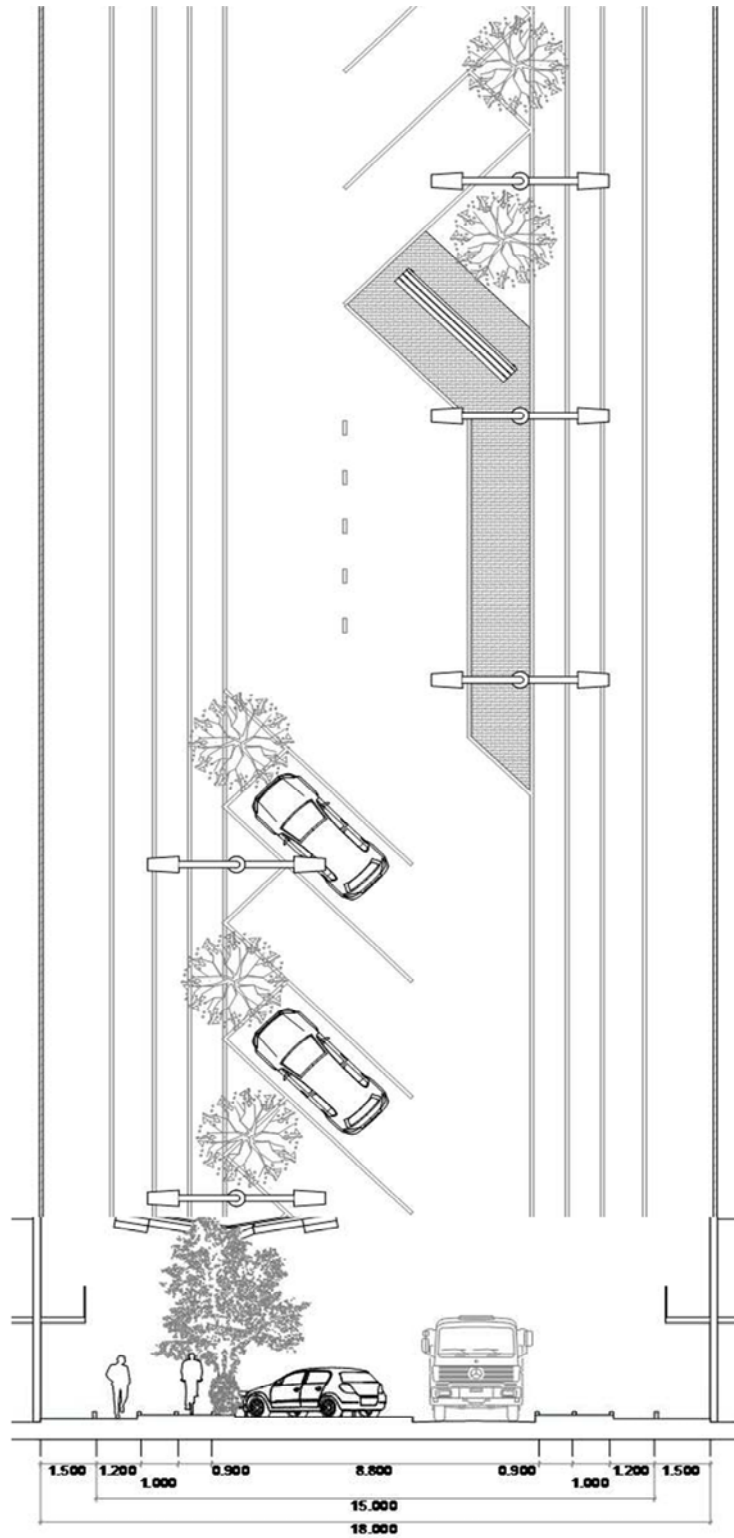


Figure 5.9 Proposed design of Second Avenue and Second Street. Source: Author.

c) Non-Motorized circulation

Non-motorized circulation has been proposed on all types of roads including bicycle, pedestrian and hand cart lanes as illustrated above.

ii. Water and sewerage

As the roads are reorganized as illustrated above, water supply pipes and sewerage systems will have to be replaced and better connections done. With Public Private Partnership other methods of sewer management can be employed including the use of bio boxes and bio digesters.

iii. Solid waste

Regulations demanding solid waste management from each development should be made. The proposed three Rs (reduce, recycle, and re-use), should be implemented through Public Private Partnership.

2. SOCIAL INFRASTRUCTURE:

a) Commercial (commercial base and markets)

The integrated secondary business centre should be left to grow because of its annexation to the CBD. The perennial problem of acquiring land for market seems very hard to be resolved. To this end the author proposes inclusion of market within the road design as will be illustrated in the design of the streets.

b) Housing and social amenities

The planning team should consider that this is an integrated Secondary Commercial Centre to the CBD hence planning it as an independent and self-contained centre might not be achievable. The public spaces including cafeterias should be taken as public spaces where the public sector has added on to social amenities for the planning team.

Nevertheless, administrative and civic centers should be developed from the informal status they are in currently to formal status. This will include designing and developing the environment around them with clear access and signage. Other amenities like public toilets should also be developed.

c) Institutions (education and health)

The fact that this is a secondary center warrants it not be exactly self-dependent on institutions except for administrative purposes including the D.Os and chiefs offices. These offices have been encroached by different developments choking the institutions.

3. BUILDINGS:

With the new approach by the City Council of Nairobi of online submissions, the problems pointed out by development control of extra floors from what was approved being developed will be a little bit curbed.

i) Single building typologies:

There is need for form based regulations elaborating on the fact of massing and height. The use of zoning regulation which is currently being utilized cannot effectively guide the resultant forms of individual buildings. Easleigh falls in Zone 2 whose ground coverage is 80% and plot ratio is 250 and the minimum area for development is 0.05 hectares. If a client decides to do ground coverage of 20 % and the maximum plot ratio then the resultant height will be very high.

ii. Combined building types

The planning team should pass regulation concerning all undeveloped land that it has to kept as green space by the land owner with or without public

access. Failure of compliance, the NCC can keep it as green space with charges for same when the landowner wants to develop it.

All other building types to be controlled using form based codes as earlier pointed out. The transect can adopted and applied alongside the primary arteries.

iii. Combined building typologies and the networks:

The practice of opening the buildings at ground and first floors to connect to the street is good and the researcher proposes this to be adopted with the proposed reorganization and design of the streets.

The idea of the clients surrendering 1.5 m road reserves should be left out due to land tenure system in the study area. The failure of surrender is attributed to lease hold system of land tenure whereby the owners risk losing their land on surrenders. With the proposed design of the streets in this paper, the author has shown that it is possible to attain maximum circulation without surrenders.

5.2.2. DEVELOPERS

The developers are affected by the results of the policy plans and zoning ordinances because this acts as guidance while developing their land. Therefore, they need to be involved in the strategic urban planning process which can be achieved through their neighborhood association.

5.2.3. USERS:

Like developers, users are affected by the results of the policy plans e.g. road will be picked or dropped by public transport at the designated drop off points as contained in the policy plans. Therefore, they need to be involved in the strategic urban planning process.

5.2.4. RESEARCHERS:

This research covered urban planning and design of EDCC as stipulated in the policy plans and zoning ordinances. Compliance of developments in terms of physical, social and buildings with the policy plans and ordinances were assessed. Implications of the degree of compliance were also investigated and lessons thereof learnt elucidated. Nevertheless, there are other areas of research interest not covered which other researchers can indulge in. this include:

- i) Reviewing the adequacy of the policy plans and zoning ordinances against the population size and user needs / interests in the study area.
- ii) Reviewing of factors leading to degree of compliance of the urban planning and design measures in the study area.
- iii) Impacts of grid plan system in urban planning and design of the study area

There could be continuation of this research through testing whether the use of form based codes combined with zoning ordinances and follow up of the due urban planning and design process leads to a higher degree of compliance.

5.2.5. PRACTITIONERS:

All consulting practitioners should be involved in the planning process also because their practice is guided by the policy plans and the zoning ordinances.

They should also be involves in developing form based codes to be used in conjunction with zoning ordinances.

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CASE STUDY PROTOCOL:

A case study protocol is used as a guide in conducting case study research.

According to Yin (2003) it should have an overview of study, field procedures, case study questions and a guide for the case study report.

Below is a structure and context of the CSP used for this research.

Case study protocol outline

| Section | Contents | Purpose |
|--------------------------|---|--|
| General | <ul style="list-style-type: none">• Overview of research project (chapter one) | To provide an overview of the research project |
| Procedure | <ul style="list-style-type: none">• Research design | To describe a detailed procedure for conducting the case. |
| Research instruments | <ul style="list-style-type: none">• Interview schedule with open ended questions | To describe the research instruments used in the research |
| Data analysis guidelines | <ul style="list-style-type: none">• Overview of data analysis process• Qualitative analysis<ul style="list-style-type: none">➤ Contextual spatial analysis➤ Descriptive analysis➤ Comparative analysis | To provide guidelines for data analysis used in this research. |
