

**PLANNING IMPLICATIONS OF UNCONTROLLED URBAN DEVELOPMENT IN
TENA RESIDENTIAL ESTATE, NAIROBI**

BY

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DECLARATION

I declare that this is my original work and has not been presented for a degree in any other University.

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DEDICATION

To my dear wife and my lovely children

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ABSTRACT

Guiding urban development should be a priority because uncontrolled developments constrain the provision of basic services hence deteriorating the living standards. According to Baross (1990), planned urban development follows the traditional planning form of planning (P), servicing (S), building (B) and occupation (O). The present study, which adopted a descriptive cross sectional design, sought to establish the extent, cause and implications of uncontrolled urban development in Tena residential estate, Nairobi. Quantitative data from the study were analyzed using SPSS 19.0 while qualitative data from focus group discussions and key informant interviews were analyzed on the basis of emerging themes.

Investigations on the extent of uncontrolled development in Tena Estates showed that most of the developers had constructed multi-dwelling (68.2%) and commercial buildings (17.0%) as opposed to 14.8% single-dwelling units (maisonettes) as stipulated by the laws. Further, 19.3% of the developments had complied with minimum building lines (6m) requirements. The high rise buildings observed were substandard with a substantial proportion (82.3%) lacking escalators as required. Overall, only 3 buildings (3.4%) were found to have fully complied with the all the regulations considered in the current study.

From the study findings, the causes of uncontrolled developments included; the high cost of land and the developers' perception that building one dwelling house per plot is not sensible, economically. Other causes identified were; ignorance of developers, corruption in regulating institutions, inaccurate policies guiding urban development and the costly and time-consuming process of getting approvals for the plans. As a consequence, uncontrolled development has resulted in constrained water supply system, haphazard parking of vehicles on the roads leading to obstructions, poor aesthetics, insecurity and decreased value of property in the area. To promote the supervision and monitoring of the development in the Estate, the study recommends that there be a high level of collaboration among the approving agencies to ensure the developers observes the development policies and regulations. The already developed premises meeting the minimum development requirements should be considered for regularization. There is also a need to review the current policy guidelines governing development in this area.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADB	African Development Bank
CBS	Central Bureau of Statistics
CCN	City Council of Nairobi
CO ₂	Carbon Dioxide
CoL	Commissioner of Lands Office
DC	Development Control
EMAS	Eco-Management & Audit Scheme
FAO	Food and Agricultural Organization
GOK	Government of Kenya
KPLC	Kenya Power and Lighting Company
NCWSCo	Nairobi City Water and Sewerage Company
NEMA	National Environmental Management Authority
OECD	Organization for Economic Co-operation and Development
SACCO	Savings and Credit Co-operatives
UN	United Nations
USAID	United States of America Agency for International Development
KNBS	Kenya National Bureau of Statistics
SPSS	Statistical Package for Social Sciences

CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Urban centers are bedeviled by various spatial development challenges, many of which are as a result of the uncontrolled development. Uncontrolled development means any deliberate action, process or effort of changing or altering an environment through establishments of infrastructure, housing, and other buildings structures without following the planning standards and regulations (Baross, 1990). Uncontrolled development should be taken care of through the process of urban planning. Urban Planning is therefore a process of programming the coordination of the direction, structure and pattern of the development, growth and management of urban settlements with the goal of ensuring that all necessary land-use needs including economic, social, environmental, institutional, cultural, recreational and leisure needs, for all the socio-economic population groups in the society are provided for in compatible and symbiotic locational relationships and densities (Okpala, 2009). Urban planning is important because by varying the category and range of permitted activities from place to place within the urban context, urban planning ensures that there is a place for every worthwhile activity while keeping away noxious activities from residential areas, thus protecting, improving and safeguarding public health of the urban population. Estate planning is a deliberate ordering by authorized public authority of the physical arrangements of towns and estates or parts of towns in order to promote their efficient and equitable functioning as economic and social units and to create an aesthetically pleasing environment (Okpala, 2009).

Urban Planning may be as old as humanity but it was the emergence of chaotic and polluted cities of Western Europe's Industrial Revolution that prompted radical concepts of urban management. The first of these concepts was termed "modernist planning" which emerged in the latter part of the 19th century and was influenced by technical and ideological considerations. The state or the ruling class was more concerned with the ideological: using planning to maintaining their property values and excluding 'less desirable' low-income residents, ethnic minorities and traders from their areas (UN Habitat, 2009). In the 20th century the concept of the master plan emerged as the key aspect of modernist planning which detailed the city layout from

its built form to its ideal end-state. Master planning still survives all over the world, albeit with some variation. Among the greatest masters of this planning form was the Frenchman, Le Corbusier whose ideas in the 1920s and 1930s established the ideal of the 'modernist' city: the ideal city was neat, ordered and highly controlled. Slums, narrow streets and mixed use areas were to be demolished (Landry, 2006).

As a habitat of more than half of the world's population, at present, cities are gradually gaining attention to the researchers, policy makers, government authorities and international organizations. The making and remaking of a sustainable city is a great challenge, particularly in the cities of the global South where urban population growth is unpredictable and even uncontrollable. It is estimated that with the current pace of urban population growth, 65 per cent of the total world population will be urban dwellers by the year of 2025 (Pacione, 2009) and almost 90 per cent of urban population growth will be in Asia, Africa and Latin America (UN, 2000). Unplanned and uncontrolled urban growth places the planning efforts in urban cause's serious effects on urban living environment (Landry, 2008). The migration of rural to urban areas has made cities densely populated which have caused constraints on the available resources in terms of housing, recreational facilities, social amenities among other human necessities. According to Dhaliwal (2000), by the year 2015, 80 per cent of the world's largest cities will be in this region. This unprecedented urbanization and urban growth has stimulated academics and policymakers to search for sustainable urban development options that can pre-empt major ecological and social upheavals.

The pursuit of a sustainable city or sustainable urban development has not only emerged as a major challenge to the governments (Pacione, 2007). The uncontrolled physical expansion of cities has had serious implications for the urban environment and economy, some of which include the unregulated increase in infrastructure, buildings, etc. through urban sprawl, encroachment into reserved areas and/ or breach of ordinances, what is referred to as the uncontrolled development (Baross, 1990). This uncontrolled development makes provision of housing, roads, water supply, sewers, and public services prohibitively expensive because cities are often built on the most productive agricultural land and unguided growth results in the

unnecessary loss of this land (Hague et al, 2005). Haphazard development also consumes land and natural landscapes needed for urban parks and recreation areas. Once an area is built up, it is both difficult and expensive to re-create Open space. For example, the present sustainable city discourses are based on certain development goals, which might only be achieved by the cities of developed countries. The hope of fulfilling the goals by the developing countries is, however, a utopia, where overwhelming rural-urban migration is uncontrollable, good governance is rare, unequal resources distribution is explicitly visible. In this unpredictable and complex situation, any goal-based development policies will certainly be misleading or partially achievable (ADB, 2005).

Unless the process of urbanization is reversed, unless there are real and immediate alternatives for the millions of immigrants, it would be unrealistic to assert that urban settlements even in anarchic should not exist (Sudhira et al, 2004). Settlements are inevitable since most people have to undertake their economic and social activities in some form of shelter. In less developed countries, where urbanization is not necessarily due to industrialization, uncontrolled settlements occur due to rapid population migration from rural to urban centres since they prefer secure tenure of shelter to physical comfort in their environment. To them the vehicle for social and economic improvements is the ownership of land on which to live and have a habitable structure no matter the surrounding conditions/environment.

In Kenya, rapid urbanization led to the expansion of town boundaries and increased housing demand. The need for housing by low income earners and unemployed population led to uncontrolled development in an attempt to meet the demand. Most of these structures and subdivisions on the land on which they are built have no approval of the local planning authority and hence they are illegal (Landry, 2006). Rapid urbanization and development control problems are intertwined and related to broader social and economic constraints that are a burden to the economy and a cause to uncontrolled developments. Uncontrolled urban development refers to the covering of areas without proper planning which creates chaos in their complementation or ordering in space (Gamarra, 2002).

In the developing countries such as Kenya, rapid urban growth which is due to both natural population growth and rural urban migration has resulted in urban segregation and exerted too

much pressure on provision of housing and related services. Kenya has been experiencing rapid urbanization at an estimated rate of 7.3 percent per annum. The proportion of Kenyans living in urban centres (defined as towns with a resident population of 2000 or more inhabitants) increased from 18.3 percent in 1989 to 30 percent in 1999. Currently, Kenya has approximately 194 urban centres with a total population of about 10.0 million, representing 34.8 percent of the total population (Republic of Kenya, 2001). Of the total number of urban centres, it is estimated that approximately 45 percent of Kenya's urban population lives in Nairobi. Main policy challenge facing developing countries like Kenya, as noted by various scholars and organizations is on how to formulate a regulatory and incentive urban planning and development policy framework which will strengthen the potential of the urban areas to grow and develop substantially and sustainably. Nairobi metropolitan plan is envisaged to address the problems such as poor housing, crime, traffic jam, infrastructure problems and environmental problems associated with urban areas. The plan is anchored on the country's Vision 2030, which aim at enabling the country to be globally competitive and prosperous with high quality life. This spirit gives urban planners and other professionals an excellent opportunity to put urban planning concerns and governance agendas to the fore when formulating Nairobi Metropolitan Region 2030 plan.

1.2 Statement of the Problem

Guiding urban development should be a priority for cities in developing countries including Nairobi and its estates. This is because the root cause of most of the problems encountered by cities in developing countries start from urban expansion (Sanderson, 2000). This problem is further complicated by the lack of provision of basic services and appropriate places for housing. According to Baross (1990), the planned urban development follows the traditional planning form of planning (P),servicing (S) building (B)and occupation (O) which occurs in a controlled urban development which means that the controlled urban development has direct relationship with planning and urban development.

Tena residential estate was originally planned for single dwelling maisonettes housing only one family a unit. However, the Estate currently is full of uncontrolled developments which have

caused constraints on the necessary amenities. Despite the many problems associated with uncontrolled urban development, the trend has continued to be witnessed. This study seeks to establish the implications of uncontrolled development in Tena residential estate, Nairobi.

1.3 Purpose of the Study

The purpose of this study was to establish the extent, causes and implications of uncontrolled urban development in Nairobi City using Tena Residential Estate as a case study

1.4 Objectives of the Study

The study was guided by the following research objectives:

1. To establish the extent of the uncontrolled development in Tena Estate
2. Examine the causes of uncontrolled development in Tena Residential Estate.
3. Assess the roles of the approving Authorities in controlling development in Tena Residential Estate
4. Examine the implications of uncontrolled development in Tena Residential Estate.
5. Suggest possible intervention measures to control development in Tena Residential Estate

1.5 Research Questions

- i. What is the extent of uncontrolled development in Tena Estate
- ii. What are the causes of uncontrolled development in Tena Residential Estate?
- iii. What are the roles of the approving Authorities on the controlled development in Tena Residential Estate?
- iv. What are the implications of uncontrolled development in Tena Residential Estate?
- v. What possible intervention measures can be suggested to control development control in Tena Residential Estate?

1.6 Assumptions of the Study

The study assumes the following:-

- i. There will be continued rapid urbanization in Nairobi which impacts on the available limited services

- ii. There lacks proper enforcement of development control in Tena Estate by the approving authorities.

1.7 Scope of the Study

The study will focus on Tena Residential Estate located in the Eastlands part of the city of Nairobi. Tena Residential Estate is located on the eastern side of Nairobi, 10 kilometres by road from the city centre. The spatial extent of Tena Residential Estate is the area bound by Outering road to the West up to Moi Drive, Manyanja road and back to the Outering.

This study was undertaken in the months of January-June, 2012. The history behind the establishment of this estate as land bought by land buying company by name of Continental Developers and subdivided into small residential plots for development of single dwelling houses drew the attention of the researcher to investigate the planning implications of uncontrolled urban development in Nairobi Metropolitan using Tena Residential Estate as a case study. The initial plan as per the approving authority (Nairobi City Council) was to have a single dwelling house per plot. Key respondents in the study included residents of Tena Estate, Approving Authorities and property developers who are key stakeholders in the development of Tena Estate. In examining key issues on development planning in Tena Estate the researcher sought to benchmark with how the well planned and controlled estates are managed in other areas in the country and other cities world over.

1.8 Justification

This study is geared towards helping understand the process of urban planning and development in Tena Estate and the implications of uncontrolled development. Further to that, the study seeks to understand the role of stakeholders involved in the planning and development of Tena Estate. In its recommendations the study proposes a framework for proper planning and development of the Estate. It is established that there are various players involved in planning and development of Tena residential Estate. They include: residents of Tena Residential Estate, Approving Authorities, property developers and construction firms who are key stakeholders in the development of Tena Residential Estate. The recommendations of this study are expected to guide the improvement of planning, designing and developments in Tena Residential Estate. By

so doing, relevant departments of the City Council of Nairobi and National Environmental Management Authority (NEMA) may benefit from the information generated which should be useful in effectively managing the planning and development of the Tena Residential Estate. There is also need for the central government particularly through the Commissioner of Lands Office (CoL) at the Ministry of Lands or the national Land Commission to work closely with local communities and City council in preventing further uncontrolled development in the estate.

To researchers and academicians the study findings would provide useful information that can be used as a base for further research on planning and development particularly in residential areas. This study would also be of benefit to developers in developing marketable, planned, and sustainable properties, thus avoiding developing unplanned and unsustainable properties that cannot meet the planning policy for the area. This study would be of benefit to urban planners in optimizing the effectiveness of the Nairobi Metropolitan land use and infrastructure by providing them with vital information on urban development.

This study would also inform the Housing Ministry the needs of urban development preferences that would guide them in policy development and decision making for urban planning and development in the Nairobi Metropolitan. This is in support of their vision to provide sustainable housing.

1.9 Limitations of the Study

The researcher faced several limitations during the period of study. First, the researcher faced the challenges of collecting data from the respondents for fear of victimization and that the study was meant to expose their lifestyles. Following high suspicion among the respondents, more respondents were unwilling to respond to the study especially the developers in Tena residential estate for fear of being identified and tracked.

The researcher also faced a challenge of respondents' giving information on the ideal scenario as opposed to the situation as it is. To delimit this, the researcher explained to them the importance of the study and how it would help improve their living conditions in the estate.

The researcher also faced a limitation of resources to conduct a survey in order to collect accurate and valid data for generalization of findings to all estates in Nairobi. This limited the extent of the study to Tena residential estate.

1.10 Definition of Terms and Concepts

Controlled Development

Development that has followed an approval building permits process of planning, servicing, building and occupation (Baross, 1990). In summary controlled means that the developments are put up in accordance with the Local Authorities' rules and regulations.

Uncontrolled Development- unregulated increase in infrastructure, buildings, etc. through urban sprawl, encroachment into reserved areas and/ or breach of ordinances (Baross, 1990). It is a development that lacks minimum social services such as housing, water supply, sanitation, education and medical facilities; Developments that have no organized patterns in land use and failure to follow the zoning policy for the area such as the sky limit, building line, the ground coverage and the plot Ratio.

Development Control Officers—these are the personnel in charge of undertaking development control measures (Okpala, 2009). They scrutinize the building plans and recommend them for approval if they meet the laid down requirements for the specific zone and send them back to the Architect for amendments or redesigning if they do not meet the requirements. These are the ones referred to as the approving authorities.

Urban sprawl is the uncontrolled expansion of cities and their suburbs to rural areas near the city (Burby, 2006).

Urbanization is the shift from a rural to an urban society. Urbanization is the outcome of social, economic and political developments that lead to urban concentration and growth of large cities, changes in land use and transformation from rural to metropolitan pattern of organization and governance (Naghibi & Shirmohammadi, 2007).

1.11 Research Design and Methodology

1.11.1 Research design

The present study employed a descriptive cross sectional research design. Descriptive research designs are used to obtain pertinent and precise information concerning the current status of phenomena and whenever possible to draw valid general conclusion from the facts discovered. Also the survey aims at obtaining information which can be analyzed, patterns extracted and comparisons made. According to Mugenda and Mugenda (2003), this approach is considered appropriate because subject events or condition already exist. This idea prompted the researcher to choose the design and from this research questions were answered.

1.11.2 Study area

The study was conducted at the capital city of Kenya, Nairobi. The city, which stands at 1,795meters above sea level, is located at 1°17'S 36°49'E and occupies an area of 696 square kilometers. It is one of the most prominent cities in Africa politically and financially that is quite cosmopolitan and multi-cultural. A substantial proportion of the city's population (1,045,058 people/33.7%) lives in over 100 slums and squatter settlements (Kenya National Bureau of Statistics (KNBS), 2010) within the city, with little or inadequate access to safe water and sanitation (UN-Habitat, 2011). Administratively, Nairobi is divided into 8 divisions, namely, Central, Dagoretti, Embakasi, Kasarani, Kibera, Makadara, Pumwani and Westlands. Tena estate is part of Embakasi division.

1.11.3 Target Population

A population is defined as a complete set of individuals, cases or objects with some common observable characteristics (Mugenda & Mugenda, 2003). It is the total collection of elements about which the study wishes to make some inferences (Cooper & Schindler, 2008).The study population comprised of the developers of Tena estate in Embakasi, Nairobi as well as the other stakeholders of Tena estate including. Additionally, the population also included other stakeholders that took part in the development of the estate including planners, architects, local administrators and other local opinion leaders, representatives of the approving authorities and Nairobi city council (NCC).

1.11.4 Sample Size

The minimum required sample size for the study was calculated based on the formula;

$$n_0 = \frac{Z^2 p(1-p)}{d^2} \text{ (Cochran, 1963)} \dots \text{Equation 1}$$

Where; n_0 = Minimum required sample size (initial)

z = Normal standard deviate for the desired confidence level (95%)

p = Proportion of uncontrolled developments made in the area

d = The desired level of precision (0.1)

Since the extent of the uncontrolled developments was unknown, an assumed proportion of 0.5 (represents maximum variability) was used in computing the sample size (n_0) for the study;

$$n_0 = \frac{1.96^2 * 0.5 * 0.5}{0.1^2} = 96.0 \text{ developers}$$

If the population is small then the sample size can be reduced slightly. This is because a given sample size provides proportionately more information for a small population than for a large population (Israel, 2009). The initial sample size (n_0) was adjusted accordingly using Equation 2.

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \text{----- Equation 2}$$

Where;

n_0 = initial sample size,

n = final sample size and

N = population size ($N=1000$)

According to records at NCC (2012), Tena estate has 1000 developers. Thus, after correction for this finite population, the minimum required sample size for the present study was 88. Other populations sampled and their corresponding sample sizes are shown in Table 1.1.

Table 1.1: Populations sampled and their corresponding sample sizes

Category/Subject	Population (N)	Sample size (n)
Developers	1000	88
Local administrators/opinion leaders	-	3
City Council of Nairobi	-	2
Contractors (representatives)	-	2
Architects	-	2

1.11.5 Sampling Method

Random sampling method was employed to select developers who will take part in the study. A list of the names of the developers was obtained from Nairobi city council offices. The names were listed alphabetically and numbered. Using a random number tables a total of 88 developers were selected to take part in the study.

1.11.6 Data Matrix

The following data matrix will guide the study.

Table 1.2: A checklist of data needs/Data Matrix

Objective	Data needs	Methods of Data Collection	Methods of data Analysis	Presentation
Extent of uncontrolled development	Compliance with development regulations	Observations Interviews Photographs	Frequencies, cross-tabulations, Analysis based on emerging themes	Tables, charts, graphs, narratives and photographs
Causes of uncontrolled development	Causes, Building Approval existence By-laws enforcement	Observations Interviews Photographs	Frequencies, cross-tabulations, Analysis based on emerging themes	Tables, charts, graphs, narratives and photographs
Roles of the approving Authorities	Approval of building plans Monitoring of development Issuing of occupation certificate	Observations Interviews; Key informant interviews	Analysis based on emerging themes	Narratives and photographs
Implications of uncontrolled development	Sufficiency of parking spaces. Water supply Sewerage system Road infrastructure Recreational facilities	Questionnaires Observations Interviews Photographing using a camera Focus group discussions (FGDs)	Narratives Analysis based on emerging themes	Photographs Narratives
Possible intervention measures to control development	Status of the structures developed in terms of meeting the minimum requirements	Key informant interviews	Thematic analysis	Tables, plates and photographs report

1.11.6 Data Collection Procedure and Instruments

Interviews and structured observation were also used in the methods of data collection of this study, while the instruments will mainly be interview schedules, questionnaires and observation

checklists. A research assistant was recruited and trained to assist in data collection. The assistant was inducted mainly on the basic skills of data collection and interviewing. A structured interviewer-administered questionnaire was used for data collection from respondents. In addition, project audit tool in form of a structured checklist was utilized for collecting information on the quality of the facilities/buildings by observation. Photographs were also taken to record the defects in buildings to reinforce the records in the checklist.

1.11.6.1 Questionnaire

A structured questionnaire was used to collect quantitative data from the developers recruited to take part in the study. The questionnaire was administered by either the principle investigator or the trained research assistant.

1.11.6.2 Key Informant Interviews and Focus group discussions (FGDs)

Qualitative data were also collected. Focus group discussions (FGDs) and key informative interviews were conducted from a small, qualitative sample comprising of developers, tenants, local administrators and representatives of the regulating authorities including two officers from CCN. Also two selected contractors (or their representatives), and two architects who were involved in the development of the estate were interviewed. The number of the key informants including architects and contractors was determined while the selection was done purposively based on the following criteria: having had a stake in the development of the estate, availability; and willingness to participate in the study.

1.11.6.3 Observational checklist and photographs

Further on the qualitative aspect of the present study, the research assistant was provided with checklists to mark yes/no answers and other activities which reflect the quality of the construction projects selected for inclusion in the study. Photographs will also be taken to record the defects in buildings to reinforce the records in the checklist.

1.11.7 Data Management and Statistical Analysis

For quality control purposes, questionnaires were counterchecked by the investigator for completeness of information during the data collection exercise. The questionnaires were then

kept in a secure locked cabinet where only the investigators had access. Data from completed questionnaires was entered in a spreadsheet, Microsoft Excel[®] and then imported to Statistical Package for Social Sciences (SPSS[®]) version 19.0 for data analysis. Univariate analyses was conducted on the study variables and outputs presented as tabulated frequencies and proportions and other descriptive statistics. The findings were presented as tables, graphs and charts.

Qualitative data from focus group discussions (FGDs) and key informative interviews were transcribed and then analyzed manually by themes.

1.12 Organization of the Study

This study is organized in a chapter by chapter basis with each chapter covering relevant sections and stages of the research work; from problem conceptualization through to data collection, analysis and report writing. Chapter one gives a brief background; research problem; research questions, assumptions, objectives; and definition of key terminologies, research methodology and organization of the study.

Chapter two reviews various relevant literatures by other scholars who have carried out research or published books and journals in the same field of study. This chapter gives a deeper understanding of the concept of uncontrolled development, causes and implications. The chapter demonstrates the relevance of the study in the broad field of urban planning and development.

Chapter Three describes the background of the study area giving a detailed description of Tena Residential Estate in the City of Nairobi. It includes maps and photographs of a few open recreational facilities found in the study area.

Chapter five provides the analysis and presentation of the causes and implications of uncontrolled development. The data was analyzed and presented in the form of tables and figures. Photographs from the study area were also taken and included in strengthening the descriptive data collected. The chapter also provides analysis and presentation of the implications of uncontrolled development. Photographs illustrating the implications of uncontrolled urban planning are well shown in the form of photographs.

Chapter six summarizes the findings presented in the study. It integrates the findings and discusses the key issues in urban planning and development. It develops proposals for alternative approaches to planning and development in the study area. An alternative framework for planning and development has been proposed for better management of planning and development in the study area.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

The chapter covers a review of literature related to the study; causes of uncontrolled development; effects of uncontrolled development, roles of the approving Authorities on the uncontrolled development, implications of uncontrolled development and possible intervention measures to control development.

2.1 Development Control

Development control as a planning control tool is the element of town and country planning through which governments regulates land use and new building. It relies on a "plan-led system" whereby development plans are formed and the public is consulted. Subsequent development requires planning permission, which is granted or refused with reference to the development plan as a material consideration. Development Control ensures that all properties are developed and used according to the Master Plan land use zoning, gross plot ratio, building height controls, and other development control guidelines (Barker, 2006).

These guidelines help to protect the amenities and interests of the wider community while allowing individual landowners and businesses to develop their property. This ensures the development fits well in its neighborhood. A fair balance of interests within the community is ensured by facilitating these developments. For instance if one wishes to carry out any building works or change the building use of properties, application for planning permission is required. In addition if one wants to change the use of a property, he may need to apply for planning permission. Furthermore, if one's development projects increase the value of the land, he may have to pay development charge when planning permission is granted to carry out the works. To the homeowners and buyers who may be thinking of buying, renovating or redeveloping a private residential property, there are development work regulations and permits required before they proceed (Department for Communities and Local Government, UK, 2009)

The lawful occupiers of any land or buildings should not only have title to their land (a freehold, leasehold, or license from the actual land owner), but also requires planning title for any buildings on the land, or uses to which the land and buildings are put. In the United Kingdom Planning title (usually referred to as "planning permission") was granted for all pre-existing buildings and uses in 1948. Since that date planning permission has been required for all new development. A grant of planning permission relates to the land or building(s) concerned. With a few rare exceptions it is not specific to the person, organization or firm who obtained the permission.

"Development" in UK planning law (same in Kenya) is defined as the carrying out of any building, engineering, mining or other operations in, on, over or under land, or the making of any material change in the use of any buildings or other land. Certain types of development are specifically excluded from the definition of development, such as routine building maintenance and repair. Many categories of minor development are classified by legislation as "permitted development" (PD). These are in effect granted an automatic planning permission by law, rather than requiring any specific application for planning permission. Although still defined as "development" these works avoid any need to engage with the planning system and can be undertaken by land owners as a right.

Uses of land and buildings are classified into "use classes" and any change from one use class to another use class is automatically a "material change of use" amounting to development. Some small scale changes between use classes are nevertheless "permitted development" and hence do not require planning permission. Certain types of use or activity do not fall into a specific use class and are termed "sui generis". Any change of use of "sui generis" land requires planning permission. In practice most uses are a composite of several uses so that, say, a factory might well have an ancillary office and perhaps storage uses, all within the same premises. In such a case however the primary use would be that of a factory (use class B1 or B2).

There is a separate system of control over alterations to buildings which are listed as being of architectural or historic interest ("listed buildings"). Alterations to such a building that affect its character or appearance require "listed building consent" (and may also require planning permission if the scope of the proposed alterations or development is above that classified as permitted development). The owner of a listed building can also be compelled to keep it in a good state of repair to safeguard its architectural or historic significance. Moreover, trees and woodland which are of particular importance to local amenity or ecology may be made the subject of a tree preservation order (TPO). Unless those trees are dead, dying or dangerous, then consent is required for their removal, and generally a replacement tree may well be required.

If development is carried out without planning permission then "enforcement action" to have the building removed, the land reinstated, or at least undertake the minimum measures required to prevent any harm arising is done. (Generally, a retrospective application for planning permission would be invited first, and action taken if planning permission is then refused.) Almost all planning permissions should be granted conditionally and enforcement action can also be taken to secure compliance with the conditions imposed. Uncontrolled development can be the subject of a "stop notice" if there is an urgent need to prevent further harm.

Public Participation: The public have a right to be consulted before any planning application is decided. Land owners immediately adjoining the application site are usually notified, a public notice may be posted in nearby streets, and sometimes a notice is published in the local press. Planning applications must be decided in a timely manner and only 21 days is normally allowed by law for the public to express their views. Planning applications can be viewed on the website and comments can be submitted by email.

Most planning applications are decided by an authorized senior officer - under what are known as "delegated powers". Only major or controversial applications are decided by elected councilors meeting as a "Planning Committee" of the authority concerned. The agenda of the committee meeting with a report by planning officers on each planning application is usually published at least five working days before the meeting. The report on any planning application should contain a description of the development, a fair summary of any public comments received, state the relevant planning policies which have a bearing on the decision and a

discussion of the issues raised – all leading to a recommendation to either grant or refuse planning permission. The elected Planning Committee may act on the advice of their professional planning officers, or occasionally may take a different view.

Planning Committee members should vote to represent the interests of the whole community they represent, including those who will later live or work in any new development, rather than any narrower local view. The committee may refuse planning permission for development when their own professional planning officers have recommended that planning permission be granted, or allow an application that officers recommend should be refused.

Application Refusal: Refusal of an application, whether by committee or under delegated powers, may be challenged by an appeal through the Planning Inspectorate. If officers had recommended the application, the authority usually has to rely on the same officers to make the case to the Inspector against it. Objectors to a successful application have no right of appeal, except by a legal challenge to the courts, although for some significant applications (e.g. involving major policy matters) the Secretary of State may "call in" an application for review.

Subject to making arrangements in advance, many authorities will invite applicants and members of the public to address the Planning Committee before making their decision. However, the Committee is "a meeting conducted in public", rather than "a public meeting"; although given an opportunity to speak at the outset of the meeting, members of the public will not be allowed to join in the committee's debate.

There are often different views as to what constitutes "fairness" in deciding planning applications. Many public objections to new development are explicitly based on a perception of unfairness that developers and landowners should be allowed to profit, while near neighbours, the local environment or the community as a whole does not. More specific objections may also be given, but this apparent unfairness is the fundamental of many if not most public objections to new development. The process of development and re-development is seen as an immediate cost or inconvenience to those living nearby, and any benefits are invariably to the community as a whole, over a wider geographical area, and over time. The most obvious beneficiaries of any development are those who will later live or work within it but their views are not heard when a

planning application is being decided. Even a well-managed authority, making decisions in light of published planning policies and after extensive public consultation, will still attract accusations of unfairness.

Proposed Reforms to System - Historically most decisions on planning applications have been framed around the question of whether the proposed development is “bad enough to warrant being refused planning permission”. The thrust of recent reforms to the planning system as a whole has been to raise the game of both developers and their advisors, along with authorities, so that the question becomes “is the proposed development good enough to deserve planning permission”.

Authorities make extensive use of electronic systems (e-construction permit system) for reasons of efficiency and also to encourage transparency. Almost all of them have their own website and electronic document management systems where planning applications can be viewed and commented upon, along with local planning policies and a wide range of other relevant sources. Provided that architectural drawings and other supporting documents are in electronic form then planning applications should ideally be submitted on-line, either via the authorities' website.

About half a million planning applications are submitted throughout the United Kingdom each year. Of those around 60% relate to “householder applications” – that is for extensions or alterations to an individual’s house. A much larger number of householder proposals are classed as permitted development and do not require a planning application to be made. Only about 30% of householder planning applications are significantly altered before being granted, or are actually refused permission as unacceptable.

2.2 Zoning and Land use Control

There are three basic elements in the discussion of the control of land use. These include land use, zoning codes and zoning permits.

In the case of the land Use, authorities develop master plans for the use of their land, traffic, commercial and residential areas, as well as community schools and parks. Zoning Codes are the laws or ordinances which are developed to specify what land uses and building types that will be

allowed in certain areas. To enforce zoning ordinances, zoning permits are a tool that are used. These permits must be granted for all uses and structures.

Zoning is therefore a device of land-use planning used by governments in most developed countries. The word is derived from the practice of designating permitted uses of land based on mapped zones which separate one set of land uses from another. Zoning may be use-based (regulating the uses to which land may be put), or it may regulate building height, lot coverage, and similar characteristics, or some combination of these. Similar urban planning methods have dictated the use of various areas for particular purposes in many cities from ancient times.

The primary purpose of zoning is to segregate uses that are thought to be incompatible. In practice, zoning is used to prevent new development from interfering with existing residents or businesses and to preserve the "character" of a community. Zoning is commonly controlled by local governments such as counties or municipalities, though the nature of the zoning regime may be determined or limited by state or national planning authorities or through enabling legislation. In Australia, land under the control of the Commonwealth (federal) government is not subject to state planning controls. The United States and other federal countries are similar. Zoning and urban planning in France and Germany are regulated by national or federal codes. In the case of Germany this code includes contents of zoning plans as well as the legal procedure.

Zoning may include regulation of the kinds of activities which will be acceptable on particular lots (such as open space, residential, agricultural, commercial or industrial), the densities at which those activities can be performed (from low-density housing such as single family homes to high-density such as high-rise apartment buildings), the height of buildings, the amount of space structures may occupy, the location of a building on the lot (setbacks), the proportions of the types of space on a lot, such as how much landscaped space, impervious surface, traffic lanes, and whether or not parking is provided. In Germany, zoning usually includes building design, very specific green space and compensation regulations. The details of how individual planning systems incorporate zoning into their regulatory regimes vary though the intention is always similar. For example, in the state of Victoria, Australia, land use zones are combined with a system of planning scheme overlays to account for the multiplicity of factors that impact on desirable urban outcomes in any location.

Basically, urban zones fall into one of five major categories: residential, mixed residential-commercial, commercial, industrial and special (e. g. power plants, sports complexes, airports, shopping malls etc.). Each category can have a number of sub-categories, for example, within the commercial category there may be separate zones for small-retail, large retail, office use, lodging and others, while industrial may be subdivided into heavy manufacturing, light assembly and warehouse uses. In Germany, each category has a designated limit for noise emissions (not part of the building code, but federal emissions code).

In the United States or Canada, for example, residential occupancies containing sleeping units where the occupants are primarily transient in nature, including: boarding houses, hotels, motels and residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including: apartment houses, convents and dormitories. There are also residential occupancies where the buildings are arranged for occupancy as residential care/assisted living facilities including more than five but not more than 16 occupants.

Conditional zoning allows for increased flexibility and permits municipalities to respond to the unique features of a particular land use application. Uses which might be disallowed under current zoning, such as a school or a community center can be permitted via conditional use zoning.

2.3 Uncontrolled Development

In spite of the increasing knowledge of modern planning and number of planners, physical development in cities of less developed countries remains an array of chaos and disorder as manifested in urban sprawl, poor access to dwellings, bad drainage, housing congestion, uncontrolled and increasing density of physical development, among many other problems (Jelili et al, 2006). This happens even though measures of development control such as the application of minimum plot size, standard on windows, doors, heights of buildings, road widths, among other variables have been introduced to control buildings and general appearance of cities.

With the uncontrolled developments, the urban areas are growing into bigger agglomerations with ever increasing influx of people creating demand for support services viz. water supply,

transportation, drainage/sewerage, garbage collection and disposal that far exceed the supply of these services. While undertaking the uncontrolled developmental activities, the assimilative capacities of the environmental components like air, water and land to various pollutants are rarely considered.

According to Karin and Hokao (2005), the transportation improvements and land-use controls of mega-urban regions in Asian developing countries have not kept pace with the economic and urbanization growths for years. The interdependence of urban forms and transportation networks has been ignored following increased uncontrolled developments in towns like Jakarta, Indonesia, and in Bangkok, Thailand. The rapid urbanizations have not occurred in developing cities only, but also in the developed ones. However, planners in developed countries have matured various advanced planning techniques to deal with such complex city growths but their last efforts are the planning supporting system (PSS) developments since 1990s (Geertman and Stillwell, 2004). While the problems of urbanization in developing cities have become more intensive than in developed cities, but their land and infrastructure planning processes are still unsystematic and ineffective. This results to the sprawl city developments together with substantial environmental damages and economic losses.

Due to uncontrolled developments, the characteristics of urban growths and its undesirable impacts in Bangkok for example land usages are the integrations for commercial and business buildings, so number of populations has been significantly increased in this area. Their road densities although are relatively high, severely congested traffic is easily experienced, because of exceeding travel demands. For surrounding areas of the central areas, they are dedicated for locating commercial areas and expanding residential areas (Karin and Hokao, 2005). Due to low road densities, the accessibility of these surrounding areas is unsatisfied for commuters. Because of residential area expansions and lack of road spaces, more congested areas are formed in urbanized suburban residential areas. As a result of the uncontrolled development, travel time of road users is enormously increased. They further add that due to the rapid and dramatic uncontrolled urban developments, the integration of land use and transportation planning is difficult to be implemented in poorly planned cities as the planners have tried for impact assessment frameworks in dealing with this problem with minimal success.

The magnitude of consequences of urban sprawl has been grouped under three headings: transport, density, and conversion of rural to urban land. By definition sprawl leads to greater distances between homes, between homes and jobs and between urban activities generally, generating more demand for travel and improvements in transport systems. Secondly, sprawl leads to changes in urban densities, most commonly a reduction in densities in the urban core and an increase in densities towards the periphery. Thirdly, urban sprawl usually, involves the conversion of previously rural land into urban use.

The sprawling of poorly controlled settlement developments has resulted in many environmental and health related problems. Uncontrolled settlement development is causing physical disorder, uneconomical land utilization, and excessive encroachment of settlements into good agricultural land, environmental degradation and pollution risks (Cole, 1995). Also, as explained below, it has become very difficult for the government to send social and economic infrastructure/services to these areas due to the lack of space and accessibility.

2.4 Suburbanization

Suburbanization describes the general trend of city dwellers to move from the city into residential areas in ever-growing concentric circles away from the city's core. The trend began briefly in the nineteenth century and then exploded after World War II (1939–1945). Suburbs developed their own shopping and service districts and bred their own distinct lifestyles. Suburbanization is therefore the growth of areas on the fringes of cities and it is one of the many causes of the increase in urban sprawl. Many residents of metropolitan regions work within the central urban area and choose to live in satellite communities called suburbs and commute to work via public and private means of transport.

The impacts of suburbanization have become very evident; Changes in infrastructure, industry, real estate development costs, fiscal policies, and diversity of cities have been easily apparent, as “making it to the suburbs”, mainly in order to own a home and escape the chaos of urban centers, have become the goals of many citizens. These impacts have many benefits as well as side effects and are becoming increasingly important in the planning and revitalization of modern cities.

2.5 Urban Sprawl

Urban sprawl or suburban sprawl is a multifaceted concept centered on the expansion of auto-oriented, low-density development. The term urban sprawl generally has negative connotation due to the health, environmental and cultural issues. Urban sprawl is characterized by leapfrog land use patterns, strip commercial development along highways, and very low-density single-use developments, all of which occur over a relatively short period of time (Ewing, 2001). Urban sprawl is generally believed to result from poorly planned, large-scale new residential, commercial and industrial developments in areas not previously used for urban purposes (Bingham and Zhang, 2001). According to Lee et al., (1998), there is one overriding theme in the recognition of urban sprawl: a spatial-temporal signature unique to the phenomenon. Over the past 50 years the process of urbanization, suburbanization, counter-urbanization, and re-urbanization, has allowed for urban expansion into rural areas taking the form of low-density development, predominantly single family residential subdivisions and strip commercial development (Dangschat et al, 2003). The result of this development process is commonly called 'urban sprawl.'

Sprawl is urbanization that takes place in either a radial direction around a well-established city or linearly along the highways over a given period of time (Sudhira *et al.*, 2004). Sudhira *et al* (2004) further states that to understand the complexity of urban sprawl, land use change analyses and urban growth pattern recognition must be determined.

According to Sudhira *et al* (2004) understanding the patterns of urban sprawl can help with natural resource planning, natural resource utilization and the provision of infrastructure facilities because urban sprawl creates inefficient use of land, land resources, and large-scale encroachment on agricultural land. The most pressing problem with urban sprawl is the substantial loss of fertile agricultural land in many cities because of short-term economic considerations (Yehand Li, 1998). Ewing (1997) argues that suburbanization as we know it is not the issue, but rather the wasteful form of development known as sprawl with which many critics have a problem. Nechyba *et al* (2004, 186) list a plethora of ills related to sprawl: the loss of open space, urban decay, unsightly strip; mall developments, the loss of a sense of

community, patchwork housing developments in the midst of agricultural land, increasing reliance on the automobile, the separation of residential and work locations, and the spreading of urbanized developments across the landscape.

2.5.1: Single-use Development

This refers to a situation where commercial, residential, institutional and industrial areas are separated from one another. Consequently, large tracts of land are devoted to a single use and are segregated from one another by open space, infrastructure, or other barriers. As a result, the places where people live, work, shop, and recreate are far from one another, usually to the extent that walking, transit use and bicycling are impractical, so all these activities generally require an automobile.

2.5.2: Low-density Development

Sprawl consumes much more land per-capita than traditional urban developments because zoning laws generally require that new developments are of low density. The exact definition of "low density" is arguable, but a common example is that of single family homes on large lots, with four or fewer units per net acre. Buildings usually have fewer stories and are spaced farther apart, separated by lawns, landscaping, roads or parking lots. Lot sizes are larger, and because more automobiles are used much more land is designated for parking. The impact of low density development in many communities is that developed or "urbanized" land is increasing at a faster rate than the population is growing.

Overall density is often lowered by "leapfrog development". This term refers to the relationship, or lack thereof, between subdivisions. Such developments are typically separated by large green belts, i.e. tracts of undeveloped land, resulting in an average density far lower even than the low density described in the previous paragraph. This is a 20th and 21st century phenomenon generated by the current custom of requiring a developer to provide subdivision infrastructure as a condition of development. Usually, the developer is required to set aside a certain percentage of the developed land for public use, including roads, parks and schools. In the past, when a local government built all the streets in a given location, the town could expand without interruption and with a coherent circulation system, because it had condemnation power. Private developers

generally do not have such power (although they can sometimes find local governments willing to help), and often choose to develop on the tracts that happen to be for sale at the time they want to build, rather than pay extra or wait for a more appropriate location.

2.5.3: Land Subdivisions

Land subdivisions are large tracts of land consisting entirely of newly built residences. Subdivisions often incorporate curved roads and cul-de-sacs. These subdivisions may offer only a few places to enter and exit the development, causing traffic to use high volume collector streets. All trips, no matter how short, must enter the collector road in a suburban system. (Duany et al., 2013)



Plate 2. 1: Showing Sprawl in Milton, Ontario

2.5.4: Commercial Malls

Shopping centers are locations consisting of retail space. These vary from commercial malls, which refer to collections of buildings sharing a common parking lot, usually built on a high-capacity roadway with commercial functions. These malls/retail parks contain a wide variety of retail and non-retail functions that also cater to daily use (e.g. video rental, takeout food, laundry

services, hairdresser etc). These developments tend to be low-density; the buildings are single-storey and there is ample space for parking and access for delivery vehicles. This character is reflected in the spacious landscaping of the parking lots and walkways and clear signage of the retail establishments. Some malls are undergoing a transformation into Lifestyle centers, plazas and cafes with size restrictions for superstores found in malls in an effort to limit sprawl (Davies, 1995).

2.5.5: Shopping malls

Another prominent form of retail development in areas characterized by "sprawl" is the shopping mall. Unlike the strip mall, this is usually composed of a single building surrounded by a parking lot that contains multiple shops, usually "anchored" by one or more department stores (Gruen & Smith, 1960). The function and size is also distinct from the commercial mall. The focus is almost exclusively on recreational shopping rather than daily goods. Shopping malls also tend to serve a wider (regional) public and require higher-order infrastructure such as highway access and can have floor spaces in excess of a million square feet (ca. 100,000 m²). Shopping malls are often detrimental to downtown shopping centres of nearby cities since the shopping malls act as a surrogate for the city centre (Crawford 1992). Some downtowns have responded to this challenge by building shopping centres of their own (Frieden&Sagelyn, 1989).

2.5.6: Fast food chains

Fast food chains are often built early in areas with low property values where the population is expected to boom and where large traffic is predicted, and set a precedent for future development. Eric Schlosser, in his book *Fast Food Nation*, argues that fast food chains accelerate suburban sprawl and help set its tone with their expansive parking lots, flashy signs, and plastic architecture. Duany et al., 2013 believes that this reinforces a destructive pattern of growth in an endless quest to move away from the sprawl that only results in creating more of it.

2.6: Social -Economic and Environmental Impacts of Uncontrolled Development

2.6.1: Socio-Economic Impacts

Uncontrolled development may be partly responsible for the decline in social capital especially in the United States. Compact and well-developed neighborhoods can foster casual social interactions among neighbors, while uncontrolled development creates barriers. Uncontrolled development tends to replace public spaces with private spaces such as fenced-in backyards as well as decrease in land, water quantity and quality.

Social consequences of uncontrolled development include erosion of the quality of life by increasing, stress, accidents and loss of time spent travelling. Moreover, social consequences of uncontrolled urban development have been found to lead to greater amount of living space, weakened sense of community, increasing economic activity, changing social values and potential social conflicts between the new and the old residents.

Duany et al. (2013) believe that in traditional neighborhoods the nearness of the workplace to retail and restaurant space that provides cafes and convenience stores with daytime customers is an essential component to the successful balance of urban life. Furthermore, they state that the closeness of the workplace to homes also gives people the option of walking or riding a bicycle to work or school and that without this kind of interaction between the different components of life the urban pattern quickly falls apart. Kunstler (2013) argued that poor aesthetics in suburban environments make them "places not worth caring about", and that they lack a sense of history and identity.

Unplanned development often involves high development costs, poor construction quality, and lack of access to public services, and cannot be transferred or mortgaged leading to a huge capital tie up. The problems of the large cities of the developing countries are due largely to the fact that they have materialized ahead of any systematic movement towards modernization. As the population levels increase in urban areas, the costs of infrastructure construction and maintenance, vehicle production and maintenance, the personal costs associated with vehicle ownership and use, the amelioration costs of dealing with the socio-environmental costs of

transport); changes in the viability of local amenities, public services and retailing, increased public costs for infrastructure investments and maintenance.

Lack of access is one of the most common problems caused by and experienced by residents in the informal settlements. Because there are neither the layout plans nor the regulatory machinery, residents tend to build to almost 100 per cent of their plot size. It has become impossible to provide access roads to these areas as there is no space for this. Likewise, no area is left open for social services like schools, hospitals, children's play grounds, etc. Consequently, people and service movement in these areas is very restricted and residents have to walk long distance to obtain services like health, education, transport and the like.

2.6.2: Environmental Impacts

Considering the density and number of inhabitants in the uncontrolled development premises there are very high risks in the cases of man-made and natural disasters. With high population than planned for in a given location, there is a high rate of consumption of natural resources especially land for new settlement areas, water and energy resulting in an ecological strain of the environment with serious pollution of the air, water and soil (Jones, 1996). Air pollution, mainly caused by traffic, traffic congestion and industrial production, in uncontrolled developing estates exceeds the environmental standards considerable. In many cases there is a lack of an efficient infrastructure for the public and private traffic, of proper garbage removal and also of sewage systems with wastewater purification. Most city-dwellers have no sanitation facilities and rainwater drainage systems are totally inadequate. This situation has serious consequences on the environment and public health (UNDP, 1997).

Lack of a proper system for waste management is even more severe in the informal settlement areas. Due to the lack of established collection points, piles of garbage are scattered in and around residential areas which leads to environmental and health problems. Few residents opt to bury or burn their wastes close to their residences (Ameyibor *et al.*, 2003). As there is no centralized sewage system, liquid waste which includes water from washing, laundry, kitchen, bath and other domestic uses is haphazardly discharged onsite. This disposal practice pollutes the groundwater and marine environments and is a major cause of water-borne diseases.

Uncontrolled waste discharges in an urban development are caused by a high population density, little open space with no foliage, and modern appliances. The current urban environment has a medium to high population density, little open space with foliage, much land cover with buildings and artificial pavements, and many modern appliances. The consequences of this urban environment are twofold: discharges from people and machines are more concentrated and the natural environment available to assimilate the discharges is limited. Waste is composed of materials that can be assimilated by a natural environment where the concentration of the waste is not too high. However, where the concentration is high, the waste load puts stress on the natural systems in the environment which damages or destroys the natural systems of plants and animals (Daily, 1997).

A direct consequence of uncontrolled urban development is that rainfall which was previously captured by the land now falls on impervious surfaces and is converted into surface runoff (Roesner *et al.*, 2001). Before a watershed is developed, pervious fallow land is able to store, infiltrate, and evapo-transpire a majority of the rainfall. After development, much of this pervious land is covered over with impervious surfaces that the rainwater cannot pass through, such as roads, sidewalks, parking lots, driveways, and rooftops. In addition, much of this impervious area is directly connected to a drainage system and the rainwater has no chance to infiltrate by passing over pervious ground; this is called Directly Connected Impervious Area (DCIA). The typical storm drainage system is designed to convey runoff quickly and efficiently to the receiving stream or water body. Combined, these result in larger, more frequent peak flows with more total volume (Jones, et al., 2005; Roesner et al., 2001; WEF & ASCE, 1998). Furthermore, since a large portion of the impervious area is directly connected to the drainage system, biological processes are also largely removed; as a result, pollutants are also conveyed quickly and untreated to the receiving water bodies (Roesner *et al.*, 2001).

Haphazard construction of houses has blocked many natural water ways and has led to frequent floods. Soil erosion and landslides are strongly related to flooding which destroy houses as well as footpaths and unpaved roads (Ameyibor et al., 2003). Houses and other properties are being washed away by floods forcing the inhabitants to vacate the areas. A high housing density, which most of the informal settlements are characterized by, makes natural seepage of storm water

more difficult due to a high share of sealed land (Ameyibor et al., 2003). Flooding which results in the overflow of pit latrines and septic tanks is also a major cause for pollution of water sources and marine environments. Due to the non-existence of drainage systems, storm water creates big puddles that become breeding places for mosquitoes which is the cause of malaria (Roesner et al, 2001). .

Spontaneous settlements explosion - Rapid growth of cities due to urbanization had led to the emergence of low-income settlements types, both of the inner-city and on the outskirts that can be characterized as 'shanty towns' but which according to Ainia (1990) are best described by the non-pejorative term 'popular settlements'. The legal definition of the term "squatter settlement" could be misleading when applied to several uncontrolled urban settlements on the continent. For instance, where a piece of urban land is unregistered and belongs to a community, it is debatable when an individual, who builds on a plot purchased from a "recognized" traditional head of the community, but without the government's approval, should be called a squatter. It is equally debatable when a government, in exercising its power of eminent domain, acquires a piece of land, fails to compensate adequately and in desperation some of the members of the community settle on a portion of the land (United Nations, 1973). Durand – Lasserre & Royston (2002) offer a three part classification of informal or squatter settlement. This aids in identifying the variety in informal processes, which the term informal settlement denies. These are unauthorized land development or informal subdivision at the fringes of most developing cities; squatter settlements found on the urban fringes or in the centrally located areas, most on private land, especially when disputed; and, informal rental housing which covers a range of situations and level of precariousness (Cousins et al, 2005). These uncontrolled and squatter settlements seem to have two or more of the following characteristics: (Aluko & Olawuni, 2002; Rakodi & Leduka, 2003). Their birth is usually due to rapid urbanization, occasioning housing problem. Residents are mostly low-income families who are adventurers or either migrants from rural areas or are victims of urban renewal schemes (United Nations, 1973). Studies on the socio-economic situation of households living in irregular settlements indicate a strong correlation between urban poverty, tenure status, access to services and citizenship (Vanderschweren et al, 1996; Durand – Lasserre & Clerc, 1996, UNCHS, 1996; Durand – Lasserre & Royston, 2002).

Tenure status is one of the key elements in the poverty cycle. Lack of security of tenure hinders most attempts to improve housing conditions for the urban poor, undermines long-term planning and distorts prices for land and services (Wegelin & Borgman, 1995). It has a direct impact on access to basic urban services and on investment at settlement level, and reinforces poverty and social exclusion (UNDP, 1991).

2.7: Impacts accrued to controlled development

2.7.1 Macro-level Scale

At the highest level of analysis macro-economic and social trends pressurize cities to develop in certain ways. The globalization trends accompanied by reductions in long-distance transport costs, has led to increasing competition between cities for economic activities. Technological innovations, the introduction of mass production, assembly-line techniques led to economies of scale that force industries to seek large extensive production sites on cheaper land at the urban periphery. The promotion of the 'property-owning democracy' has been favoured by many governments, that leads on to demands for the construction of individual private dwellings, frequently in the form of low-density residential areas at the city periphery, that can be contrasted with the more collective housing (Newman & Kenworthy, 1999).

On the supply side certain economic sectors benefit particularly from urban sprawl. House builders can obtain greater productivity from large-scale developments on green field sites than can be obtained from smaller and more complex urban redevelopment sites. The suppliers of household equipment (e.g. white appliances, furniture, furnishings, etc.) are more involved as more dwellings are built. The suppliers of infrastructure (e.g. highways) also gain from urban sprawl. Out-of-town hypermarkets, discount stores and shopping centers offer more efficient ways of retailing, often by passing on to the customer a proportion of the transport costs involved. Landowners are continually seeking to maximize the returns from their holdings that are (excluding nonprofit landowners) constantly seeking to convert their agricultural land into urban land. On the demand side, rising real incomes lead to pressures for the development of housing, the enjoyment of goods and services, and ever-increasing mobility, that in turn leads on to increasing demand for residential development, distribution centres, retail and leisure parks,

and transport to convey people and goods between all of these places (Adams and Watkins 2002; Newman and Kenworthy, 1999).

In addition to economic aspects, there is also social aspiration for suburban living that creates its own demand for urban sprawl. Affordability is also very important. For older households and higher income groups, the proximity to the countryside and coast is an important secondary influence. Older and lower income households are also influenced by the proximity of shopping and public transport facilities. If peripheral developments are perceived as lower in crime, quieter and nearer to green areas, demand for sprawl will continue, especially if real incomes continue to rise, and if offering affordable housing to younger age groups. The changing structure of households also plays a key role in the process of urban sprawl. Much of this reduced household density has to be accommodated by urbanizing additional rural land.

Younger, single or childless households are increasingly occupying dwelling units closer to city centres as families become more concentrated in the suburbs. Throughout the 20th century the combination of rising car ownership and highway building continued to reduce transport costs and allow developments to sprawl at greater distances at no financial cost (Naghibi & Shirmohammadi, 2007). This has allowed cities to sprawl over a larger area without economic loss. Residents can live at greater distance from their places of work, shopping and leisure, without additional travel costs. Similarly, firms can deliver goods and services over larger areas without additional travel costs. Within this overall context individual national governments create their own social, financial, fiscal and regulatory environments that encourage or discourage urban sprawl to different degrees (Adams & Watkins, 2002).

2.7.2 Micro-level Scale

The location decisions made by a multitude of agents have a profound effect on urban sprawl (Phelps *et al.* 2006). Each firm makes decisions over the scale and location of production with a direct effect on urban sprawl, taking into account local plans and policies, infrastructure, utilities, land costs, tax regimes, labour costs, etc. For each firm these factors may impact in different ways, leading to different location decisions. Similarly, individual household decisions will be determined by local economic and social conditions, environmental circumstances, infrastructure

provision, the quality of services, such as schools, costs and value for money, and the perceived qualities of individual neighborhoods. Other agents include developers and building entrepreneurs, who create expensive or affordable housing and shops in different locations. Here the need for an adequate mathematical formalization or model to support the deductions from the macro and meso level of analyses became obvious, because simple rules of interaction, each of them well known or at least plausible, added up to a complex network of interrelations (Couch, Leontidou, Petschel-Held, 2007; Deal & Schunk, 2004).

These benefits are however frustrated by a number of challenges which are legal and institutional, environmental, economic, political amongst others.

2.8 Legal, Policy and Institutional Framework Challenges

2.8.1: Lack of comprehensive Urban Development Policy

Unfortunately many of the challenges being experienced in developing countries including Kenya's urban sector are happening against a backdrop of the absence of a policy to guide urban development. This general lack of a broad urban development policy presents a serious challenge to achieving sustainable urban development in Kenya. Its absence has negatively impacted on the growth and development of the national urban system and has resulted in spontaneous growth, weak link between rural and urban development, uncoordinated initiatives, and weak regulatory capacity and frameworks at all levels (Adams & Watkins, 2002).

Furthermore the realization of sustainable urban development has been hampered by a fragmented approach to planning with different agencies applying their own laws resulting into duplication of roles and jurisdictional conflicts. The existing legislations thus need to be reviewed, re-engineered and harmonized to facilitate attainment of this goal. There are over 70 existing Acts of parliament or statutes governing urbanization and urban development in Kenya. The existence of these Acts has created a lot of conflicts and overlaps amongst the key stakeholders and has led to lack of proper co-ordination. There is a need for harmonization of the existing legal and institutional framework to address urbanization process in Kenya (GOK, 2008)

2.8.2 Zoning Challenges

Zoning is a device of land-use planning used by local governments to control developments. Theoretically, the primary purpose of zoning is to segregate uses that are thought to be incompatible. In practice, zoning is used to prevent new development from interfering with existing residents or businesses and to preserve the "character" of a community. Zoning may include regulation of the kinds of activities which will be acceptable on particular lots (such as open space, residential, agricultural, commercial or industrial), the densities at which those activities can be performed (from low-density housing such as single family homes to high-density such as high-rise apartment buildings), the height of buildings, the amount of space structures may occupy, the location of a building on the lot (setbacks), the proportions of the types of space on a lot, such as how much landscaped space, impervious surface, traffic lanes, and whether or not parking is provided.

In developing countries, including Kenya, the relationship between urbanization, residential developments and industrialization is not always clear as premises are established in the middle of lands without any infrastructure base. As a result the impact of urban development and other developments on natural environment is very visible (Burgess, 2000). According to Pravakar & Ranjith (2005), uncontrolled and unplanned urban, residential and industrial growths are the main cause for deterioration of natural resources.

2.8.3 The Physical Planning Act 1996 Cap. 286

The Physical Planning Act of 1996 is an act of parliament providing for the preparation, implementation and enforcement of physical development plans. The act was enacted to provide a framework for conflict resolution through liaison committees from the district, provincial and national levels and also provides what should guide land uses through physical development plans (Local in urban areas and regional in rural areas) and a mechanism to guide and enforce development control through local authorities and NEMA. The acts have linkages with the environmental monitoring and coordination acts and require that a participatory environment impact assessment be done on projects with a greater impact on the physical environment and

those in environmentally fragile areas. Weak enforcement powers on the part of enforcement authority have created loopholes to implementation of the Act.

Section 23 provides for declaration of special planning areas to areas with unique development potential or problem for the purpose of preparation of a preparation of a physical development plan irrespective of whether such a region lies within or outside the area of the local authority.

Section 29 gives the Local Authorities powers;

- a) To prohibit or control the use or development of land and buildings in the interest of proper and orderly development of its area
- b) To control or prohibit the subdivision of land or existing plots into smaller areas
- c) To consider and approve all development applications and grant all development permissions
- d) To ensure proper execution and implementation of approved physical development plans
- e) To formulate by-laws to regulate zoning in respect of use and density of development and
- f) To reserve and maintain all the land planned for open spaces, park urban forests and green belts in accordance with the approved physical development plan.

Section 30 prohibits development which is not approved as provided by the Act, but the penalty for defaulters is too low thus developers break the law.

2.8.4 Local Government Act Cap 265

This act deals with creation, administration, management and running of local authorities in Kenya.

- Section 162 just like the physical planning act give local authorities' power on subdivision of land and 166 powers on development control.
- Section 16(g) gives the local authorities powers to prohibit registration of any subdivision carried out contrary to the provision of the Act.
- Section 168 gives the local authority power to establish and maintain sewerage and drainage works and allows them to lay pipes and the infrastructure to go with it.
- Other services to be provided are housing, water supply and diversion of streams with due regard to the water Act.

2.8.5 The Environmental Management and Coordination Act, 1999

- This act allows for appointment of provincial and district environmental committees which are charged with the proper management of the environment within a province or district
- Section 58 requires that any development as in 2nd schedule will be carried out only after an environmental impact assessment has been done. Such development includes new townships, industrial estates, shopping centres and complexes etc.

2.8.6 The Land Acquisition Act CAP 295 of 1968:

Section 6 (1) gives the Minister powers to acquire land compulsorily if he is satisfied that the land is for public interests of defence, public safety, public order, public morality, public health, town and country planning or the development or utilization of any property in such a manner as to promote public benefit.

In conclusion we have observed that the study area is dynamic in land use whereas the infrastructure provision is lagging behind. This would lead to the emerging land use exceeding the infrastructural carrying capacity leading to unsustainable urban growth.

There are several factors which lead to land use dynamism. The following literature discusses the land determinants and their relevance in the study area.

2.9 The Development Approval Process

A major responsibility of local authorities is to plan and to enforce laws for managed and orderly growth, especially of urban activities. The control of development is carried out through numerous instruments of development approval spread over several stages, each stage requiring input from multiple departments. Nevertheless, many local authorities lack technical and professional staff to perform the required investigation and enforcement of the by –laws (Karin & Hokao, 2005). Failing that, they perform only rudimentary examinations of development proposals. The discussion in this paper focuses on the planning implications of uncontrolled urban development in Tena Residential Estate, Nairobi.

2.9.1 Types of Approval and Departments Involved

The development approval process involves numerous steps (Lee, 1986) and very often starts outside of the jurisdiction of the local authority. In particular, agricultural land must first have their status changed through a process commonly referred to as “conversion” (legally called “change of category of land use”) under the land law (National Land Code 1965). This approval is sought through the District Land Office or the State Land and Mines Department. The views of the local authority are customarily sought but the State Authority is not bound by the views or advice from the local authority. Notwithstanding this, any decision by the State Authority binds the local authority even if it contradicts the development policies and advice of the local authority. This decision thus becomes the starting point for most applications for development approval at the local authority level.

When the issue of category of land use under the land law has been resolved, the developer or owner must then proceed to obtain several other types of approval from the local authority. The first stop is the City Planning Department to obtain planning permission. Planning permission refines in further detail the type and intensity of various permitted developments on the proposed site as well as provisions for community facilities and amenities and traffic flow. In most local authorities, the planning permission is granted based on a layout plan and development brief prepared by consultants to the project proponent.

But in the process of evaluating compliance, the application is also referred to various departments for comments and requirements. These departments may include Development Control, engineering and Public health within the local authority as well as external departments responsible for schools, market drainage and irrigation, sewerage, roads, environment, civil aviation, telecommunications and others. Aggrieved parties to the application for planning permission may appeal the decision of the local authority

The next major step in the development approval process is the building plan approval coordinated by the Building Department. Provisions in the Uniform Building By-Law (UBBL) are the basis for investigating compliance (e.g. minimum floor area for bedrooms, thickness of

party walls, natural ventilation and lighting, etc.). A site plan indicating the exact location of the building or buildings and their footprints accompanies the building plan. In housing schemes, the original approved layout plan is redrawn to provide more precise and accurate details on building shape, location, set-backs from property lines, distances between buildings, and road reserves. Since layout is deemed a town planning activity, building plans are referred to the City Planning Department for confirmation of compliance with planning requirements. In the process, the City Planning Department will have to retrieve the approved layout, compare it with the layout in the Building Plan, make appropriate recommendations and route back the building plan application to the Building Department, often weighed down by the attached approved planning permission (layout plan) file.

Once the second major approval has been obtained, the developer must proceed to secure several other approvals from the local authority including approval for earthworks, roads and drains, landscaping and structural drawings

2.10 Sustainable development of Cities

2.10.1 More sustainable futures

Cities are not isolated entities, but are interwoven with environmental, economical, social and political systems (Simon, 1999). Humans have a tendency to be inherently connected to their natural landscapes. Landscapes are actually a combination of nature and culture, two components that are quite inseparable (Tress *et al.*, 2001). Urban landscapes spill over into a dynamic sphere referred to as peri-urban areas, “zones of influence” or “extended metropolitan regions” which could lead to a blurring of rural-urban functions, especially in Africa (McGee & Greenberg, 1992; McGee & Yeung, 1993; Drakakis-Smith, 1995). Peri-urban areas can be seen as the interface between urban and rural areas, and have been neglected in most urban studies (Sánchez-Rodríguez *et al.*, 2004). For instance the areas around Tena residential estate has experienced uncontrolled development as many city dwellers try to tap the housing and real estate market following the increased Nairobi population.

Urban processes have wide reaching impacts, spilling over into the peri-urban and remote rural areas, and eventually influencing global processes. This is especially true for environmental processes and the associated impacts on natural resources. So how do we best deal with the environment within an urban context? Cities should strive to create more “liveable” environs for all their inhabitants, towards a more sustainable future. This implies addressing the interaction of human and ecological processes across space and time. The notion of sustainability was put on the national political agenda by the Brundtland Commission with their classic definition of sustainable development: “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Commission, 1987). Sustainable development has different dimensions: social, environmental, economic and institutional (Spangenberg *et al.*, 2002). Ecological sustainability is often described in terms of the resilience of the system (Resilience Alliance). With the ever growing population in Nairobi city pressure is fast mounting on the available infrastructure hence more strict laws and aggressive enforcement of the already in place environmental provisions should be effected in order to promote sustainable development in Nairobi city.

2.10.2 Urban foot printing

Cities are places of excessive consumption, both by humans and urban or technological processes. In the quest for improved urban sustainability, this is one of the most important effects of urbanization that needs to be addressed. Numerous studies have been done on the ecological footprints of cities (Rees, 1992; Folke *et al.*, 1997; Bolund & Hunhammar, 1999; Solecki *et al.*, 2005). The influence of human activities can already be seen on over 83 per cent of the earth's land surface (Mayell, 2002). The fact is that cities need a land area much larger than their own physical footprint to sustain the city and its inhabitants. These hinterlands need to provide input into the city and take care of the output from the city (Bolund & Hunhammar, 1999). The extent of such land is referred to as the “ecological footprint” of the city. Life in cities is dependent on a basic set of goods and services that are provided through ecological processes and sometimes extend far beyond the physical footprint of the city. The conditions and processes through which natural ecosystems provide for and sustain human life are known as ecosystem services (Daily,

1997; Chee, 2004). Costanza et al (1997) have provided a view of the value of ecosystem services but the true value cannot really be calculated as human life is totally dependent on it. However, no one actually “owns” or has the “rights” to these services (Dasgupta et al., 2000).

The inherent value of ecosystem services has been demonstrated in a number of case studies, such as an alien invasive plant management plan in South African Fynbos ecosystems (Van Wilgen *et al.*, 2001; Higgins et al, 1997), and the value of restoring the integrity of the Catskills Mountains watershed (PCAST, 1998). However, the knowledge of the “worth” of ecosystem functions for social and economic advantage is limited. Equally so is the understanding of how certain ecosystems could change with transformation (O’Riordan, 2004; Olsson et al., 2003). Without proper environmental concerns and city planning, the ecosystem within Nairobi will be strained and inhabitable in the near future hence transformation to the present ecosystem is a must if Nairobi is to gain any social and economic advantage as a city.

Ecosystems are capital assets that yield a flow of vital services of which six groups are considered of major importance to an urban area: air filtering; micro-climate regulation; noise reduction; water supply and drainage; sewage treatment; recreational and cultural values (Costanza et al, 1997; Daily, 2000). A city can itself be regarded as an ecosystem. Various perceptions exist, including that the city being seen as one integrated ecosystem a social-economic-natural complex ecosystem (Wang et al, 2003), or that the city is an assemblage of different ecosystems. Whichever way, the city consists of a complex set of issues that overlap and interact in a number of ways (Rebele, 1994; Newman, 1999; Bradshaw, 2003; Nilon et al, 2003). In addition, the human population imposes increasing demands on the ecosystems supporting a city. The irony is that ecologists usually do not study humans and economists, or human ecologists, have little ecological knowledge (Rees, 1992). With uncontrolled development such as that experienced in Tena Residential Estate, the pressure on the air filtering; micro-climate regulation; noise reduction; water supply and drainage; sewage treatment; recreational and cultural values processes will be overwhelming due to the complex set of issues that overlap and interact in a number of ways within Nairobi city.

Ecosystem services provide the biophysical foundation for people and hence contribute to the quality of urban life (Folke et al, 1997; Bolund & Hunhammar, 1999). However, little attention has been given to the biodiversity capital that supports ecosystem services (Daily, 2000). It is well known that urban growth poses tremendous challenges to biodiversity, both within the urban realm and extending into the peri-urban areas, eventually with a ripple effect on global biodiversity. Managing the interface between the ecosystem and human settlement lies at the core of the vision of a sustainable city. Proper planning and control of urban development is one major way of making Nairobi a sustainable city.

2.10.3 Sustainable cities

A sustainable human settlement was the goal of the UN Habitat II Conference in 1996 (Folke et al, 1997). An array of international initiatives claims to address the issue of sustainable cities. Some of the frequently cited programmes and projects include:

Sustainable Cities Programme of UN Habitat and UNEP; Local Agenda 21 as promoted at the United Nations Conference on Environment and Development, convened in Rio de Janeiro, Brazil, in 1992. Forum of Cities for Life in Peru Organization for Economic Co-operation and Development (OECD); World Bank Urban Development; World Health Organization Healthy Cities Project and Stockholm Partnership for Sustainable Cities Sustainable Cities Initiative (SCI).

There is an increasingly rich body of literature that refers to the notion of “sustainable cities”. Mitlin & Satterthwaite (1996) argue that we could refer to sustainable development within cities, but not to “sustainable cities”: It is unrealistic to demand that major cities should be supported by the resources produced in their immediate surrounds but entirely appropriate to require that consumers and producers in high-consumption, high waste cities reduce their level of resource use and waste, and reduce or halt the damaging ecological impacts of their demands for fresh water and other resources on their surrounds.

It is however, realistic for cities to improve on environmental performance so as to reduce the transfer of environmental costs to other people, other ecosystems, or into the future (Satterthwaite, 1997). Nonetheless the term “sustainable city” is not precisely defined, but “sustainability” as a general topic has been at the top of social and political agendas since the mid-1980s, culminating in the United Nations Conference on Environment and Development (the Earth Summit) in Rio de Janeiro in 1992 (Pugh, 1996). Ten years later the second Summit was held in Johannesburg, South Africa in 2002 – the World Summit on Sustainable Development.

2.11 Conceptual framework

Figure 2.1 presents the conceptual framework on which the present study was based. The independent variables investigated were causes of uncontrolled development which included weak policies, poor monitoring and enforcement, lack of capacity (resources and manpower) on the part of regulating authorities, ignorance of developers, high demand for housing and high cost of land. The consequences of the uncontrolled development in the study area were speculated to be urban sprawl, pollution, strain of resources, lack of safety and security, poor aesthetics and decreased property value. With the existence of political good will, staff capacity building, proper zoning of land uses, policy reviews, provision of resources, community participation and empowerment of monitoring and enforcement agencies it is envisaged that a much favourable state would be restored in Tena residential estate. Such would involve improved waste management, traffic flow, improved public amenities improved safety and security, ambience, adequate social infrastructure, proper legal and institutional frameworks supporting properly planned land allocation and use (Figure 2.1).

Independent Factors

Dependent Factors

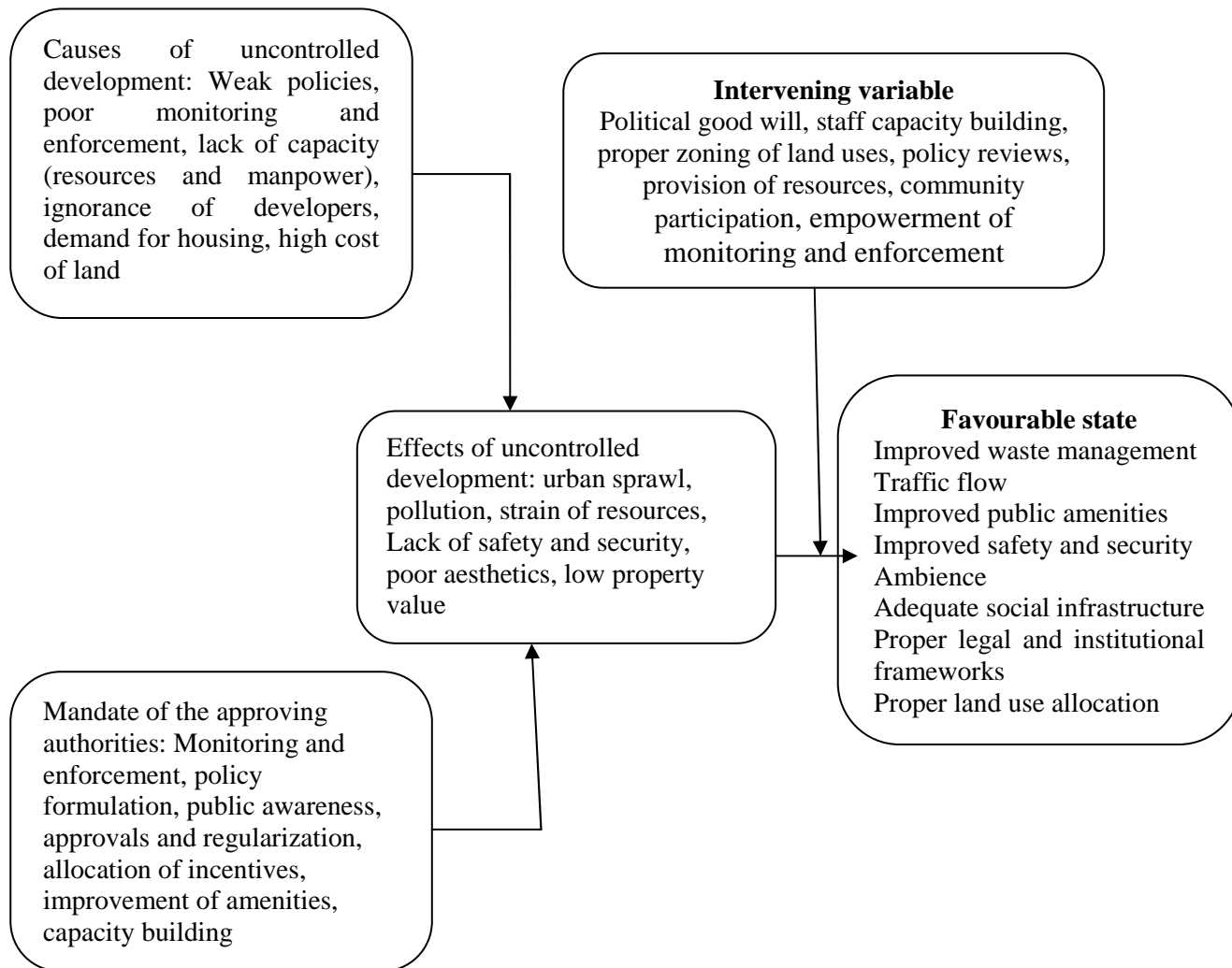


Figure 2.1: Conceptual Framework.

Source: Author, 2012

CHAPTER THREE: BACKGROUND OF THE STUDY AREA

3.0 Introduction

This section starts with a brief discussion of the historical development of Nairobi and then zeros down to the study area. In so doing, the section describes the key features of the project area including location and site, physical features, the human environment, existing infrastructure and socio-economic factors among other considerations. The chapter further attempts to relate this aspects to the subject of study.

3.1 Historical Development of Nairobi

During the construction of Mombasa –Kisumu railway line between 1895 and 1905. The town was first settled in 1896 as a transport deport. The main attraction of the town was clean water and cool climate. The site was halfway between Mombasa and Port Florence (now Kisumu)

By 1901, the population had grown to 8000. A private company was contracted to clean the streets, collect garbage, and clean the drains and to light the streets. The company failed and a plague epidemic struck in 1902. A second plague broke out in 1904 due to poor environmental conditions.

Nairobi was made a capital in 1905 despite those shortcomings.

By 1906 the city had sorted itself into distinct functional zones as follows;

- a) The railway center
- b) The Indian Baazar
- c) The European business and administrative center
- d) The railway workers quarters
- e) Washersman's quarters
- f) Military barracks outside the town limits

The European housing occupied the western side of the city where the soils were red. The area had good drainage also. There were few Africans in the city during this period.

In 1906, a commission was set up to investigate the sanitary conditions of the town after the two plagues broke out in the Indian Baazars. The commission found out that the site was totally unsuitable for further development. The possibility for its relocation was debated twice with no political goodwill to allow for its relocation.

In 1912, a third plague broke out. This necessitated the formation of Simson commission which recommended on racial segregation with Indians, Africans and Europeans living in separate quarters. In 1919, the municipal committee was dissolved and replaced by a fully-fledged Nairobi Municipal Council.

In 1928, a local government commission headed by Justice Feedham made a review of the town's structure and development. It proposed amongst others a change in boundary which effectively brought the autonomous area into Nairobi to create the Nairobi Extra provincial district of 1928

In 1948, The Nairobi master plan for a colonial capital was prepared. The plan was prepared by Thorton-White and was inspired by the colonial planning approach. The plan advocated for racial segregation and was based on the European model of urban form rather than the traditional African settlement pattern (Obudho, 1997).

The plan defined European and Asian housing areas (zones) while African areas were situated next to areas designated for industries. The plan was prepared when the population of Nairobi was 109,000.00. The population was growing at 5% and it was estimated that by 1975, it would grow to 270,000. The plan was revised in 1963 and 1978. The goal was to formulate a more integrated planning system with emphasis on provision of employment and housing for the rapidly growing population.

The plan gave rise to the development of the site and services schemes in Mathare North, Dandora and Kayole. Alongside these schemes, slums upgrading programs were implemented in Kibera, Pumwani, Mathare, Mathare Valley and Kariobangi areas 1973- 1983.

In 1967, the Nairobi urban study group was formed. The study was occasioned by shortages in water supply, traffic congestion and shelter provision. The group was to study the economic, social and physical variables, urban information system and growth frontiers.

The group recommended on the following:-

1. The growth direction of the city
2. The infrastructural requirement to accomplish development objectives
3. The proposed physical layout of the city
4. Detailed method of implementation of the recommendations
5. The social- economic development plan for the city including financing policy.
6. The urban development. It recommended that the growth should not extend to north or West in order to preserve the rich agricultural land but instead should extend to the Athi plains and towards Thika (mostly black cotton soils areas which were seen as poor soils for cash crop farming).

In 1987, Nairobi was zoned into 20 land use zones. Tena was zoned together with Tassia, Donholm, and adjacent lands as zone 10E.

3.2 Historical development of Tena Estate

Tena Residential Estate was carved from the larger Donholm estate that included the present Tassia, Green field, Savanna and New Donholm estates in 1985. The larger Donholm was bought from a Briton by Continental Developers in early 80s. Tena Residential Estate was delineated from Donholm in 1985 and the subdivision was done in 1986 and was approved by the City Council of Nairobi the same year. The L.R. Number for Tena Residential Estate before the subdivision was 82/370 and had an area of 40.47 hectares. This land was subdivided into 1000 residential plots measuring 10m by 20m, 15m by 20m, 10m by 30m and 10m by 40m. The cost per plot then was Sh.47000, Sh. 77500, Sh.75000 and Sh.99500 respectively.

Apart from the residential plots, there was a proposed 1.2 hectares for a primary school, 0.4 ha for a shopping Centre. Five other open spaces for 0.1 ha each had also been reserved for recreation but two of them have since been grabbed and churches have been erected in the plots. The subdivision approval condition was that the estate would be for a single dwelling per plot.

Among the one thousands residential plots, the first two hundred and fifty were sold to Teachers of Nairobi Sacco hence the name Tena. Other two hundred and fifty plots were sold to Afya SACCO; the Continental Developers developed one hundred three bedroom bungalows and sold some of them to post office for accommodation of their employees and some to individuals in 1989 and 1980.

The remaining plots were sold to people from different parts of the country although majority was from Nairobi and the surrounding. The people who bought the plots for speculation purposes sold their plots at high prices to people who had no interest of settling in Tena Residential Estate but were purely after building rental houses. With demand for housing within the estate rising, and the Government Departments responsible for enforcing the building by laws failing to act on time some developers started constructing more than one dwelling house per plot.

With the price per plot increasing at a very high presently costing over four million shillings and the rent for a bedsitter, one bedroom, two bedroom and three bedroom going for shs10,000, shs12000, 15000 and 18000 respectively per month the developers have continued constructing high rise buildings without considering the effects and implications of such developments. On average over 70% of buildings are beyond five floors

3.3 Location of Tena residential estate

Tena Residential Estate is located on the eastern edge of Nairobi City and about 10km by road from the city centre. The project site is bound by Outer Ring Road, Moi Drive and the Manyanja Road in Nairobi metropolitan. Nairobi metropolitan occupies an area of about 700 km² at the south-eastern end of Kenya's agricultural heartland. At 1600 to 1850 m above sea level, it enjoys tolerable temperatures all year round (CBS, 2001; Mitullah, 2003). According to Mitullah (2003) Nairobi's settlements sprawl outwards, they take over forested and agricultural land, fragmenting and degrading remaining natural areas. In addition, rapid population growth has outstripped the city's ability to deliver adequate services such as education, health care, safe water, sanitation, and waste removal. It has also led to an explosion in the number of cars and other vehicles, leading to ubiquitous traffic jams and high levels of air pollution. As it continues to grow,

Nairobi faces the challenge of planning for sustainable urban development that provides adequate housing and services (Mitullah, 2003).

Minor earthquakes and tremors occasionally shake the city. Much of Nairobi's urban footprint is unplanned settlement driven by rapid population growth and urban poverty, among other things. Sprawling informal settlements handicap the city's delivery of social services and negatively impact the quality of life. Informal settlements date to the city's earliest days when European settlers appropriated large tracts of land displacing the local African population with no provision for their resettlement. In the early 1990s, it was determined that over half of the city's population was living in unplanned settlements (Obudho & Aduwo, 1989).

The proposed Nairobi metropolitan region comprise of 15 regions independent local authorities which including City Council of Nairobi, Municipal Council of Mavoko Municipal Council of Limuru, Municipal Council of Machakos, Municipal Council of Thika, Municipal Council of Ruiru, Town Council of Kajiado, Town Council of Karuri, Town Council of Kikuyu, Town Council of Talaa/Kagundo, County Council of Kiambu, County Council of Masaku, County Council of Olekajuado, and County Council of Thika.

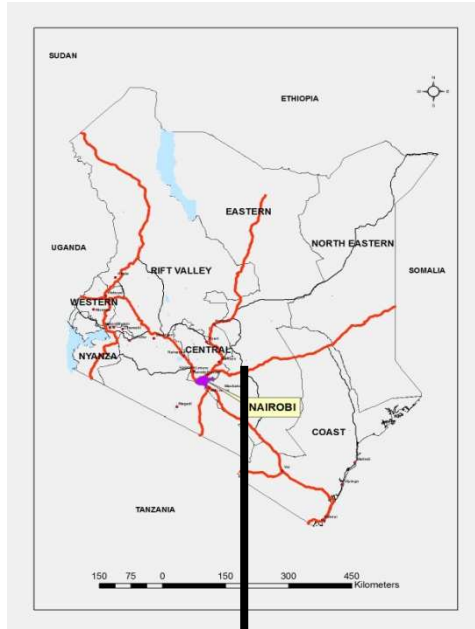


Plate 3.1: National Map (Kenya).

Source: Physical Planning Department; Ministry of Lands

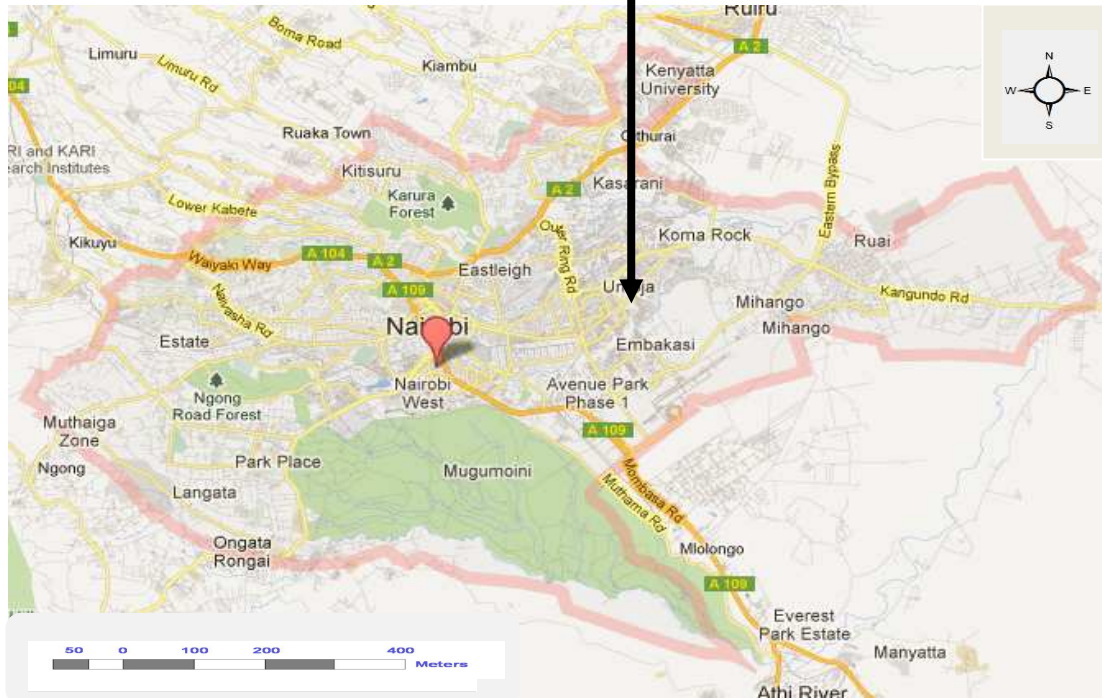


Plate 3.2: Nairobi Regional map.

Source: Google Image (2012)

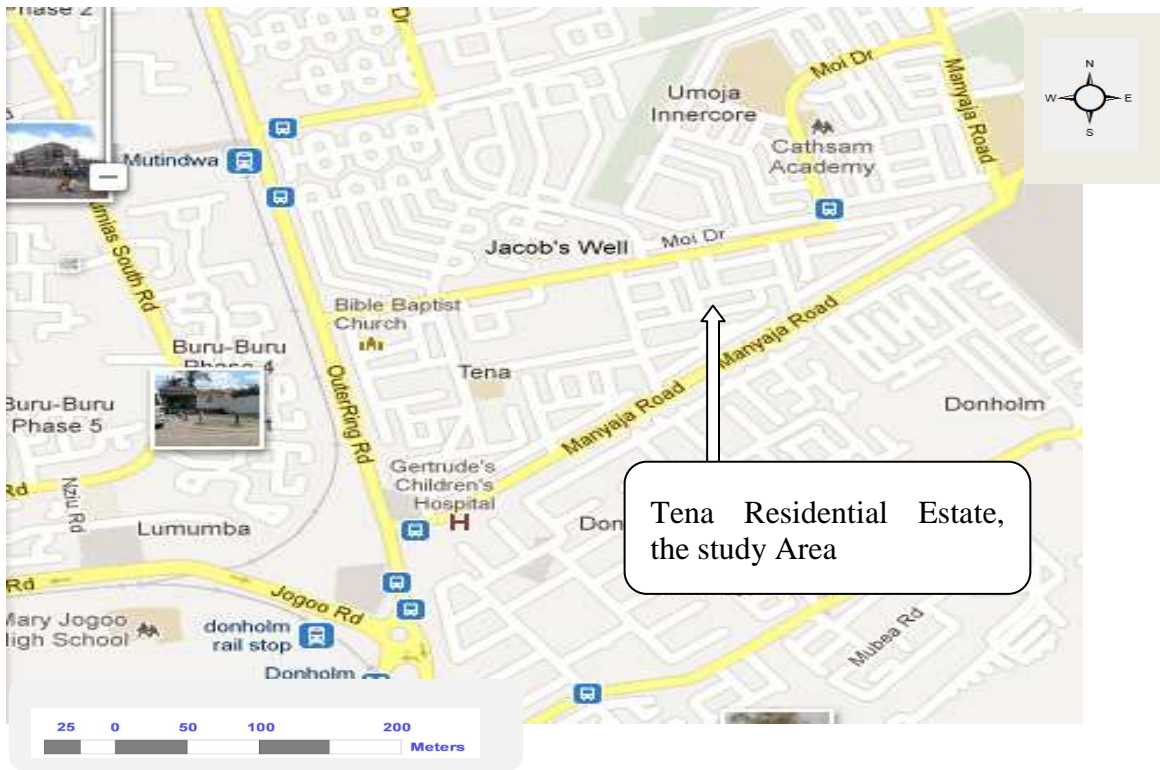


Plate 3.3: Location of Tena Residential Estate in Nairobi.

Source: Google Image (2012)

3.4 Physiographical Characteristics of the Study Area

In looking at the physiographical characteristics, we look at the physical features, like terrain, soils, climate, geological formation etc. which impacts on urban development.

3.4.1 Geology

The geology of Nairobi is shaped by both volcanicity and tectonic movements. The rocks in the area were formed as early as the Precambrian era through volcanicity.

The physiographical units found in the Nairobi area include:

- i) The lava plains
- ii) The rift frank
- iii) The Kikuyu highlands
- iv) Ngong hills

3.4.2 Soils

The soils within this estate are black cotton soil with impeded drainage, low carrying capacity and marked considerable shrink and swell characteristics. These types of soils do also prohibit of growth of vegetation such as grass which is key in providing healthy living standards by using the Carbon Dioxide generated and releasing oxygen. In addition, this type of soil makes excavation very hard for construction purposes.

3.4.3 Topography

The Estate is slightly sloping to the east. The site is well drained by natural drainage and the civil works drainage channels on roads. There are no major rivers, swamps or other water bodies in the immediate vicinity. It is important to note that in spite of the seemingly favourable topography of the land in this area, this does not help much in enhancing the drainage due to the poor qualities of soil in this area. In some cases, so as to achieve a level ground more soil usually has to be added on top of the existing grounds from time to time.

3.4.4 Rainfall

The general climate of the area is characterized by a bimodal rainfall pattern where short rains are experienced from October to December, and long rains from March to May. The June to August period is characterized by a cold spell while the August to October and January to March seasons are hot and dry. The mean annual rainfall is about 900 mm and an annual potential evaporation of about 1600 mm. Although the potential evaporation appears to be high compared to the rainfall, it is noted that the rainfall seasons are relatively cool and evaporation values are thus low. This condition gives way to adequate rain for run-off, percolation for replenishment of ground water and sufficient moisture for crops and vegetation growth.

3.5 Map of the Study Area

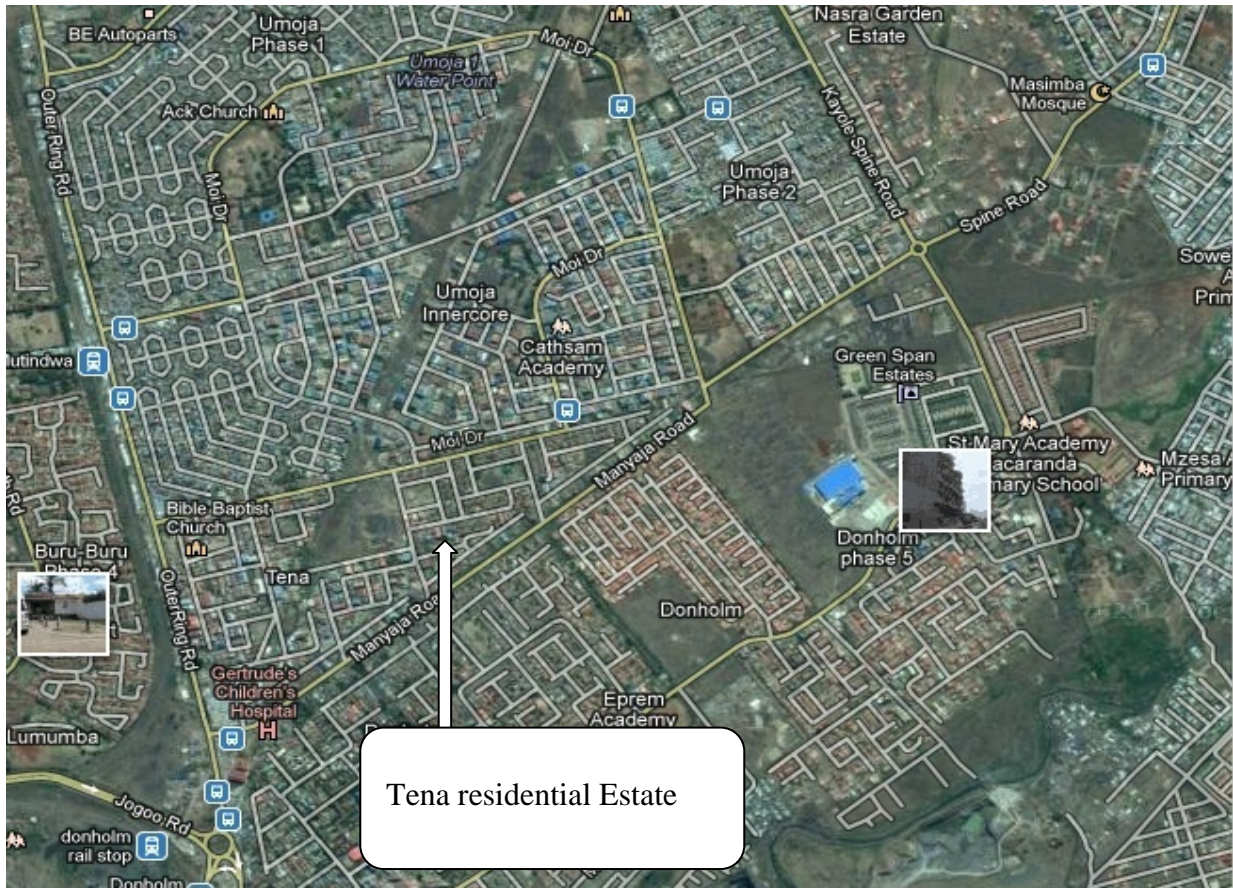


Plate 3.4: Google Satellite Image of the Study Area.

Source: http://www.oneworld/map/google_map_Nairobi/tena_estate.htm

3.6 Existing physical Infrastructure

- i. Roads
- ii. Sewerage system
- iii. Water
- iv. Storm water drainage
- v. Solid waste management
- vi. Electricity

a. Roads

The estate is mainly served by three trunk roads namely; Moi Drive, Outering and Manyanja roads. Outering being a main trunk road to the greater Eastlands, Moi Drive road which is circular road around the estate and Manyanja road which connects the estate from Outering road. These roads have been clearly shown in the location map attached (Plate 3.5). Other the three main trunk roads, Tena estate is well served with minor access roads though some of them are not well maintained and hence are not passable during rainy seasons.

b. Water

The estate is served by piped water by the Nairobi City Water and Sewerage Company (NCWSCo.). However, the area is faced with problems of water shortage which is common in the entire estate. This problem is not only being faced by the residential and other forms on land use activities but also within recreational open spaces which have been contributed by a high population increase following uncontrolled development. Due to inadequate water supply, the Residents are forced to rely on private water vendors who sell the water

c. Energy

The estate is connected with electricity by Kenya Power and Lighting Company (KPLC) from its supplies within the neighborhood. Cooking gas is supplied by Total and K gas dealers affiliated to the neighboring oil companies such as Total. Some residents use charcoal supplied by dealers in the estate.

d. Emergency services

Emergency services such as health ambulances are necessary and it is advisable that they are easily accessible so that in case of an emergency, the victims can be attended to on time. Unfortunately, it was noted that there lacks such facilities around the study area. During the study, crime was reported as one of the major implication of uncontrolled development as many residents did not have stable jobs.

e. Waste management

Waste management is one of major challenges in this estate. The City Council does not cover the entire estate and only collects waste in sections of the estate which are easily accessible and are

near the main roads. Waste Management in the Estate has been left to the residents to organize privately. The services by the Council are also not regular due to lack of adequate waste collection vehicles equipment and adequate funding to finance the operations of waste collection in the estates. Private waste handlers have come in handy and they collect waste in sections of the state where tenants pay for the services. Generally, the private waste handlers are also not well equipped to handle the waste generated in the estates. As a result, most of the waste goes uncollected for a long time. Most of the residents and their neighborhoods visited had littered waste and did not have a clear arrangement of waste collection except for the Council owned facilities which relied on the council waste collection lorries that came to the estates at least twice a week. The lack of clear arrangement of waste collection has led to uncontrolled dumping which eventually has led to scenes such as plate 3.7 along the roads in this estate.



Plate 3. 5: Poor waste management in the Estate.

Source: Researcher (2012)

CHAPTER FOUR: THE EXTENT AND CAUSES OF UNCONTROLLED URBAN DEVELOPMENT ON TENA ESTATE

4.0 Introduction

This chapter presents the empirical findings obtained by the researcher on the extent and causes of uncontrolled urban development. It uses tables, figures and plates to explain the empirical findings. The researcher used descriptive statistics to make conclusions. The analyzed data was presented in form of bar graphs, tables and plates for easy interpretation by the readers.

4.1 Description of interviewed developers

A total of 88 developers from Tena estate were interviewed in the current study. Inquiries into the number of years they had lived in Tena estate showed that 36.4% and 30.7% had been there for, respectively, one to five years and six to ten years. A minority (9.1%) had lived in Tena estate for more than twenty years as shown in Table 4.1.

Table 4. 1: Sample characteristics

Attribute	Frequency (n=88)	%	Cumulative %
Age (years)			
20-30	9	10.2	10.2
31-40	21	23.9	34.1
41-50	24	27.3	61.4
>50	34	38.6	100.0
No. of years lived in Tena			
1 to 5	32	36.4	36.4
6 to 10	27	30.7	67.1
11 to 20	21	23.9	91.0
>20	8	9.0	9.0

Examination of the ages of the respondents revealed that majority (65.9%) were aged above 40 years constituted by 27.3 % aged 41 to 50 years and 38.6% aged above 50 years. Only 10.2% of the respondents were in the age bracket of twenty to thirty years as presented in Table 4.1 and Figure 4.1.

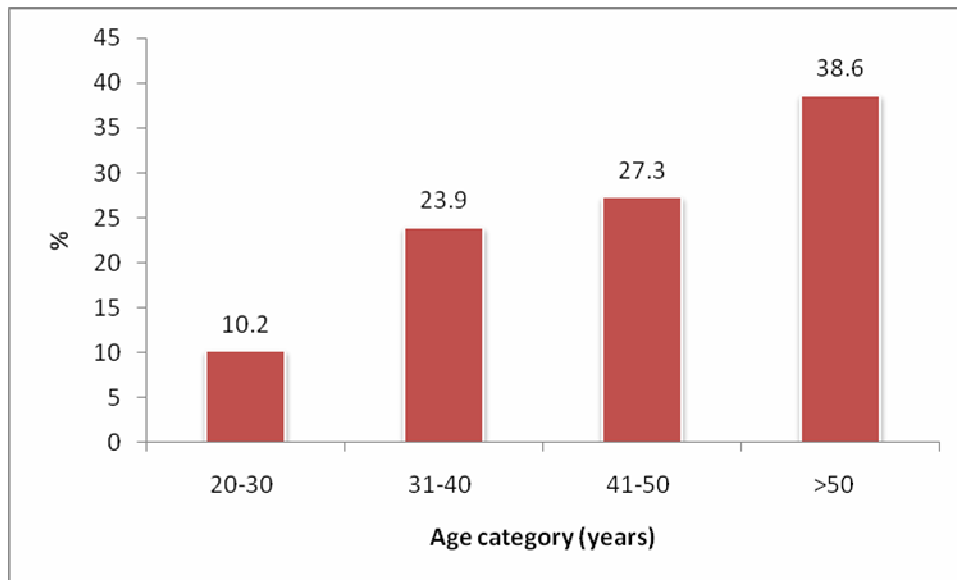


Figure 4. 1: Age of the study participants.

4.2 Extent of uncontrolled developments in Tena estate

Most of the respondents had constructed multi-dwelling (68.2%) and commercial buildings (17.0%). Noteworthy, only 14.8% of the respondents interviewed reported to have complied with the current policy guidelines of constructing a single-dwelling house in the estate under study (Table 4.2). Asked whether they had engaged the services of any professional during the process of carrying out the developments, an overwhelming majority (90.9%) responding in the affirmative as shown in Table 4.2.

Table 4. 2: Characteristics of the developments

Characteristic	Frequency(n=88)	%
Building type		
Single dwelling	13	14.8
Multi-dwelling	60	68.2
Commercial	15	17
Year development was done		
≤ 2000	11	12.5
2001-2005	25	28.4
> 2005	52	59.1
Engaged professionals in your development?		
Yes	80	90.9
No	8	9.1

What is even worse, the high rise buildings are not developed up to standard and with the necessary facilities for a house of such a status. The study found that 82.3% of the high rise buildings that were supposed to have been equipped with escalators as required by the building regulations lacked them as illustrated in Plate 4.1. The seven storey house shown was developed without provision for escalators or lifts thus endangering the life of its dwellers. In addition, the houses were poorly ventilated because of their proximity to one another hence forcing its dwellers to have lights on all the time.

A seven floor building without an escalator which contravenes the development regulations



Plate 4. 1: Highrise storey buildings without escalators.

Source :(Researcher, 2012)

The buildings shown Plate 4.1 does an illustration of the developments that exist in Tena Residential Estates whereby there is a mixture of controlled and uncontrolled development. The

approved developments are single dwelling units like the one shown sandwiched in the Plate 4.2. The two high rise buildings on either side are some of the uncontrolled developments in the area.



Plate 4.2: Occurrence of both controlled and uncontrolled developments.

Source: Researcher (2012)

A vast majority of these developments (87.5%) had been initiated at the turn of the century with those constructed between 2001 and 2005 comprising of 28.4% and those constructed afterwards (after 2005) constituting 59.4% of the 88 developments studied (Table 4.3 and Figure 4.2).

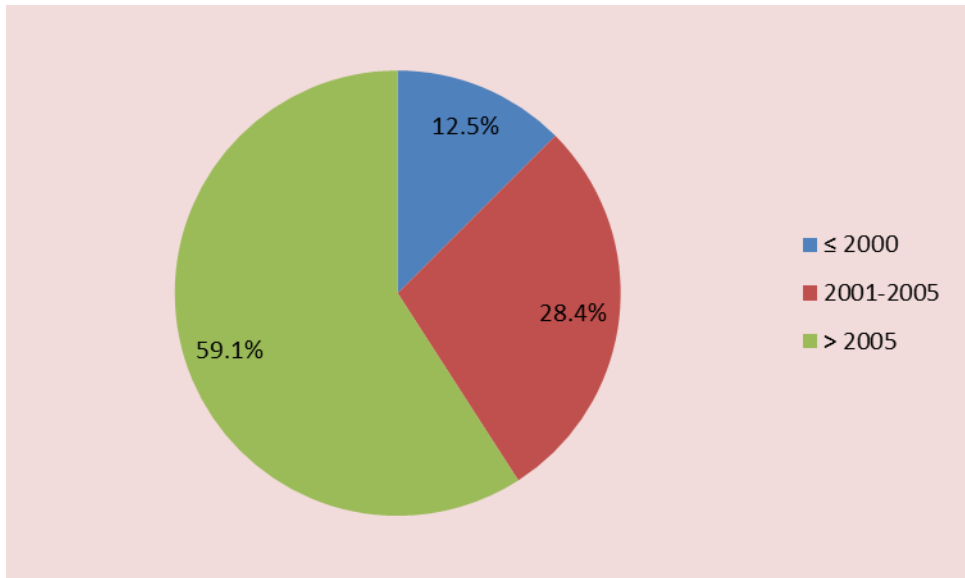


Figure 4. 2: Timelines at which the developments were initiated.

Of the 70 (79.5%) development plans submitted to the relevant authorities for approval, 77.1% were approved (Table 4.3).

Table 4. 3: Approval status

Characteristic	Number	%
Were plans submitted for approval? (n=88)		
Yes	70	79.5
No	18	20.5
Were the plans approved?(n=70)		
Yes	54	77.1
No	16	22.9

From the findings, approving authorities wholesomely answered ‘No’ when asked whether the contentious developments were approved and thus conformed to the estate planning. They indicated that the original approved structures in the estate were single dwelling masionettes. A sample of approved developments structures is shown in the plate 4.3 below.



Plate 4. 3: Sample of approved development structures in Tena Residential Estate

Source :(Researcher, 2012)

The respondents were also probed on whether they complied with the relevant regulations when constructing the houses. The findings are presented in table 4.4.Overall, 19.3% and 14.8% observed the requirements of the minimum building lines (6m) and building one dwelling house per plot respectively. Interestingly, only 3 study participants (3.4%) reported to have fully complied with the two regulations during the construction of their properties (Table 4.4)

Table 4. 4: Compliance with the building regulations

Regulation	No. complied (n=88)	Compliance (%)
Building line 6m from the road and 2.4 m from bedroom window (a)	17	19.3
Building single house per plot (b)	13	14.8
Compliance with both regulations (a&b)	3	3.4

As illustrated in Plate 4.4 failure to observe the building line in uncontrolled development is a common phenomenon in the area with buildings being constructed on the road way



Plate 4. 4: Building developed on a road way.

Source: (Researcher, 2012)

4.3 Causes of Uncontrolled Developments in Tena estate

The study also sought to identify the reasons as to why developers in the area declined to follow the laid down rules while constructing with the results being as shown in Table 4.5. Most of the

respondents (71.6%) claimed that constructing one dwelling house per plot was uneconomical considering they had used huge amounts of money in purchasing the land. Others reported that they were motivated by the rental income following the high demand for houses in the area. A substantial proportion of the study participants (58, 65.9%) faulted the approving authorities for the uncontrolled development by taking too long to approve plans submitted to them (17, 19.3%) and/or charging exorbitantly for this service (41, 46.6%). Some participants mentioned that they had flaunted the regulations on observing that most of the developers were building or had built structures that contravened the current guidelines. Interestingly, some ten participants (11.4%) explained that they felt that single houses on a plot would result in social isolation hence loneliness (Table 4.5).

Table 4. 5: Reasons for non-adherence

Reasons for non-adherence	No. (n=88)	%
Uneconomical given huge investment made on purchasing the land	63	71.6
Needed to generate some income	35	39.8
Majority have of the developers have already built flats	29	33.0
Plans take too long to be approved	17	19.3
Approval charges are too high	41	46.6
Loneliness due to social isolation when one constructs a single house	10	11.4

The study participants also gave their opinion on various statements regarding uncontrolled development in the estate as presented in Table 4.6. Only a small proportion of the respondents agreed with the statement that absence of policy to guide developments as the reason behind uncontrolled development witnessed in Tena estate. Further, 68.2% of the respondents agreed that the high population growth rates in the city were the cause of the haphazard developments in the estate while 85.2% of respondents pegged it on increased rural-urban migration. All the participants responded in the affirmative when they were asked if corruption and bureaucracy were to blame for the uncontrolled development in the study area but for the seven participants

failed to respond to this statement. A vast majority (95.1%) of the respondents opined that inadequate monitoring and enforcement by authorities was to blame. All the respondents, save for the non-respondents, were in agreement that the high cost of land in the area (Table 4.6).

Table 4.6: Statements on causes of uncontrolled development in Tena

Cause	Frequency (n=88)	%
Absence of policy to guide development		
Disagree/Not sure	59	72.8
Agree	22	27.2
No response	7	
High population growth rates in the city		
Not sure	28	31.8
Agree	60	68.2
High rural urban migration		
Disagree	12	14.8
Agree	69	85.2
No response	7	
Corruption in government institutions		
Agree	81	100.0
No response	7	
Inadequate monitoring and enforcement by authorities		
Not sure	4	4.9
Agree	77	95.1
No response	7	
High cost of land in Tena		
Agree	81	100.0
No response	7	
Bureaucracy in the process of approving building plans		
Agree	81	100.0
No response	7	

CHAPTER FIVE: IMPLICATIONS OF THE UNCONTROLLED DEVELOPMENT

5.0 Implications of the Uncontrolled Development

On effects experienced following the uncontrolled development, heightened insecurity, congestion (inadequate parking spaces, no playgrounds for children, no pathways) and strain on amenities and infrastructure including health facilities & schools, water shortages and ever blocking sewers were mentioned adversely by the respondents. Pollution which included dumping solid wastes in the estate was also mentioned as shown in Table 5.1. Poor lighting and air circulation and loss of privacy were listed by 23.9% and 18.2% of the respondents respectively.

Uncontrolled development has brought about persistent water shortages in Tena Residential Estate. This is supported by the many water vendors in the estate. Water vendors are many stationed in less than 100 metres. The estate has both fixed and mobile water vendors to help the residents' access water. This is well explained in the plate 5.1.



Plate 5.1: Water Vendors' carts and cans.

Source :(Researcher, 2012)

Uncontrolled development also causes excessive encroachment of settlements into good agricultural land. Uncontrolled development also causes environmental degradation and pollution risks as indicated.

Table 5. 1: Responses on the effects arising from having more than one house per plot

Effects of more than one dwelling per plot	Number(n=88)	%
Loss of privacy	16	18.2
Heightens insecurity	40	45.5
Dumping of wastes	10	11.4
Congestion (inadequate parking spaces, no playgrounds for children, no pathways)	59	67.0
Strain on amenities and infrastructure (strain on amenities like hospitals & schools, water shortages, ever blocking sewers)	22	25.0
Pollution	27	30.7
Poor lighting & poor air circulation	21	23.9

Waste management is one of major challenges in this estate. The City Council does not cover the entire estate and only collects waste in sections of the estate which are easily accessible and are near the main roads. Waste management in the estate has been left to the residents to organize privately. The services by the Council are also not regular due to lack of adequate waste collection vehicles and adequate funding to finance the operations of waste collection in the estates. Private waste handlers have come in handy and they collect waste in sections of the state where tenants pay for the services. Generally, the private waste handlers are also not well equipped to handle the waste generated in the estates. As a result, most of the waste goes uncollected for a long time. Most of the residents and their neighborhoods visited had littered waste and did not have a clear arrangement of waste collection except for the Council owned facilities which relied on the council waste collection lorries that came to the estates at least twice a week. The lack of clear arrangement of waste collection has led to uncontrolled dumping which eventually has led to scenes such as plate 5.2 along the roads in this estate.

**Poor waste management and disposal in
Tena residential Estate**



Plate 5.2: Poor waste management in the Estate.

Source: Researcher (2012)

The uncontrolled development and resultant waste management challenges are found scattered all over including on the pathways and roads as illustrated in the plate 5.3. The wastes which contain a large proportion of plastics and polythene bags have been implicated in flooding at the estate during the rainy season as the block the storm drains.



Plate 5.3: Poor waste disposal and management.

Source :(Researcher, 2012)

The respondents also indicated that uncontrolled development leads to increased level of pollution in the estate and the whole city at large. There is increased water pollution resulting from poor drainage and air pollution resulting from poor waste management as shown in the plates 5.2 above and 5.3above:



Plate 5.4: Implication of uncontrolled development on pollution (Busted Sewer).

Source: (Researcher, 2012)

The area is served with an initially well laid trunk physical infrastructure which due to over-use and poor maintenance has led to decline in its condition over time. In plate 5.4, one is able to see a storm water drainage system that was originally well constructed but has declined to a level where the water can no longer flow and it is also damaged from almost all sides. The drainage mains for storm water have also been filled with paper wastes, soil and solid waste materials.



Plate 5.5: Flooded Storm water drainage.

Source: Researcher (2012)

Uncontrolled development also leads to uneconomical land utilization. This can be witnessed by the high levels of buildings housing many individuals without proper planning for parking. This has caused parking on pathways and roads thus causing obstructions. Uncontrolled development has led to development in areas reserved for roads and other public utilities. A good example from the area of study is a house developed on a road forcing motor vehicles to pass below the house as shown in the plate 4.4.

Uncontrolled development also causes excessive encroachment of settlements into good agricultural land. Uncontrolled development also causes environmental degradation and pollution risks as indicated. Uncontrolled developments lead to the digging of the ground and haphazard dumping of the dug soil. In addition, the high population has negative effects on the soil and the whole environment. This is well illustrated in the plate 5.6 below.



Plate 5.6: Effects of uncontrolled development on the environment.

Source: (Researcher, 2012)

Uncontrolled development has led to the development of substandard housing structures. The houses are not developed up to standard and with the necessary facilities for a house of such a status. A good example from the area of study includes a seven storey. Uncontrolled development has led to the estate stretching beyond its holding capacity leading to frequent traffic jams. The estate does not have enough parking for the residents which the policy available in City Planning Department recommends of one and a half parking per flat thus leading to routine parking on the road as shown by plate 5.7.

Not observing the minimum building line requirements was observed to have resulted in compromised safety of the occupants of the buildings as vehicles tended to easily hit the buildings when they lost control as reported by 46.6% of the developers interviewed. Further, disturbances arising from noise from the traffic and lack of parking were mentioned by, respectively, 68.2% and 18.2% of the respondents. Ten respondents (11.4%) felt that space to grow plants was unavailable as a result of contravening the building line guideline. Others

mentioned losses arising from demolitions in case of road expansion, dust from the roads and poor sanitation (Table 5.2).

Table 5.2: Responses on the effects witnessed as a result on not observing the building line

Effects of not observing the minimum building line	Frequency(n=88)	%
Noise from the traffic on the roads	60	68.2
Lack of parking	16	18.2
Safety is compromised; vehicles hit buildings when they lose control	41	46.6
No space for planting grass and trees	10	11.4
Other*	9	10.2

* Demolitions in cases of road expansion (4), Dust from the roads (3), poor sanitation (2)



Vehicles parked on the road ways due to lack of



Vehicles parked on the road ways due to lack of

Plate 5.7: Vehicles parked on the road.

Source: Researcher, 2012

5.1 The Role of approving Authorities

The study sought to establish the role of the approving authorities in the uncontrolled developments witnessed in the estate under study. The approving authorities considered in this study included the City Council of Nairobi (CCN) together with the National Environmental Management Authority (NEMA). Some of the ACTs providing guidance and regulation to development control in urban centres include the Physical Planning Act Cap 286, Local Government Act Cap 265 and the ECMA Act (1999) by NEMA, Public Health Act Cap 242 which stipulates that the environment inhabited by human beings should always be kept clean at all times to keep away disease and keep the population healthy. The approving authority CCN has also developed By-Laws that are supposed to be adhered with by all the developers and residents. However, these have not been followed to the later due to CCN capacity.

To help bring control and observation of the planning in Tena Residential Estate, the approving authorities have several options to take. Some of these include taking an enforcement action by demolishing the irregularly developed structures that have not observed the development requirements. This can be done by demolishing the illegal building. CCN can also take a remedial action by regularizing those building meeting the minimum requirements for development.

However, the approving Authorities are faced with several challenges in their efforts to control and plan the developments in the City. Some of these includes resistance from the developers/contractors, the developers going to court to resist the demolition of the “illegal” structures and lack of adequate resources like capital and human resources to reinforce the city by-laws and development requirements. The approving authorities also face political interference in their duties thus restraining their activities in some incidences.

The study also sought to establish how the approving authorities were executing their duties. Several statements were raised on which the residents were to provide their levels of agreement with each.

Most of the respondents interviewed (83.9%) were of the opinion that the approving authorities had failed in execution of their mandate in Tena estate development. In fact, 88.6% reported that

the approving authority were irregular in their inspecting tours for buildings that are under construction (Table 5.3).

Table 5. 3: Roles of the respondents on approving authorities

Role of approving authority	Frequency(n=88)	%
Approving authorities have been doing their work efficiently in Tena?		
Yes	14	16.1
No	73	83.9
No response	1	
How often do you witness approving authority inspecting buildings?		
Regularly	10	11.4
Irregularly	78	88.6

5.2Qualitative analyses of focus group discussions and key informant interviews

The local leaders interviewed as informants complained that uncontrolled development had led to constraints on public facilities like recreational facilities. One leader said; *‘The only existing open space in the estate which is a playground is overstretched and the condition of the playing ground is in a bad state following over usage and poor maintenance. The playground has no grass and in case of rainfall, it cannot be used.’*



An over utilized recreation facility following overcrowding leading to loss of

Plate 5.8: Poorly Maintained recreational Open Space.

Source: Researcher (2012)

In the local leaders' opinion, another effect of uncontrolled development in Tena Residential Estate is the increased levels of insecurity arising from high population and high levels of unemployment among the residents. This uncontrolled development has also lowered the living standard in the estate to that planned. Other implications mentioned include poor development of structures without observing the laid down rules and regulation thus leading to collapse of buildings and loss of life as well as a decline in property values.

During the key informant interviews, the most mentioned challenge that negates the efforts of approving authorities was bad precedence of unapproved structures, inadequate facilitation of the monitoring and inspection team including the fact that the team is not well funded to carry out duties. Closely related to this was shortage of enforcement officers. In addition, during the informant interviews it was mentioned that corruption was rampant involving officials of the relevant authorities assigned to that area with developments being carried out on weekends and holidays. In relation to corruption of as one NCC official stated;

'It is the hostile developers who collude with council ward officials and other relevant authorities assigned to the area, to build unapproved structure. They are organized cartels that even deny NCC officers from accessing developments'

This is even worsened by the fact that there is no clear demarcation of roles amongst the NCC officials with one key informant mentioned;

'You will see council askaris sometimes supervising and inspecting construction sites on their own'

Security was mentioned frequently whereby security threats were issued when demolishing illegal structures. Land ownership documentation, logistic problems in getting security officers when enforcing the by-laws, lack of information/base maps to locate some sites and ignorance of the developers were other key challenges mentioned.

The effects identified included by the key informants including the local opinion leaders and contractors included strain on infrastructure due to increase in population, the existing buildings which were not approved, lack of adequate on-site parking, and shortage of parking. In particular, local opinion leaders were not impressed by the resultant overcrowding and mixed

developments whereby single dwellings were surrounded by towering flats as well as the overloaded sewers which experienced constant blockage. One of the interviewed architects pointed out the *'poor aesthetics of the estate and unwanted environmental events'* due to the uncontrolled development.

On measures to curb the uncontrolled developments in the area the informants mentioned highlighted the need to impose very high penalties for buildings that contravene the set regulations. One NCC official who is concerned with approvals mentioned;

'we need to insist on enforcement of physical planning act cap 286 and the NCC by-laws in addition to conducting frequent monitoring of development activities in the area'

The architects and contractors interviewed opined that there is a need to ensure that that existing buildings were not approved need to be regularized if they meet approval standards. This was also echoed by the NCC officials interviewed but with a caveat; *'if the buildings are substandard they should then demolished. All developers and contractors must adhere to laid down policies of this zone. There are buildings here which do not meet the bare minimum requirements for occupation.* Moreover, the contractors and architects who took part in the key informant intervention voiced the need to review the current policies guiding development in Tena estate to accommodate higher densities of people in the area. One architect mentioned; *'...change existing by-laws and planning policies to accommodate the ever changing trends...'* Interviews with NCC officials including those responsible for approvals aired the sentiments that were in concordant with those of the architect. They indicated that the policy that was in existence had loopholes which developers took advantage of in putting up their structures.

CHAPTER SIX: SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter provides the discussion and synthesis of the findings from four. It also gives the conclusions and recommendations of the study based on the objectives of the study. The general objective of this study was determining the planning implications of uncontrolled urban development on living conditions in Tena Residential Estate, Nairobi.

6.2 Findings

The aim of this study was to examine the planning implications of uncontrolled urban development on the living conditions in Tena Residential Estate in Nairobi. The findings of this study in chapter five have shown the diverse implications of uncontrolled urban development on the living standard of Tena Residential Estate in Nairobi's Eastlands. The following discussions has synthesized and interpreted salient points of the findings of the study so as to present them in a coherent form in order to achieve the stated objectives of the study. According to Kimani and Musungu (2010), the world is urbanizing at a very rapid rate. This growth is largely due to a high level of rural-urban migration fuelled by rural poverty and a dwindling per capita ownership of farming and grazing land. Fundamental transition from relatively low density rural communities to higher density urban societies is manifested spatially. As a result of this migration, population grows very fast in the urban areas bringing with it several effects.

In 2007, 26% of the total population resided in urban areas, and it is estimated that by 2030, 63% of the population will be living in urban areas (GOK, 2007). The pressure for urbanization has led to the evolution of numerous urban areas whose development in most cases has not been in tandem with physical development planning, alongside enforcement of building standards and regulations. This was evident in Tena Residential Estate as developers developed buildings without observing the requirements for such development. The buildings are developed on road reserves and other has exceeded the planned height of development. The approved development for Tena Residential Estate was single dwelling maisonettes. However, uncontrolled

development has led to huge high rise buildings of up to seven floors without escalators. Unmanaged urban growth has contributed to social and economic problems, including the emergence and proliferation of informal settlements, shortage of decent housing, rising crime, vulnerability to disasters such as fire, collapsing buildings and flooding, environment degradation and poor infrastructural services such as road transport, social amenities, drainage system and sanitation services (GOK, 2007).

6.2.1 Extent of uncontrolled development

Only a mere 14.8% of the developers reporting full compliance with the current policy guidelines on developments in the estate under study whereby one was supposed to construct only single residential buildings. Majority of the developers had constructed multi-dwelling (68.2%) and commercial buildings (17.0%). Overall, 19.3% and 14.8% observed the requirements of the minimum building lines (6m) and building one dwelling house per plot respectively. Interestingly, only 3 study participants (3.4%) reported to have fully complied with the all the regulations and requirements outlined in the guidelines for development in Tena residential estate.

6.2.2 Causes of uncontrolled developments in Tena Residential Estate

The causes of uncontrolled developments in Tena Residential Estate are many and diverse. First, the policy guiding urban developments are not accurate thus leaving loopholes that developers have taken advantage of to develop building structures that have not been dully approved. Another prominent cause of uncontrolled development in Tena Residential Estate included a high population growth rate arising from increased rural-urban migration. In addition, corruption in government institutions also played a key role in uncontrolled development. The City Council of Nairobi also had some inadequacies in terms of human resources and support from the related Ministries and government organs in the enforcement of City Bylaws and construction code.

6.2.3 Roles of approving Authorities on the uncontrolled developments in Tena Estate

The approving authorities in development planning in urban areas included the Ministry of Local Government through City Council of Nairobi, Ministry of Nairobi Metropolitan, Ministry of Lands, Ministry of Public Health And Sanitation and National Environmental Management

Authority among others. These authorities are charged with the responsibility of ensuring that the developments in the area meet the bare minimum requirements for buildings and general land developments in the estate. The Authorities are doing their job well. However, the authorities have encountered several challenges in their duties. First, some of the uncontrolled developments in the estate belong to powerful politicians and well-connected individuals. As such, these individuals have taken advantage of the situation to develop haphazardly in the area thus leading to persisted deterioration of living standards.

6.2.4 The implications of uncontrolled development in Tena Residential Estate

Uncontrolled development has had several diverse effects on the living standards of the residents in Tena Residential Estate. First, the uncontrolled developments have led to a constrained water supply system leading to persistent water shortages. The uncontrolled developments have also led to haphazard parking of vehicles on the roads and other path ways. Uncontrolled developments have also led to irregular allocation of land where individuals are reallocating public land to themselves. A case in point is the encroachment of the public recreational facilities by one of the churches. Uncontrolled developments have also led to development of substandard structures which pose a human danger.

Uncontrolled development has also led to huge population than initially planned for the Estate. This has brought about a lot of insecurity as majority of the people living in and around the estate do not have stable jobs therefore trying all they can to make ends meet. The rate of unemployment has also aggravated the situation considering that the rate of unemployment is on the increase.

6.2.5 Possible intervention measures to control development in Tena Estate

There are several interventions for the uncontrolled developments in Tena Residential Estate. One of these is the regularization of the developments that meet the bare minimum requirements for development. This may be achieved through collaboration between the approving authorities and the developers. The structures meeting the minimum building requirements can be approved to regularize the developments. Upgrading of the sewerage system is necessary to cope with the high affluent release from the area that had not been planned for.

The approving authorities are also facing several challenges in the execution of their duties. Some of these challenges included inadequate human capital to supervise and oversee the development in the area. The city has expanded so fast that even it is difficult for the approving officers to keep pace. These have given developers with sufficient capital to put up structures very first before even being noticed. To help decongest the traffic jams in the area, the study recommends that the feeder roads and Jogoo Road linking the estate to town be expanded. This will help save man hours wasted in the traffic jams.

6.3 Conclusions

Throughout this study, the underlying theme has been to understand the implications of uncontrolled development on the living standards of residents of Tena Residential Estate. The findings of this study led to discussions on how uncontrolled development affects the living standards of residents of estates like Tena. It has been demonstrated through this study that uncontrolled developments provide a great challenge to urban residents. The causes of uncontrolled development are many and wide. They range from rural urban migration, unemployment, high population growth rate, inadequate supervision and monitoring from the concerned authorities. It has also been noted that the role of local authorities and other approving authorities in physical planning and enforcement of the law for the public good has declined due to lack of strong institutional and legal mechanism. The following general recommendations were drawn to enable reduce the effects of uncontrolled developments on the residents' living standards: uncontrolled developments in the Estate be investigated to ascertain their suitability for human habitat. For those meeting the minimum requirements for building construction be regularized through following the normal approval procedures. However, for developments not meeting the recommended minimum requirements, they should be demolished to safeguard human life and dignity.

To help ease the challenges of rural urban migration, the government should consider decentralization and fair distribution of resources all over the nation. This may involve encouraging industries to set up factories in rural areas to help curb the problem of rural urban migration. The government can attain this through offering tax incentives and the necessary

infrastructure for the investors willing to take up these challenges. To help curb the challenges faced by the approving authorities, the governments through its relevant Ministries need to hire competent and adequate human resources to oversee the developments within urban areas. In addition, these human capital need to be provided with adequate working tools to enable them deliver quality supervision.

6.4 Recommendations

This section outlines the recommendations for effective development control among the approving authorities at various levels.

6.4.1 Policy level

The approving authorities need to carry out regular reviews of physical development plans and development control policies. The Ministry of Lands in conjunction with other stakeholders should prepare a National Physical Development plan to guide developments at a national level and provide framework for the preparation of local physical development plans. The approving authorities need to strengthen enforcement mechanism so as to create strict enforcement mechanisms that ensure compliance with the physical development statutes. The enforcements need to be applied without favors to ensure that decent human living conditions are maintained and the buildings are safe for human habitation

6.4.2 Legal framework

Review and consolidate existing statutes in order to strengthen good governance of development control. Harmonize and coordinate the institutions and related agencies that deal with development control process and management. By doing this, the authorities involved in the process of development control and management will build synergy and allow for timely notification of any plans to develop an approved development. The early detection and stopping of the unapproved developments will discourage developers from starting the construction process without due approval process. There should also be increase public awareness of development control procedures among Kenyan citizens. It is important the citizens are educated on development control regulations to engrain and deepen their understanding on the facilitative

other than punitive nature of development control which may involve demolishing the already developed structures. Citizens should also be educated on the dangers of involving incompetent people in development control.

The Government through its relevant regulatory bodies should create a framework for the promotion of public private partnerships especially in the enforcement of the zoning regulations. This may be achieved through residential communities wanting their neighborhoods to evolve thus easily identify what bottlenecks and requirements need to be addressed, and also what they can contribute to the process to make sure that their living standards are bettered and improved.

The government should also involve all stakeholders in developing development control procedures: Public participation should form a key plank of encouraging compliance. By doing this, the government will be able to reduce possible resistance hence reduce the rate of uncontrolled development. The Local Authority together with other approving authorities should act within the development control regulations and laws without influence from other quarters when approving and supervising development projects. Politics was identified as one of the major factors promoting uncontrolled development in Tena Residential Estate. In order to avert such problems in future, the officers should be allowed to conduct their business without influence from politicians.

The Land Control Act, the Government Land Act and the Local Government Act should be harmonized to create a clear development control system. Land tenure systems between the urban and the rural areas should be harmonized in order to curtail the freedom of the developer especially on freehold land to undertake irregular developments. Strengthen the role of technical officers and consultants in the development control process

6.5 Areas for Further Studies

The study recommends that further research should be conducted on all the residential estate in Nairobi to establish the level of their observation and following of the given areas' development plan from the master plan to ensure that the envisaged living conditions are adhered to. The

study recommends that further research be undertaken on the role of different stakeholders in promoting health and planned development within Nairobi city.

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APPENDIX I: COVER LETTER

NJANI JASSAN NDEGWA

University of Nairobi,

P.O BOX 30197,

Nairobi.

January 2012

Dear Sir/Madam,

RE: DATA COLLECTION

I am a postgraduate student at University of Nairobi undertaking a master's degree in Urban Planning. One of my academic outputs before graduating was proposal and for this I have chosen the research topic: PLANNING IMPLICATIONS OF UNCONTROLLED URBAN DEVELOPMENT: CASE STUDY OF TENA RESIDENTIAL ESTATE, NAIROBI. You have been selected to form part of the study. This is to kindly request you to assist me collect the data by responding to the interview guide. The information you provide will be used strictly for academic purposes and will be treated with utmost confidence.

A copy of the final report will be available to you upon request. Your assistance will be highly appreciated.

Yours sincerely,

NJANI JASSAN NDEGWA

APPENDIX II: QUESTIONNAIRE FOR DEVELOPERS

University Of Nairobi

School of the Built Environment

Department of Urban and Regional Planning

I am a postgraduate student at University of Nairobi undertaking a Master's Degree in Urban Planning. I am now undertaking my research project titles: *Planning Implications of Uncontrolled Urban Development on Living Conditions: Case Study of Tena Estate, Nairobi*. The responses you provide will be treated with a lot of confidentiality and will only be used for academic purposes and not for any other purpose. Kindly spare some of your time to answer the following questions.

Section A: Background information

1. What is your age bracket?

20-30 years () 31-40 years ()

41-50 years () Above 50 years ()

2. How long have you lived in Tena Estate?

Less than 1 year () Between 1-5 years ()

Between 6-10 years () Between 11-20 years ()

Above 21 years ()

3. What type of building have you constructed on your plot?

Single dwelling () Multi-dwelling () Commercial ()

Others _____

4 (a) When did you construct your house? _____

(b) Did you engage the services of a professional in the built environment, for instance a planner, Architect etc.? _____

5. Did you submit your development application to the approving authority?_____

6

(a) Was your development approved and given a go ahead? Yes () No ()

(b) Were there any conditions that you were to meet in developing your plot?

Yes () No ()

If yes, what were the conditions_____?

(c) Did you adhere to the conditions? Yes () No ()

If no, why?_____

Section B: Causes of Uncontrolled Developments

7) Tena estate is supposed to have only one dwelling house per plot. Is it the case in your opinion? Yes () No ()

If not, what would be the reason?_____

8) To what extent do you agree with the following statements that the following are causes of uncontrolled developments in Tena estate? Key: (3: Agree, 2: Disagree, 1: Not sure)

Causes of Uncontrolled Development	1	2	3
Absence of a policy to guide urban development			
High population growth rate in the cities			
High rural urban migration			
Corruption in government institutions			
Inadequate monitoring and enforcement from the relevant Authorities			
High cost of land in Tena Estate			
Bureaucracy in the approval process of building plans			

9) What is your opinion on development of single dwellings per plot?

i. _____

ii. _____

iii. _____

Section C: Effects of uncontrolled developments

10) What are the effects of having more than one dwelling house per plot in Tena Estate?

11) What are the effects of having houses that do not observe 6m building lines?

12) What are the consequences of having other uses in the estate other than single dwelling? _____

Section D: Roles of the approving Authorities on developments that do not meet the required standards

13) Are approving authorities responsible for controlling development doing their work efficiently in Tena Estate?

Yes () No ()

14) How often do you witness the approving authority inspecting buildings during construction?

Regularly () irregularly () Not at all ()

APPENDIX III: QUESTIONNAIRE FOR ARCHITECTS

University Of Nairobi

School of the Built Environment

Department of Urban and Regional Planning

Dear Respondent,

Date _____/2013

I am a postgraduate student at University of Nairobi undertaking a Master's Degree in Urban Planning. I am now undertaking my research project titles: *Planning Implications of Uncontrolled Urban Development on Living Conditions: Case Study of Tena Estate, Nairobi*. The responses you provide will be treated with a lot of confidentiality and will only be used for academic purposes and not for any other purpose. Kindly spare some of your time to answer the following questions.

Section A: Background information

1. What is your age bracket?

20-30 years () 31-40 years ()
41-50 years () Above 50 years ()

2. How long have you been an architect?

Less than 5 years () Between 5-10 years ()
Between 10-15 years () Between 15-20 years ()
Above 20 years ()

3. What is your highest academic level?

Primary certificate () Secondary certificate ()
College diploma () University Graduate ()
Post graduate () Other (specify) _____

Section B: Causes of Uncontrolled Developments

4. (a) Is the entire development within Tena Estate controlled?

Yes () No ()

(b) If not, what contributes to the uncontrolled development?

5. Have you ever been involved in any development within Tena Estate? What was the nature of involvement?

6. Tena Estate is zoned for single dwelling developments. If you have ever had a development in the estate, did it follow the zoning regulations?

7. To what extent do you agree with the following statement on causes of Uncontrolled Development? Key:(1: Agree 2: Disagree, 3: Not sure)

Causes of Uncontrolled Development	1	2	3
Absence of a policy to guide urban development			
High population growth rate in the cities			
High rural urban migration			
Corruption in government institutions			
Inadequate monitoring and enforcement from the relevant Authorities			
High cost of land in Tena Estate			
Bureaucracy in the approval process of building plans			

8. How do you handle the cases of clients who may engage you to provide your services in projects to be implemented in an uncontrolled development manner?

9. a) Does uncontrolled development have any economic, social and environment effects on Tena estate community? Yes () No ()

b) If yes, what are these effects?

i) Economic Effects

ii) Social Effects

iii) Environmental Effects

Section C: Approving Authority's Role in Controlling Development in Tena Estate

10. Are the approving authorities effective in the controlling development in Tena Estate?

Yes ()

No ()

11. To what extent do you agree with the following statement on role of the approving authority in Controlling Development in Tena Estate?

Key: (1: Agree, 2: Disagree, 3: Not sure)

Roles of Approving Authorities	1	2	3
The City Council of Nairobi has the regulations to prevent uncontrolled developments in Tena estate.			
City Council of Nairobi Planning Department is doing its best to prevent uncontrolled development in Tena estate.			
NEMA is doing its job diligently in controlling development in Tena estate.			
Inadequate technical staffs in City Council of Nairobi Planning Department contribute towards uncontrolled development in Tena Estate.			

APPENDIX IV: QUESTIONNAIRE FOR THE APPROVING AUTHORITIES

University Of Nairobi

School of the Built Environment

Department of Urban and Regional Planning

Dear Respondent,

Date _____/2013

I am a postgraduate student at University of Nairobi undertaking a Master's of Arts Degree in Urban and Regional Planning. I am currently undertaking my research project titled: *Planning Implications of Uncontrolled Urban Development on Living Conditions: Case Study of Tena Estate, Nairobi*. The responses you provide will be treated with a lot of confidentiality and will only be used for academic purposes and not for any other purpose. Kindly spare some of your time to answer the following questions.

Section A: Background Information

1. Name of the Institution _____
2. How long have you worked with this institution?
Less than 1 year () Between 1-5 years ()
Between 6-10 years () Between 11-20 years ()
Over 20 years ()
3. What is your highest academic level?
Primary certificate [] Secondary certificate []
College diploma [] University Graduate []
Post graduate [] Other. *Specify*

Section B: Causes of Uncontrolled Developments

4. Is the entire development within Tena estate controlled?
Yes () No ()

5. Which planning standards does a developer need to adhere to, in order to be allowed to develop in Tena Estate?

.....

.....

.....

6. What proportion of buildings within Tena Estate meets the required standards?

Less than 20% () 21-40% ()
 41-60% () 61-80% ()
 Over 81% ()

7. To what extent do you agree with the following statement on causes of Uncontrolled Development? (1: Agree, 2: Disagree, 3: Not certain)

	Cause Uncontrolled Development	1	2	3
i	Absence of policy guidelines to urban development			
ii	High population growth rate in the cities			
iii	Bureaucracy on approval process			
iv	Corruption in the approving authorities			
v	High cost of land in Tena Estate			
vi	Inadequate monitoring and enforcement from the relevant Authorities			

8. The Department of City Planning has the responsibility of approving developments, monitoring and enforcement of building by-laws. Which challenges do you encounter in Tena Estate to execute the same?

9. What are the effects of uncontrolled developments in Tena Estate?

10. If there is uncontrolled development, what regulations and policy measures should you enforce in order to effectively control further development in Tena Estate?

11. What do you think can be done to the already existing uncontrolled developments?

APPENDIX VI: OBSERVATIONAL CHECKLIST

Study Title: Planning Implications of Uncontrolled Urban Development in Tena Residential Estate, Nairobi

Date:-----

Building/Plot no.:-----

Please check for the following in the sampled buildings and tick appropriately

1. Type of building: 1. Single-dwelling 2. Flats 5. Other. Specify-----
2. Has the development complied with the minimum building line requirement (six metres from the building to the beacon along the road)? 1. Yes 2. No
3. Has the building observed the requirement for a clearance of 2.4 metres from the bedroom window? 1. Yes 2. No
4. If a flat,
 - a) How many floors does it have? ----- floors
 - b) If more than five floors, is it fitted with an escalator? 1. Yes 2. No
 - c) Has it complied with the rule of one and a half parking per flat? 1. Yes 2. No