

**ANALYSIS OF DEVELOPMENT CONTROL REGULATIONS'
COMPLIANCE IN KITENGELA TOWN, KAJIADO COUNTY,
KENYA**

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DECLARATION

This Planning Research Project is my original work and has not been presented for a degree in any other university.

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DEDICATION

I would like to dedicate this report to my parents Mr. and Mrs. Bernard Wathome, my son Baxton Baraka and wife Winfred Sammy for their unconditional love, support and encouragement throughout the course of this work.

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ABSTRACT

Urbanization is taking place in all parts of the world. In developing countries like Kenya, urban development has been taking place in a haphazard way especially in Nairobi's satellite towns such as Kitengela. This has been attributed to violation of development control regulations. Several development control tools which provide the set development control regulations have been provided to guide and control development in these urban areas. However, the violation of these development control regulations has persisted resulting to unhealthy environment, lack of aesthetics, inadequacy of provisions of public utilities and open spaces. The study sought to identify and document previous and current development control tools used to guide and control physical development in Kitengela Town, investigate the level of compliance with development control regulations in Kitengela Town, assess the factors affecting compliance, establish the effects of the development control tools compliance level to the urban spatial structure and propose possible intervention measures for the effective development control regulations compliance. The study used semi-structured questionnaires to interview 40 households and 24 developers and a checklist to collect data on 40 developments. It also used interview schedules to interview 4 key informant. The collected data was analyzed using spatial analysis, descriptive analysis and basic computation using computer programs such as SPSS and Excel in analyzing the data. The study found out that; Currently, Kitengela Zoning Plan (2012) is the main development control tool for Kitengela Town, the average development control regulations' compliance level is at 59.5% and the main factors contributing to development control regulations' non-compliance are; high statutory and professional fees (at 25%), corruption (at 22.5%), aspiration of developers to maximise returns from their land (at 17.5%), ignorance (at 10%) and low levels of public awareness (at 7.5%). The study has established that there is moderate negative relationship between building line size and plot coverage and the main effects of development control regulations' non-compliance include; environmental degradation, vulnerability to loss of lives and property, congestion, inadequacy of public purpose spaces, loss of desirable neighbourhood character and inadequacy of parking spaces. The study concludes that the main driver of development control regulations' compliance is the effectiveness of the development proposal evaluation process, development supervision and inspection. The study therefore recommends introduction of a computerized development

application system and adoption of one stop shop concept such as e-construction permit management system which has been a success in Kigali-Rwanda, establishment of an e-consultation portal for development control, devolution of development control institutions to the sub-county level, enforcement of development control through criminal offence, establishment of an independent development control oversight institution, zone based statutory fee and gazettelement and listing of registered and licensed development professionals.

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ABBREVIATIONS AND ACRONYMS

AAK	Architectural Association of Kenya
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
GIS	Geographical Information System
GOI	Government of Ireland
GOK	Government of Kenya
KNBS	Kenya National Bureau of Statistics
NEMA	National Environment Management Authority
NLC	National Land Commission
OECD	Organization for Economic Co-operation and Development
PDP	Part Development Plan
PPP	Public-Private Partnership
SDGs	Sustainable Development Goals
SHHP	Self Help Housing Program
SPSS	Statistical Package for Social Science
TISA	The Institute for Social Accountability
UN	United Nations
UNCHS	United Nations Commission on Human Settlements
UNPD	United Nations Development Programme
USAID	United States Agency for International Development
WCED	World Commission on Environment and Development

CHAPTER ONE: INTRODUCTION

1.1 Introduction

For any system to work as expected there is always the need for control and balance which is a form of regulation for necessary operation (Obabori, Obiwevbi and Olomu, 2007). In the built environment, development control regulations provides for these controls and balance. The development control regulations (development guidelines and specifications) are provided by the various development control tools ranging from development plans to development legislations (GOI, 2007). These development control tools are intended to provide the strategic framework and policy context for all local planning decisions (GOI, 2007). The rationale for introduction of development control on both public and private development is to achieve objectives of safety and better health in order to create an improved environment for the benefit of the community (Dissanayake, 1987).

Different countries have employed different typologies of planning instruments and approaches in concerted efforts to address some of the shortcomings experienced in the development process. The instruments have been derived from different sectoral experiences in both the developed countries and developing countries (Akatch, 1995). In Africa, some of the most commonly used planning approaches include, Master planning which despite its static nature has been used by a number of countries; Action planning and structure planning approach as used in a few countries like Kenya, Uganda and Botswana; Strategic planning is used in South Africa and Egyptians new towns with Hybrid variations of land use regulations for urban development control and management (Akatch, 1995).

Kenya has had different legislations that have guided physical development since 1915 such as Town Planning Ordinance Cap of 1931, Land Planning Act Cap 303 and the Physical Planning Act of 1996. The Town Planning Ordinance Cap 134 of 1931 (now repealed) provided for the use, control and development of Government Land in Kenya, The Land Planning Act Cap 303 was enacted to address land use in the areas within 3 miles of municipality and township boundaries and areas within 400 feet from the centre of trunk roads while the Physical Planning Act extended planning to all areas of the country. Today, urban planning in Kenya is under two institutions; the Ministry of Lands, Housing and Urban Development and the County governments. The two

institutions are mainly guided by the Physical Planning Act Cap 286 (under review), Urban Areas and Cities Act (2011), County Government Act (2012) and National Land Commission Act (2012). There are other numerous laws that guide physical planning and are mostly related to land. These laws are set to ensure sustainable development in the country and especially in urban areas where the rate of development is very high due to high rate of urban population growth due to rural urban migration and natural population growth. This increase in urban population has not been adequately planned for. Hardly 30 percent of the urban centres are planned and even where plans are available they are rarely enforced (Kimani and Musungu, 2010). The legal structures under which development control is enforced has been identified to be either too weak or inappropriate in addressing the myriad of problems of physical development (Ahmed and Dinye, 2011). The growth in unplanned settlements in the urban areas, urban sprawl, congestion and property development in excess of the carrying capacity of available infrastructure are the most obvious evidence of failure to plan urban development and enforce the designated laws and standards. Physical development planning in Kenya has not been a prerequisite of any building construction. This has led to location of developments in areas that are poorly served with infrastructural services and with incompatible and conflicting developments.

The study therefore seeks to analyses development control regulations' compliance in Kitengela Town being one of the largest satellite towns of Nairobi city with a population size of 58,167 and an area of 89.19km² (KNBS, 2009). The study highlights the level of development control regulations' compliance by assessing one of the oldest residential zone of Kitengela Town (Kia Ng'ombe 'B' Zone) as well as the different development control tools that have been used to guide and control physical development in the town over the years, the level of compliance to these development control regulations, the factors affecting the compliance level, the effects of the compliance level and the possible intervention measures for the effective development control regulations compliance.

1.2 Statement of the Problem

Urbanisation is taking place in all parts of the world. The world urban population has been growing significantly from 2% in the year 1800 to about 50% currently (UN-Habitat 2011). In the less developed countries, the urban population is expected to grow from 1.9 billion in 2000 to 3.9 billion in 2030 (UNPD, 2008). Growth rate is expected to be more rapid in urban areas in less developed countries/regions averaging 2.3% per annum with doubling time of 30 years. The urban population in Africa is expected to double by 2025 with African cities becoming home to over 40,000 people every day (Hall and Pfeifer, 2000:3).

Like most African countries, Kenya has been urbanizing rapidly. Of the projected top 20 fastest growing cities in the world from 2010 to 2025, Mombasa and Nairobi are among them with Mombasa being expected to grow at 79 percent and Nairobi at 77.3 percent (State of East Africa Report, 2012). While an estimated 20.4 percent of Kenya's population lived in urban areas by the year 2000, the proportion is estimated to reach 60 percent by the year 2030 (Kenya Vision 2030). 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, natural population growth and arbitrary urban boundary extensions (Owuor, 2011).

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 planning standards and regulations (AAK, 2011). 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 (Kenya, 2007). In order to deal with the strain of urban population booms some of these cities are turning to satellite cities and towns as part of their solution. Without proper planning, there is likely of emergence of unplanned urban sprawl. This has created a need for new towns to be developed within the peripheries. This has been the case with Nairobi City where satellite towns such as Ongata Rongai, Kiserian, Ngong, Athi River, Ruiru and Kitengela have emerged and grown significantly as a way of accommodating the swelling number of urban dwellers in Nairobi city. Their emergence and rapid growth

has been attributed to their proximity to the city and availability of land. This is due to the fact that rapid urban growth means an increasing demand for urban land, particularly for housing, but also for various other urban uses. This increase in demand for land affects land use in the peri-urban areas where most of the satellite towns are located (Aguilar, 2008; Aguilar and Ward, 2003; Tacoli, 1999 and 1998). As the city expands, the rural-urban fringe experiences its direct impact with those living there facing new challenges and opportunities in meeting their life needs and accommodating the by-products of land use changes. Although urbanisation of these fringe areas provides opportunities for employment, better housing, education, knowledge and technology transfer and ready markets for the agricultural products, increase in population places enormous stress on natural resources and existing social services and infrastructure (Rees, 1992; Rees and Wackernagel, 1994).

Serving mainly as dormitory towns, these satellite towns are characterised by strip and nodal physical development with haphazard developments coming along major roads and then spreading to the interior (Kazungu, Gichuru & Gitau, 2011). This has resulted in high densities, overcrowded housing, insanitary conditions, diminishing open spaces and haphazard peripheral development. The transformation of these towns from rural to urban has been taking place under the watch of the local authorities from the local governments in the name of town and county councils to the current county governments. These local authorities have used different development control tools to control and guide physical developments some of which have been considered to be inadequate, inappropriate or poorly enforced resulting to uncoordinated physical development and its resultant effects. In addition, majority of these satellite towns lack local physical development plans with the few that have them having been prepared in the recent past. This has resulted to a firefighting approach to development control as development precedes planning especially in the old zones of these towns.

A significant volume of research literature on impacts of urbanization on land use planning, livelihood and environment in the Nairobi rural-urban fringe and agglomeration and dispersion is reported in Thuo (2013), Friedmann's (1987: 38), Krugman and Venables (1990), Rosenthal and Strange (2010). However, limited work has been done in understanding the development control regulations' compliance in Nairobi's satellite towns especially in the old zones of these towns since the level of compliance to planning standards (development control regulations) vary from zone to

zone and development to development due to difference in socio-economic characteristics among people as noted by Habitat International, 2009. With the increasing rate of land subdivision of grazing land (as noted by Nkedianye, 2004) and subsequent physical development in Kitengela town especially in the old residential zones, the development control tools used to guide and control physical development in the town since its emergency, level of adherence to these development control tools within Kia Ng'ombe 'B' Zone and the factors explaining the compliance level and the resultant effects of the adherence level are questioned.

1.3 Research Questions

The study set out to answer the following questions:

1. What are the previous and current development control tools used to guide and control physical development in Kitengela Town?
2. What is the level of compliance with development control regulations in Kitengela Town?
3. What are the factors affecting compliance with development control regulations in Kitengela Town?
4. What are the effects of the level of compliance to development control regulations to the urban spatial structure in the study area?
5. What are the possible intervention measures for the effective compliance with development control regulations in Kitengela Town?

1.4 Research Objectives

The specific objectives of the study are as follows:

1. To identify and document the previous and current development control tools used to guide and control physical development in Kitengela Town.
2. To investigate the development control regulations compliance levels in Kitengela Town.
3. To assess the factors affecting development control regulations compliance in Kitengela Town.
4. To establish the effects of the development control regulations compliance level to the urban spatial structure of Kitengela Town.
5. To propose possible intervention measures for the effective development control regulations compliance in Kitengela Town.

1.5 Research Hypothesis

The research hypothesis for this study is as follows;

H_a: The correlation between building line size and level of plot coverage will be significantly different from zero.

Thus, the Null Hypothesis will be as follows;

H₀: The correlation between level of building line and level of plot coverage will not be significantly different from zero.

The two variables for which the magnitude of relationship will be assessed are building line size and plot coverage (building line size being the independent variable and plot coverage the dependent variable). The statistical technique to be used to test the hypothesis will be correlation (Pearson correlation coefficient) since the variables are perceived to be linearly related and are at ratio level of measurement.

1.6 Geographical and Contextual Scope

The study is geographically limited to Kia Ngombe 'B' Zone in Kitengela Town which is one of the seventeen zones in the town. This research is part study on the dynamics of development control which is broad. Therefore the research is limited to the development control tools used to guide and control physical development in Kitengela Town, the development control regulations compliance within Kia Ngombe 'B' zone, the factors affecting development control regulations compliance level, the effects of the development control regulations compliance level to the urban spatial structure and possible intervention measures for the effective development control regulations compliance in Kitengela Town. Under the development control tools, the study will examine the various development control tools informing physical development in Kitengela Town since the emergence of the town as well as assess the level of development control regulations compliance in Kia Ngombe 'B' Zone-the study area. The study will also look at the socio-economic factors affecting the development control regulations compliance level and the resultant effects of the compliance level to the urban spatial structure of the study area. In addition, the study will examine the previous efforts, on-going programmes and proposed programmes on improving the development control regulations compliance in the town. This will be accompanied by alternative planning interventions that can be adopted for the effective development control regulations compliance of the Kia Ngombe 'B' Zone and the entire Kitengela

town as a whole as the zone may not be examined in isolation from the other zones forming the town.

1.7 Justification

Analysis of development control regulations' compliance plays a great role in the provision of a better understanding of the effectiveness of existing development control instruments in achieving sustainable urban development, capacity of planning departments in development control and the main factors hampering the effectiveness of development control. It also facilitates the formulation of policy proposals which can be adopted to ensure orderly physical development, optimal land use, proper execution and implementation of approved physical development plans and protection and conservation of the environment as noted by AAK (2011). In addition, the study therefore will have benefitted the academia with relevant information that is crucial in beefing knowledge bank in so far as development control issues are concerned.

Therefore, for effective management of urban areas, development control regulations' compliance analysis is key for all towns and cities and especially for towns experiencing rapid urbanization due to the rapid rate of land use and land use intensity changes. Kitengela Town (a satellite town of Nairobi City within the wider Nairobi Metropolitan region) is one such town undergoing rapid spatial transformations transforming from a group ranch (in 1988) to the current robust urban centre. The town which is only 30 kilometers south of Nairobi city begun as a group ranch (Kitengela group ranch) made up of 18,292 hectares and 214 registered members which was subdivided in 1988 in efforts by the Government to encourage private land ownership in pastoral systems with the aim of intensifying and commercializing livestock production. After subdivision of the group ranch, land fragmentation and sales have continued at a steady and escalating pace. The land fragmentation has been accelerated by the high rate of in-migration from Nairobi City due to availability of affordable land, its proximity to Nairobi and its strategic location along an international road (Nairobi-Arusha road). The human population within the Kitengela area has more than doubled in the last 10 years from 6,548 in 1989 to 17,347 in 1999 to 58,167 in 2009.

Kitengela once had its little economy pegged on livestock slaughter houses. Wildlife roamed the land and only a few non-Maasai dared to settle here. Today, it is unrecognizable from its humble beginning. Long gone are the slaughter houses replaced

with supermarkets, high rise buildings and residential apartments, small scale residential estates, bustling businesses, hospitals, universities and high cost private schools.



Plate 1-1: A Commercial Development in Kitengela Town

Source: Fieldwork, 2016

In order to accommodate the rapid growth of Kitengela town, a zoning plan for the town was prepared in the year 2012 to act as the main development control instrument/tool for the town. The zoning plan provided various planning standards for all the zones within the town to guide and control development as a way of ensuring sustainable development by realization of self-sustaining and controlled future spatial development.

The level of compliance to the zoning plan has been wanting in some parts of the town such as Kia Ngombe ‘B’ zone which is one of the oldest zones in Kitengela town having majority of its developments having been developed way before the preparation of the town’s zoning plan in 2012. The zone has a mix of both permanent and semi-permanent structures as well as mini-zones of low density, medium density and high density residential developments despite being currently zoned as a high density residential zone.



Plate 1-2: Mixed Density Residential Developments within Kia Ng'ombe 'B' Zone

Source: Fieldwork, 2016

This has resulted to undesirable development intensity and pattern and hence the author's interest in the area of study. In addition, there is an identifiable information gap in understanding the development control regulations compliance in Nairobi's satellite towns. The study aims at formulation of possible intervention measures for sustainable physical development of Kia Ng'ombe 'B' Zone and Kitengela town in general.

1.8 Assumptions

The study has several assumptions which include;

1. Compliance with development control regulations is a means to sustainable development in urban areas
2. The sample data from the study can be used to generalize or estimate the development control regulations' compliance level for the whole town and other satellite towns like Kitengela
3. The recommendations (intervention measures) from the study can be adopted to solve similar problems in other parts/zones of the town as well as other towns facing similar problems

1.9 Definition of Terms

Development Control: The draft Physical Planning Handbook of 2008 defines development control as ‘a process of ensuring development applications comply with policy guidelines, planning regulations, standards, approved physical development plans, Local Authority by-laws as well as other relevant statutes’. This also involves enforcing compliance with these requirements in implementing the approved development proposals to ensure sustainable development.

Development: The Physical Planning Act Cap 286 (under review) defines development as ‘the making of any material change in the use or density of any building or land or subdivision of any land’. This study considers the definition of development to include the works that the Local Authority grants approval for as per Section 33 of the Physical Planning Act.

Planning Standards: Planning standards are development guidelines and regulations provided by various development control tools to guide and control development in a given area

Urbanization: This is defined as a process of increasing concentration of a country’s national population into towns and cities. The process includes the multiplication of points of concentration and increase in size of individual concentration (Draft Land Policy-Kenya, 2007).

Satellite Towns: Satellite towns are smaller municipalities that are adjacent to a major city which is the core of a metropolitan area. They differ from mere suburbs, subdivisions and especially bedroom communities in that they have municipal governments distinct from that of the core metropolis and employment bases sufficient to support their residential

populations (Ministry of Nairobi Metropolitan Development, 2009)

Advisory/Zoning Plan: It is a plan indicating permitted subdivision and use of land specified in such plan (draft Physical Planning Handbook of 2008). AAK 2011 defines advisory/zoning plan as a plan indicating permitted subdivision and use of land specified in such plan.

Urban Area: Means an area designated as such under the Urban Areas and Cities Act as contemplated in Article 184 of the Constitution;

Physical Planning: The Draft Physical Planning Bill 2015 defines physical planning as urban or regional planning, spatial planning, town and county planning, or land planning;

Sustainable Development: It can be defined as Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). Sustainable Development expands and enhances the quality of human life without debasing the ecological capital.

Land use planning: The draft Physical Planning Handbook of 2008 defines land use planning as deciding in advance what to do, where, when, with what, how, on or under the land. It is a thought process that guides land use activities on space. This process has to be guided by a set of rules, regulations and standards.

Intervention Measures: These refer to deliberate actions taken to improve a situation (Oxford Dictionary)

Sustainable Development: It can be defined as Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). Sustainable Development expands and enhances the quality of human life without debasing the ecological capital.

Compliance: OECD, 2000 defines compliance/adherence as obedience by a target population with regulatory rules/standards or with government policy objectives.

Urban Spatial Structure: Organization of buildings, bridges, roads and any other components of the city in such a manner that is seen as effective and can foster further growth and development of the community (Knox and Marston, 2007)

Building Line A line usually set with respect to the frontage of a plot of land which is fixed by statute, deed or contract and beyond which the owner of the land may not build (Dictionary of Construction)

Plot Coverage The portion of horizontal area of the site of the building permitted to be built (Physical Planning Handbook, 2008)

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter entails the systematic identification and analysis of documents containing information related to; development control tools, factors affecting development control regulations' compliance, effects of development control regulations non-compliance level to the urban spatial structure, possible intervention measures for the effective development control regulations compliance based on lessons learnt from best practice case studies, development control related legal, policy and institutional framework and conceptual framework .

2.2 Development Control

Reade (1987), defines development control as the power to decide whether or not specific development takes place on specific sites to control the intensity of development that is permitted and to control its layout and design. Its power lies not in the power to grant or to refuse permission, but rather in the power of the professional planners to persuade the applicants to modify their proposal, even before they submit them for approval. Groves (2000) conceives development control as the executive arm of the planning process being the means whereby policies are implemented, specific land use proposals brought to fruition and unlawful development prevented. It enables a local authority to protect residential areas from inappropriate intrusions, reserve land for new industries, maintain a green belt, keep valuable buildings and trees and prevent ugly signs.

Development Control is also defined as the process of managing or regulating the carrying out of any works on land or making of any material change in the use of any structures and ensuring compliance with the physical development plans (Physical Planning Act, 1996).

The development control function seeks to manage and regulate property development to ensure that all development takes place at an appropriate time and place and in such a manner that it conforms to a pre-determined set of policies or standards. Ahmed and Dinye (2011), notes that development control can be either pre-development, during development or at post -development stage of a project which is sited in an unapproved location. It is a highly sensitive exercise which must be done with precaution, precision, firmness and with deep sense of responsibility by the authority concerned. Fairness, justice and equity should be the watchwords in development control programmes. If

done properly and in a humane manner, it will be widely accepted. However, when it is haphazardly done with bias and favoritism in the society, it could be explosive and may lead to violent reactions from affected members of the community concerned.

2.2.1 Objectives of Development Control

According to Ahmed and Dinye (2011), development control facilitates appropriate development, recognizing its significance in building and protecting a healthy economy and a sustainable environment. It also examines the potential impact of the proposed development, protects the public interest from inappropriate development and also involves compliance of all procedures, building codes, standards to ensure that physical plans conform to the approved plans. The Draft Physical Planning Bill 2015 states that the main purpose of development control is ‘to ensure the orderly and rational development of land to create sustainable human settlements that accommodate a variety of land uses to meet the needs of the people who live in these settlements’. In this regard, there are five main objectives of development control which include:

- i. To ensure orderly physical development;
- ii. To ensure optimal land use;
- iii. To ensure proper execution and implementation of approved physical development plans;
- iv. To protect and conserve the environment and;
- v. To promote public participation in physical development decision-making.

The legitimacy of urban development control is derived from the police power which is exercised by the government (Opata, Mulongo, Omuterema, Ngetich, 2013). The Draft Physical Planning Bill 2015 and the Urban Areas and Cities Act 2011 provides for each planning authority in the area under the planning authority’s jurisdiction to:

- i. Control or prohibit the use or development of land or buildings for the proper and orderly development of the area;
- ii. Control or prohibit the sub-division of land or existing parcels of property;
- iii. Consider and approve all development applications;
- iv. Protect, preserve public land reserved for open spaces, parks, urban forests and green belts;
- v. Ensure compliance with the provisions of Draft Physical Planning Bill 2015 and the Urban Areas and Cities Act 2011 or any other relevant written law.

2.2.2 Development Control Tools/Instruments

Ngetich, Opata and Mulongo (2014) identified two types of development control tools/instruments; statutory and non-statutory instruments. The statutory instruments entail the legislations and policies which provide for the preparation of development plans and the planning and development regulations and standards which inform development control process. They include the Constitution of Kenya 2010, Physical Planning Act 1996, County Government Act 2012, Urban Areas and Cities Act 2011, National Land Commission Act 2012, Public Health Act Cap 242 and the EMCA of 1999, Sessional paper No.6 of 1999 on Environment and Development, Draft National Urban Development Policy, Environment and Natural resource policy, National Housing Policy and Draft National Land Policy (2006). The non-statutory instruments include Local Authorities Planning and building Regulations, gazetted rules and regulations (Physical Planning Handbook), circulars from Ministries, Departments and resolutions of County committee meetings as well as political decisions.

According to AAK (2015), the main tools or instruments of development for orderly and sustainable development include: Regional Physical Development Plans, Local Physical Development Plans, Part Development Plans, Zoning Plans and ordinances and Local Authorities Planning and building Regulations (The Building Codes). Of special importance is the Local Government (Adoptive By-Laws) (Building) Order 1968 due to its use as the main development control tool in towns and other urban areas lacking development plans. It comprehensively addresses among others matters revolving around comfort, aesthetics, safety, public health, lifespan and performance of the built environment and their inhabitants (Nduthu, 2010). The code clearly outlines the process of application for development permission and mandatory inspections. These development control tools/instruments provide the development guidelines and regulations (development control regulations) which provide a framework for development control process.

2.2.3 Development Control Regulations

Development control regulations are provided at plot and neighbourhood/zone levels. At plot level, development control regulations are provided in terms of plot settings, permitted structure types, permitted uses, permissible development with conditions and prohibited developments (Rongai Zoning Plan, 2013). At neighbourhood level, development control regulations are provided in terms of roads hierarchy (widths and

length of roads, the number of plots the roads ought to serve and provision of dead ends and truncations), provision of public utility spaces and the percentage of land use allocation (Draft Physical Planning Handbook, 2008).

In regards to plot settings, the development control regulations provided are the permitted minimum plot sizes, permitted minimum access road width, permitted maximum plot coverage, permitted maximum building heights, permitted minimum building line, permitted minimum setbacks, parking space provisions specification and waste water disposal mechanisms. Under the permitted structure types, the typologies of developments are specified; single dwelling units, apartments/flats, row housing, health institutions, educational institutions, nature parks/trails, open spaces, assembly plants etc. The permitted structure type has to be in line with the permitted use. The permitted use varies between the ten main land uses which include; Residential, Commercial, Industrial, Recreational, Transportation, Public Purpose, Public Utilities, Educational, deferred (land bank) and urban agriculture (Draft Physical Planning Handbook, 2008). These land uses are further divided into sub-land uses such as: high, medium and low density for residential land use and heavy and light for industrial land use.

Under the permissible developments with conditions, the developments which are deemed compatible with the permitted land use are indicated with provision of the conditions such as change or extension of user, specification on plot settings such as landscaping and fence heights and specification on the intensity of the permissible land use such as specification on the scale of the use. In regards to prohibited developments, the type of developments deemed incompatible to the permitted land use are listed indicating that these developments cannot be permitted even with conditions attached since they seem to conflict with the permitted land use.

Table 2-1: Summary of Development Control Regulations

LEVEL	DEVELOPMENT CONTROL REGULATIONS	DETAILS	
Neighbourhood Level	1. Roads' Hierarchy	Specifications on: <ul style="list-style-type: none"> ○ Widths and Length of Roads ○ Number of Plots the Roads Ought to Serve ○ Provision of Dead Ends and Truncations 	
	2. Provision of Public Utility Spaces	Specification on: <ul style="list-style-type: none"> ○ Solid Waste Disposal ○ Wastewater Disposal 	
	3. Percentage of Land Use Allocation	Percentage of Land for: <ul style="list-style-type: none"> ○ Dwelling plots ○ Recreation ○ Community Facilities ○ Roads and Streets 	
Plot Level	1. Plot Settings	<ul style="list-style-type: none"> ○ Permitted Minimum Plot Sizes ○ Permitted Minimum Access Road Width ○ Permitted Maximum Plot Coverage ○ Permitted Maximum Building Heights ○ Permitted Minimum Building Line ○ Permitted Minimum Setbacks ○ Parking Space Provisions Specification ○ Waste Water Disposal Mechanisms 	
	2. Permitted Structure Types	Typologies of developments are specified; <ul style="list-style-type: none"> ○ Single Dwelling Units ○ Apartments/Flats ○ Row Housing ○ Health Institutions ○ Educational Institutions ○ Nature Parks/Trails ○ Open Spaces ○ Assembly Plants 	
	3. Permitted Uses	<ul style="list-style-type: none"> ○ Residential 	Density Specification:

		<ul style="list-style-type: none"> ○ Low Density ○ Medium Density ○ High Density
		<ul style="list-style-type: none"> ○ Industrial Intensity Specification: <ul style="list-style-type: none"> ○ Heavy ○ Medium ○ Light
		<ul style="list-style-type: none"> ○ Commercial ○ Recreational ○ Transportation ○ Public Purpose ○ Public Utilities ○ Educational ○ Deferred (Land Bank) Urban Agriculture
	4. Permissible Development with Conditions	Conditions such as: <ul style="list-style-type: none"> ○ Change or Extension of User ○ Specification on plot settings such as landscaping and fence heights ○ Specification on the intensity of the permissible land use such as specification on the scale of the use
	5. Prohibited Developments	List of developments types deemed incompatible to the permitted land use

Source: Author's Construct, 2016

2.2.4 Development Control Elements

The elements of urban development control include Part Development Plans, Land Subdivisions, Change of User, Extension of User, Extension of Lease and Building Plans. These elements of urban development are implemented leading to the way the towns spatially get organized (Opata, Mulongo, Omuterema, Ngetich, 2014).

Part development plans (PDP's) are plans which are prepared on the basis of an approved Physical Development plan. It indicates precise areas identified for immediate use and for alienation. It has been abused or used in the past to identify and allocate

plots reserved for public utilities, riparian reserves and other environmentally sensitive areas, for private use.

A subdivision plan is used to actualize proposal of LPDP and specifies zoning density of an area. It has been used as premise for decision making in a place where there is no master plans to guide layout development of a town.

Change of user, extension of user and extension of lease are interrelated elements of development control and they are used to monitor land use change in the urban setting. Change of user entails substituting the existing function of the plot for another different user while extension of user involves introducing another different user to share the same space in the plot. In the case of extension of lease, it means renewal of lease to reflect an extra term of ownership.

Building plans entails Architectural and Structural Drawings of developments. They indicate the design, size and typology of buildings as well as the structural settings of the buildings. They are used to monitor development density in an urban setting (Opata et al, 2014).

2.2.5 Development Control Process

The process of development control entail evaluation of applications for development permission, granting or refusing permission and inspecting developments (Opata, Mulongo, Omuterema & Ngetich, 2013). Currently, urban development control is under the armpit of the 47 County Governments in Kenya (Kenya, 2010). According to Opata, Mulongo, Omuterema and Ngetich (2013), there are two phases of development control; evaluation of development application and inspection.

In the first phase of development control process (evaluation of development application) under the County Government, the Sub-County Administrators receive the application forms (Form PPAI) from the applicants with sufficient copies for circulation to various institutions for comments. The type of development applications which are normally processed ranges from land subdivision or amalgamation, building plans, change of user and extension of user and extension of leases or renewals. Development permission is granted by the County Government upon receipt of favourable comments from the institutions to which the applications are circulated to. A decision by the County Government's Technical committee led by the Sub-County Administrator is made within a period of one month and that decisions can either fall within four

categories notably: Unconditional permission or approval, Conditional approval, Refusal of permission and Refusal to take a decision or deferment. The approvals or refusal or deferment is done in the prescribed form PPA2. If planning permission is refused or the applicant is aggrieved by any conditions imposed or the County Government refuses to make a decision within one month, the applicant may appeal to the District/Municipal planning Liaison Committee, the National Physical planning Liaison committee or the High Court. The Physical planning liaison committees are quasi-judicial bodies that meet and determine complaints lodged arising from planning decisions.

The second phase of development control process (inspection) kicks in after the evaluation of development application is completed and approvals are issued. In this phase building inspectors from the enforcement directorate periodically visit the project sites to inspect and complete the development/building card to ensure that developments are undertaken in compliance with the relevant standards and that the developments are supervised by approved professionals. Upon completion of the construction works and the development is ready for use, the enforcement department issues a certificate of occupation to permit the use of the development.

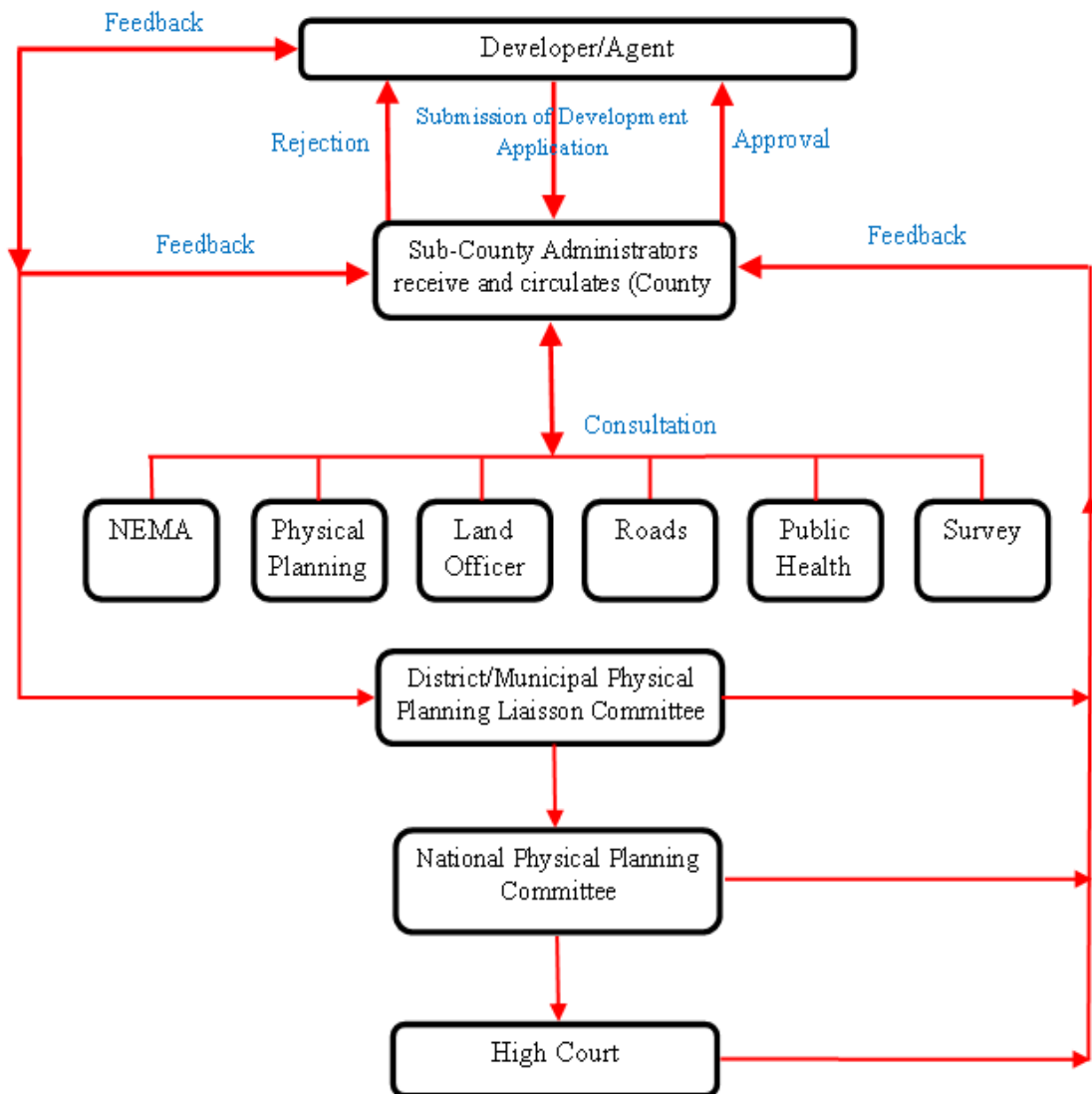


Figure 2-1: Conceptualized diagram of Development Application Evaluation in Kenya
 Source: Adapted from Oyata, Mulongo, Omuterema & Ngetich (2013) with Modifications

2.2.6 Approaches of Development Control

According to AAK (2011), planning theory which provides a platform for development control has evolved in three stages: Master Plan or Blue Print Era of 1950s to mid-1960s exemplified in early development plans coming after the 1947 Town and Country Planning Act of Britain; System theory view of planning from 1960s championed by the Planning Advisory Group (PAG) of 1965, and Planning as a continuous participation in conflict resolution or collaborative/communicative view of planning in late 1960s and early 1970s.

In the Master Plan or Blue Print Era (1950s), planning was concerned with production of plans that gave detailed maps of a desired future end state to be achieved in certain

number of years. This planning approach followed a model developed by Abercrombie which had three stages of planning: Survey, Analyze and Plan (SAP). The philosophy behind the master plans assumed that the planner, being a technocrat had the skills and know-how to solve the spatial-related problems for the sake of public interest and the developer had the obligation to follow as a servant what the master plan had in command without the option of an alternative view. The disadvantage of this model was the inflexibility of the plan due to its command nature and lack of public participation in the plan formulation.

In 1960s, there was the System View of Planning and the Structure Plans which concentrated on the objectives of the plan and the alternative ways of reaching such objectives. The emphasis of this approach was that planning had to be accompanied by reports showing the rationale of decision making at every stage of the planning process by illustrating the possible consequences of alternative policies/strategies and evaluating them against the objectives in order to choose a preferred course of action. The planner was tasked with formulation of broad development goals and identification of detailed objectives then tries to follow the consequences of possible courses of action, evaluate the alternatives in relation to the objectives and the resources available and takes action through public investment or controls on private investment to implement the preferred alternative. There was constant monitoring to assess the progress of the plan in achieving the set goals and objectives. McLoughlin (1969) argues this process assumes that 'it proceeds in a straight line through a sequence of processes, which are then constantly reiterated through a return loop'. The disadvantage of this model was the assumption that the planner could determine what was best for society and the high amount data requirements.

In 1970s, there was the approach of Planning as a continuous participation in conflict resolution or collaborative/communicative view of planning. The emphasis was on public participation in plan formulation. According to Burke (1979), participatory planning approaches emphasize public participation and reduce the role of the planner to that of a negotiator/advocate whose principal aim is to promote public interest. There is stakeholders' involvement in preparation of planning proposals as a way of ensuring that they own and support the development control process. The disadvantage of this approach is that small groups of people using positions of influence or money can influence planning decisions to the disadvantage of society.

2.3 Implications of Development Control on Urban Development

Development control as a process is geared towards achieving goals and objectives depicted in spatial plans and entails the government regulating land use and new buildings (Ngetich, Opata and Mulongo, 2014). In addition, it also considered to encourage optimal utilization of resources in order to achieve greatest improvement and to promote separation of incompatible uses, as well as enhancing visually pleasant landscape. The elements of public interest which development control seeks to protect for achievement of sustainable urban development include health and safety, convenience, efficiency and energy conservation, environmental quality, social equity and social choice and amenity as (Faludi, 1973). Development control plays a great role in the determination of urban spatial structures through the application of laws and other instruments which provide development control regulations for guiding and controlling development (Ngetich, Opata and Mulongo, 2014).

Since development control takes place at two levels (the macro and micro levels) as noted by Onokerhoraye and Omuta (1985), it influences the urban structure at both the macro and micro levels. At the macro level, its main objective is to control the subdivision of land thus controlling the development of layouts or sub-divisions with the aim of ensuring that as new areas are brought under urban use and influence, they not only form an integral part of the present overall urban structure, but also fit into the future structure. At the micro level, its main objective is to control the development of the individual plot and structure within the sub-division. It is normally applied in different contexts for different ends. Control over building densities can be imposed with a view to decentralize activities to prevent a burden on the available infrastructure in a particular area or alternatively to restrict low rise development with the view of achieving maximum utilization of land where there is a scarcity of land for development (Dissanayake, 1987).

2.4 Development Control and Satellite Towns Development

Satellite towns refer to small or media-sized settlements located around a large metropolis. They are physically separated from the main urban area, but economically they are an integral part of a large urban body (Golany, 1976; Weissbourd, 1972). The distance between a satellite town and a major town should be close enough to justify both a rapid commuting distance and the open space needed to separate the town settlements and far enough to give a physical identity to the satellite town (Golany, 1976). In addition,

satellite towns should be totally economic dependent on the neighboring urban center where the majority of satellite town residents find their jobs and should have independent local governments to give them identity so that they are different from normal urban suburb. Majority of satellite towns are basically dependent residential settlements attaching to metropolises as people only live there with basic service facilities and need to go to urban center for work and entertainment resulting to the name “dormitory towns” (Mengyi, 2011).

The objectives of satellite town development are to decentralize population and industries from the large cities. Fung (1981), noted several advantages of satellite town development such as relocation of factories, schools and offices from the central cities preventing overconcentration of population and economic activities in the central cities. In addition, it facilitates better utilization of urban land use by using farmland surrounding towns to replace open spaces that would have been planned in the central cities. In some countries, the development of satellite towns is by default rather than by design as they emerge and grow around cities and large towns due to their proximity and availability of land while in others such as China, they are planned for. In cases where development of satellite towns is planned, there is normally provision of development control regulations to guide and control their growth such as optimal size, distance from the central city, permitted industrial activities and the physical infrastructure to be provided (Fung and Freeberne, 1981). In cases where the emergence and growth of satellite towns is by default rather than by design, zoning plans/ordinance are normally prepared to guide, control and accommodate the growth and development of the towns. These zoning ordinances specify the uses to which property may be legally put and the intensity of development allowed. Just like in other towns, development control in satellite towns facilitates orderly physical development, optimal land use and protection and conservation of the environment.

2.5 Factors affecting Compliance with Development Control Regulations

Despite the existence of various development control tools such as development plans (which provide the development control regulations), there are cases of total non-compliance or partial compliance in some areas. Kimani and Musungu (2010) highlighted lack of capacity to inspect and supervise developments and implement plans, lack of relevant supportive system for effective enforcement and lack of resources for local authorities as the main factors hampering the effectiveness of

development control. In addition, UN Habitat (1990 a) and AAK, (2010) in their re-assessment of urban planning and development regulations in African cities, Ogundele, Odewumi and Aigbe (2011) on their paper on challenges and prospects of physical development control and AAK (2015) in their policy paper on managing building development, outlined the factors which contribute to non-compliance to urban development control regulations;

2.5.1 Lack of Approved Physical Development Plans

AAK (2015) noted that most counties in Kenya lacked approved physical development plans which leads to absence of standards for development control despite the provision for County Spatial Plan, County Integrated Development Plans, Town Plans and Sectoral Plans by the County Governments Act of 2012. The lack of physical development plans being the main sources of planning standards and other development regulations resulted to lack a framework for development control. In cases where the development plans are in existence, there arises the challenge of the plans being outdated due to lack of constant review. This makes the development control process difficult and ineffective since the provisions or regulations of the development plans do not accommodate the changing development trends.

2.5.2 Laxity in Processing Development Applications

The time taken for evaluation of development application and subsequent approval was deemed to be too long discouraging developers from submitting applications for development permission and corruption of responsible officers to speed up the process. The Draft Physical Planning Bill 2015 and the Urban Areas and Cities Act 2011 require that all developers must submit their development proposals to planning authorities for approval. In some cases, the development applications processing has been reported to take unnecessary long period of time (more than the thirty days as provided by the Physical Planning Bill 2015) thus delaying developments in many areas. Developers have had to go ahead with their developments with no regard for submitted development proposals. This has resulted to non-compliance or partial compliance of the set development control regulations due to lack of compliance to the conditions which are normally provided when granting the development permission.

2.5.3 High Professional Fees

The Physical Planning Act (Kenya, 1996) stipulates that any documents, plans and particulars that are provided to the planning authority while applying for development permission have been prepared by qualified, registered and validly registered professions. This is done to ensure that development proposals are prepared by the relevant professionals with adequate knowledge on the requirements of the law concerning the development proposal. However, the professional fees charged by various professionals like Planners, Architects, land Surveyors and Engineers have been identified as a serious hindrance to development within the legal framework in Kenya. To many developers, these professional fees have been unaffordable hence discouraging developers in engaging these professionals in making development proposals thus leaving room for the quacks to ruin the built environment (Opata, Mulongo, Omuterema, Ngetich, 2013).

2.5.4 High Poverty Levels

The proportion of the population living in poverty has increased in most developing countries to as much as 50% of the population in Kenya's urban areas. With a large proportion of urban population in poverty struggling to make a living, compliance to urban development regulations is not among their key priorities. Lack of comprehensive urban development policy that would guide regulations that are in line with the needs of the people and the current social-economic realities such as urban poverty has contributed to the high degree of non-compliance to urban development and planning regulations (Ngetich, Opata and Mulongo, 2013).

2.5.5 Lack of awareness of the existence of Development Control Regulations

The extent to which people are aware of the existence of development control regulations is important because it partly determines the extent to which people comply with the standards/regulations. A large portion of people in the urban areas are not aware of the development standards/regulations (UNCHS Habitat, 1999). This results to non-compliance of the set development control regulations negatively affecting the implementation of development plans and policies. The lack of awareness to these planning regulations has been partial attributed to lacks of guidelines in policy procedures such as current development plans, comprehensive zoning plans and planning standards (AAK, 2011). A relatively high number of developers get to know of the existence of the development control regulations during the submission of the

development proposals as majority of the members of the public are “illiterate” on physical planning programmes (Ogundele, Odewumi and Aigbe, 2011). In view of this, urban developers have come to view the development control process as a hindrance rather than a means to achieving sustainable developments.

2.5.6 Poor Enforcement Machinery

The technical capacities in most counties did not meet the required establishment requirement in terms of experience, expertise and numbers with only Nairobi City County having a fully functional City Planning Department with nine sections. Approximately 82 percent of Counties in Kenya do not have adequate development control staff, while 6 per cent had no technical staff and support from related agencies (AAK, 2015). The planning officers in charge of development control have been unable to implement development plans and inspect and supervise all developments within their area of jurisdiction. This has been attributed to inadequacy of resources and lack of relevant supportive system for effective enforcement as (Kimani and Musungu, 2010).

2.5.7 Political Interference and lack of Political Will

Political interference in the urban development control systems has limited the local Authorities ability to fully regulate and control development. Powerful government officials have been known in the past to enforce approvals which do not meet the stipulated requirements (Opata, Mulongo, Omuterema, Ngetich, 2013). This has resulted to high rates of violation of the development control regulations which negatively affects the implementation of development plans resulting to uncoordinated development patterns, lack of neighbourhood character and inadequacy in infrastructure provision. In addition, there is lack of political will and public support for planning. Planning is viewed as unnecessary interference in private property rights. Obudho (1992), notes that implementation of development plans depends on very much on the good will of Local Authority. Where spatial planning receives public support, development control takes place smoothly with effective implementation of the development plans and policies unlike in areas without public support.

2.5.8 Restrictive Planning Regulations

Explicit urban development and planning regulations have been adopted in developing countries. The various Acts regulating urban development seem to be outdated and not conforming to the countries current social, economic and political circumstances (e.g. Physical Planning Act Cap 286). Planning regulations and standards have been considered to be too static and inflexible such as the developments control code, the building and zoning regulations (Ngetich, 2013). Some of the issues that have been considered unrealistic include the space requirements for various developments such as educational facilities especially in urban areas where land/space is limited and spacing of specific developments such as petrol service stations and provision of acceleration and deceleration lanes.

2.5.9 Effects of Market Forces

The aims and aspirations of developers (profit motivated) have greatly affected development plans implementation. As developers seek to maximize returns from land, they tend to violate some of the building and planning standards/regulations such as plot coverage and plot ratio. Developers seek to attain as many units as possible within their land as a way of maximizing profits from their land and developments. The high demand for commercial spaces and housing units as evident in the high rate of housing deficit in the country has motivated developers to adopt the *beacon to beacon* type of developments (AAK, 2011).

2.5.10 Concluding Remark

Based on these previous study on factors affecting development control regulations compliance, the above factors appear to be the main causes of development control regulations non-compliance in urban areas of Kenya. However, due to the different rate of urban growth and the uniqueness of urban centres in terms of topography, demography, etc., each urban area is experiencing different set of challenges and the contribution of these factors to the non-compliance of development control regulations may not be uniform in all urban areas. There is a need to indicate the extent to which each of these factors contributes to the non-compliance of development control regulations and confirm whether the above mentioned factors are the only main factors affecting development control instruments' compliance.

2.6 Effects of Non-Compliance to Development Control Regulations

Non-compliance to development control regulations have negative effects on the developers and the society at large. The effects of the non-compliance to the developers include demolition of non-compliant developments and/or fine or jail term. The negative effects of the non-compliance to the society include unhealthy environment, lack of aesthetics, inadequacy of provisions for parking and children's playing grounds and loss of lives and property due to collapse of buildings (AAK, 2011).

2.6.1 Land Use Conflicts and Demolitions

The use of land for the purpose other than the one provided for by the development plans/land use plans results to land use conflicts leading to demolitions. Developments encroaching on private or public land are normally demolished to pave way for the intended use. In Nairobi, the Syokimau demolition case was an epitome of non-adherence to development control regulations. So many buildings were demolished in various neighborhoods of Syokimau, Kiangombe and Manyatta areas in 2011. The demolitions were necessitated by the fact that land in question was within the jurisdictional area occupied by the Jomo Kenyatta International Airport and thereby posing a security risk (Opata, Mulongo, Omuterema, Ngetich, 2013).

2.6.2 Fines and/or Jail Term

The Physical Planning Act Cap 286 (Under Review) and the Draft Physical Planning Bill 2015 provide for the fine and jail term for violation of development/planning regulations. Section 72(2) of the Physical Planning Bill constitute an offence liable to fine not less than five percent and not exceeding ten percent the value of land on which the development is taking place or to imprisonment for a term not exceeding two years or to both' while Section 30 (1) of the Physical Planning Act Cap 286 constitute an offence liable to fine not exceeding Kenya shillings hundred thousand or an imprisonment not exceeding five years or both, but this punishment has never been meted. As a result, most low income urban residents continue to encroach and squat in unupgraded areas (Opata, Mulongo, Omuterema, Ngetich, 2014).

2.6.3 Unhealthy Environment

A study undertaken by Architectural Association of Kenya in the year 2011 on the development control frameworks of 17 Municipalities and towns in Kenya indicated that the leading effects of non-compliance are unhealthy living environment (unsecure,

poorly lit, ventilated and solid waste disposal) and lack of children's playground. This has been attributed to uncoordinated development pattern, beacon to beacon type of development and inadequate provision spaces for public utility such as dumpsites, drainage channels and sewer lines (AAK, 2011).

2.6.4 Lack of Aesthetics

Lack of aesthetics is evident in lack of neighbourhood character as defined by zoning regulations (UN Habitat 1990 a), AAK, (2010). The uncoordinated development pattern in areas with high rate of development control regulations non-compliance results to undesirable area character. For an area to have a character there has to be some form of uniformity in regards to building typology, plot coverage and building height. Non-compliance of these development control regulations results to loss of aesthetics due to lack of character. For instance, the emergence of highrise developments within low density residential areas due to non-compliance in regards to permitted use and building heights, results to loss of character in an area.

2.6.5 Inadequate Provision of Parking

AAK 2011, identified inadequacy of parking spaces as one of the effect of non-compliance to development control regulations. As developers fail to comply with the set plot coverage at plot level (due aims and aspiration of developers to maximize returns from their land), parking spaces are normally not provided for. This has been witnessed in residential as well as commercial areas/zones where the plot coverage goes up to 100% in some cases with no provision of parking spaces at any of the lower, ground or upper floors.

2.6.6 Inadequate Provision of Children's Playing Ground

As market forces take centre stage in allocation of urban land uses, developers seek to use land in ways that make maximum returns to them. Very few if not none are interested in provision of children's playing grounds and where they exists or are provided for, developers look for ways to convert them to other more profitable uses (AAK, 2011). This has been experienced in Nairobi where children's playing ground for Langata Primary School was grabbed by developers for construction of parking space for an adjacent hotel.

2.6.7 Loss of Lives and Property

The lack of adherence to planning and building regulations in regards to permitted building height (based on soil type), stipulated type/size of material and ratio of mixture among others has resulted to collapse of buildings. This has resulted to loss of lives and property. The urban scene in Kenya in the recent past has witnessed a series of collapse of buildings for instance, in January 2006, 15 workers were killed in downtown Nairobi's Nyama Kima area when a two storey building under construction collapsed. The tragedy was attributed to under designed concrete columns and failure to allow appropriate curing (AAK, 2011). In June 2012, a building collapsed in Mlolongo in the outskirts of Nairobi where one person was confirmed dead (Daily Nation of 11th June, 2012). According to statistics released by Board of Registered Architects and Quantity Surveyors and Architectural Association of Kenya in July 2011, Kenya developers lost KSH. 1.4 Billion, as a result of collapsed buildings since 2001.

These seven effects are considered as the main effects of non-compliance to development control regulations in urban areas in accordance to the previous studies related to the research topic. However, they ought to be ordered from the most adverse to the least adverse in reference to the number of people affected so as to provide the most effective remedy depending on the cause. In addition, there is need to establish whether there may be other effects which are more adverse than the above mentioned depending on the urban area.

2.7 Intervention Measures for Effective Spatial Development

The existing urban development control instruments and practices have not been effective in guaranteeing sustainable living despite being in existence in Kenya from as early as 1947 in the name of Town and County Planning Act. Ngetich (2013) noted that there is a need for all stakeholders in the built environment to address the challenge of development control regulations' non-compliance as a way of ensuring effective development control regulations compliance in guaranteeing sustainable living. Several intervention measures to development control regulations' non-compliance have been adopted in other countries where the level of compliance and sub sequential development plans implementation has been high. In order to have an in-depth understanding of these intervention measures, it is necessary to undertake a review of best practices in development control.

2.7.1 Review of Best Practices in Development Control

The review of the best practice case studies helps to develop the benchmarks of development control systems (AAK, 2011). The review of the best practices of development control such as Botswana and Singapore may/could enable a better understanding of how the development control process in our country can be improved for effective development plans and policies implementation. The justification for the selection of Botswana and Singapore for the case studies is due to: International recognition of Singapore for its good practice and procedures in public land management (Yeung, 1987) and the well contained rapid urban growth of the city of Gaborone in Botswana through careful management and development control practices (Mosha, 1996).

2.7.1.1 A Case Study of Gaborone City-Botswana

Gaborone is one of fastest growing capital cities in Africa (Mosha, 1996). Mosha (1996) notes that with careful planning and management, development of the city has been sustainable in all respects. In the planning of Gaborone, the master/structure plans, zoning, subdivision regulations, building codes, urban development standards and other public policies are used to shape development. These regulations are all adopted to help protect the urban natural environment, gear infrastructure investments with development and enhance property values.

In order to ensure that there is no overlap and conflict of jurisdiction and decision making in regards to development control, there has been good separation of roles and responsibilities regarding land management. Physical planning is the responsibility of the Ministry of Local Government, Lands and Housing through its department of Town and Regional Planning. The Department of Town and Regional Planning is responsible for preparation of physical development plans and setting detailed guidelines for development control. The Ministry of Local Government, Lands and Housing is the principal land manager being responsible for setting guidelines and policies on the use of land. The Department of Survey and Mapping is responsible for surveying. The Department of Lands is responsible for land allocation and land administration. Local Authorities have delegated powers for controlling development within the areas of their jurisdiction (Mosha, 1996).

As a way of ensuring strict adherence to planning standards in housing development, a housing cooperation (Botswana Housing Cooperation) was established to build houses both for sale and rental within the confines of the planning regulations. All urban centres and major villages are declared planning areas and therefore all developments including houses within the settlements require compliance with the Town and Country Planning Act of 1977 (DCDM Botswana, 2006).

Local Authorities in Botswana are responsible for development control in all the country's planning areas and carry out such a responsibility through building inspectors who make sure that all developments carried out are consistent with the development control code and the Town and Country Planning Act (Segopa, 2009). In addition, a Self Help Housing Program was introduced in the 1970s to provide site and service plots where people erect their houses at their own pace using less rigorous standards to ease affordability. Recent policy changes have made the government the facilitator of housing rather than the provider. Private sector, financial institutions and individuals are called upon to service land and construct houses in urban areas. The policy of social mix in Botswana requires that urban areas be planned in a way to avoid polarization of people in terms of social classes or income groups. This would avoid the development of low income ghettos which are non-compliant to the set development control regulations.

2.7.1.2 A Case Study of Singapore

In Singapore, land use planning is taken seriously and plans are implemented with high levels of compliance with development control and planning regulations (Yuen, 2007). To ensure that plans remain relevant, workable and well integrated with the environment and infrastructure, the planning authority in Singapore (the Urban Redevelopment Authority) has been involving all relevant public development agencies when preparing and reviewing the development plans. Its Development Control Division holds frequent dialogues with professional bodies and private sector to review development rules and guidelines to facilitate the work of the development industry. In addition, as a way of dealing with rigid land use zoning proposals ((of the 1958 Master Plan), there has been establishment of a more responsive instrument (Singapore Concept Plan of 1971) to facilitate long-term planning. It overcame the restrictions of the Master Plan by remaining an expression of principles and policies, not detailed proposals and land use maps. It is an evolving document in order to effect the strategic

shifts necessary to meet growing needs, changing circumstances and available opportunities as they arise.

As a way of ensuring adequate public awareness on the set development control regulations and other development regulations, government agencies in Singapore hold public consultations through media focus group discussion, public dialogues, forums, exhibition and competitions. The community works with planners in the plan making process with the key goal being consensus building to create and foster a greater sense of community. Through these consultations, Singapore has developed a new zoning system which moves away from the traditional prescriptive land use zoning system to an impact based zoning scheme. The new zoning system gives businesses greater flexibility of having a mixed use and creating work- life- play-learn environment within the same site to suit their need and market demand.

Uses allowed in current white zone*		P L U S	Additional uses allowed		
Housing	Shops		Clean Industry	Educational institution	Clean utility
Office	Hotel		Business Park	Civic & community institution	Sports & recreation

Figure 2-2: The New zoning system in Singapore

Source: *Urban Redevelopment Authority Annual Report 2000/01*

The planning authorities in Singapore also introduced electronic consultation with the public/population. This was achieved through establishment of an e-consultation portal to engage the population on specific draft guidelines and policies before they are finalized. Development potential of each site is set out in the development guide plans and this gives the private and public sector developers a clear idea of what they can or cannot build on their land parcels. This also provides certainty and transparency in the planning system and makes development control objectives predictable and accountable.

Other than the public consultation, there is also Public Private Partnership in plan implementation in Singapore. Plans are sent to private sector professionals and developers to prepare in the move to give the private sector and the general public more participation in the process of planning. This has promoted and facilitated growth in supporting businesses and engaging people in planning. The introduction of a Computerized Planning Application has improved on the timelines of granting planning decisions and saves applicant time, manpower and resources. It enables online consultations, checks status online and can be made at any time and place provided there is internet.

In order to ensure strict adherence to development control regulations, the enforcement of development control is enforced through criminal offence. An enforcement notice is in writing and may be served to any person who has interest on land in question. The notice states the breach of planning control, measures and time to be taken to remedy the situation. The fine for offenders is high at S\$10,000 every day for a continuing offence compared to other countries like Kenya where it is only Kshs 5,000 for a continuing offence (Physical Planning Bill 2014). With the strict enforcement of these fines, high levels of development control instruments' compliance are achieved.

2.7.2 Lessons learnt from Best Practices in Development Control

The above two case studies of best practices of development control (in Singapore and Gaborone City-Botswana) has provided intervention measures which can be adopted by other countries such as Kenya to ensure sustainable urban development through effective urban development management. They can be summarized as below:

- a. Adequate public participation in development control through various means
- b. Creation of public private partnerships in development control
- c. Strict enforcement of development control regulations
- d. Provision of serviced plots for development
- e. Simplification of development application processing
- f. Flexibility and impact oriented zoning systems
- g. Adequate staff provision for development control
- h. Effective separation of roles and responsibilities regarding land management

It is also important to note that despite the efficiency of these measures, there are also challenges that come with their adoption such as too much flexibility of the

development control regulations which can create problems of achieving the desired area character. In addition, it has not been clearly determined whether these intervention measures can bear the same fruits in other countries which have unique development challenges or they were just toiler-made for those countries where they originate to address their own development challenges.

2.8 Development Control related Legal, Policy and Institutional Framework

This section is for analyzing Policies and Acts of Parliament touching on physical planning and development in Kenya by looking at their relevance to development control regulations adherence.

2.8.1 Legal Framework

In Kenya, development is governed by various legislations which mainly include the Constitution of Kenya 2010, Physical Planning Act Bill 2014, County Government Act 2012, Urban Areas and Cities Act 2011, National Land Commission Act 2012, Public Health Act Cap 242 and the Environmental Management and Coordination Act (EMCA) of 1999. These laws cover possession, registration and land planning and development.

a. The Constitution of Kenya (2010)

Constitution of Kenya provides that land in Kenya shall be held, used and managed in a manner that is equitable, efficient, productive and sustainable. In this regard, land within the study area ought to be used and managed equitably, efficiently, productively and sustainable by conservation of the environment and optimal use of land and land resources.

b. Physical Planning Act, 1996

This Act provides for the purposes of the Local Physical Development Plans to be for the purposes of zoning, urban renewal or redevelopment, guiding and coordinating the development of infrastructure, regulating land use and land development, providing a framework for coordinating various sectoral agencies and giving effect to any Integrated City or Urban Development Plan. The Local Physical Plan for Kitengela town will be used for the above purposes.

c. The Environmental Management and Co-ordination Act, 1999

The EMCA is an Act of Parliament that provides for the establishment of an appropriate legal and institutional framework for the management of the environment. It provides

for establishment of NEMA a body charged with the responsibility of ensuring a clean and healthy environment. The act provides various standards and regulations in regards to different developments or land uses with a provision for environmental impact assessment for selected developments. Its emphasis is on clean and healthy environment for all people in Kenya.

d. Public Health Act Cap 242

The act makes provision for securing and maintaining health. Under section 166 it is stipulated that the local authority should maintain hygiene and prevent nuisance. It stress on prevention of pollution with strong emphasis on water by any waste and provision of housing support services and infrastructures which should be kept clean. Section 126(d), the act provides for the formulation of by-laws by all municipal, urban and area councils regarding building materials, building space, lighting, ventilation, height of buildings and height of chimneys. This facilitates development control since it provides for the establishment of standards to guide and control development.

e. Water Act, 2002

This Act of Parliament provides for the management, conservation, use and control of water resources and for the acquisition and regulation of rights to use water; to provide for the regulation and management of water supply and sewerage services. In reference to the act, developers within Kitengela Town ought to compliance to the act in regards to effluent discharge and water usage in all phases of the development projects' cycles and provision of permits from WARMA in cases where boreholes are considered as sources of water supply within the area.

f. National Land Commission Act, 2012

This Act gives effect to the objects and principles of devolved government in land management and administration. Of relevance, is provision for the management and administration of land in accordance with the principles of land policy set out in Article 60 of the Constitution and the national land policy and also for the linkage between the Commission (NLC), County governments and other institutions dealing with land and land related resources.

g. Urban Areas and Cities Act, 2011

The objectives and purposes of this Act are to establish a legislative framework for classification of areas as urban areas or cities, governance and management of urban

areas and cities and participation by the residents in the governance of urban areas and cities. The act provides for the formulation of integrated development plans for towns and cities which bind, guide and inform all planning development and decisions and ensure comprehensive inclusion of all functions. The city or urban area integrated development plans ought to be aligned to the development plans and strategies of the county governments.

h. County Government Act No.17 of 2012

In Section 111 of the act, each city and municipality should have city or municipal land use plans and city or municipal building and zoning plans which will be the instruments for development facilitation and development control within the respective city or municipality. In reference to the act, the County Government of Kajiado have the statutory mandate to undertake development planning and control land and building development within their area of jurisdiction including Kitengela town, the study area.

2.8.2 Policy Framework

The main policies that have shaped development control in Kenya are Sessional paper No.6 of 1999 on Environment and Development, Agenda 21: Rio Declaration for Environment and Development (1992), Draft National Urban Development Policy, Environment and Natural resource policy, National Housing Policy and Draft National Land Policy (2006).

a. Agenda 21: Rio Declaration for Environment and Development, 1992

This is a programme of action for sustainable development worldwide. In the conference, elaboration of strategies and measures to halt and reverse the effects of environmental degradation in contexts of national and international efforts to promote sustainable and environmental sound development in all countries was done. This was to be achieved through environmentally sound management of waste. The programme recognizes provision of infrastructure services and facilities as the main issue of addressing sustainable development which will be achieved through better and coordinated/planned development especially in the urban areas such as the Kitengela town.

b. Sustainable Development Goals (SDGs)

The SDGs officially known as Transforming our World: the 2030 Agenda for Sustainable Development are intergovernmental set of aspiration goals (which are 17

in number) and are regarded as the successor of the MDGs. The goals covers a broad range of sustainable development issues such as ending poverty and hunger, improving health and education, making cities more sustainable, combating climate change and protecting oceans and forests. Of relevance is Goal number 11 (*Making Cities and Human Settlements inclusive, safe, resilient and sustainable*) which recognizes the importance of provision of inclusive and accessible green and public spaces, affordable housing and basic services which can only be effectively achieved through effective development control. To this effect, Kitengela Town can only be made inclusive, safe, resilient and sustainable through development control.

c. Sessional paper No.6 of 1999 on Environment and Development

This Sessional paper sets out comprehensive policy guidelines towards achieving sustainable development and in response to the increasing concerns regarding the effects of development on the environment. The paper recognizes the need for the provision of infrastructures and coordinated development and land uses. Kitengela town just like any other urban area in Kenya ought to be adequately provided with infrastructure and provided with a land use plan to guide and control development in the area.

d. National Urban Development Policy, 2015

This is the basic policy of urban development in Kenya and provides a framework for sustainable urban development. The specific objectives this policy seeks to realize are: mainstream good governance; foster safe, secure and livable urban areas, ensure adequate housing for all urban income groups; facilitate accessibility to the full range of social services that improve the health, education, skills development and recreational needs of citizens in urban areas; promote integrated environmental planning and management and foster timely and adequate delivery/management of land for urban development.

e. National Environment Policy, 2013

The goal of this policy is better quality of life for present and future generations through sustainable management and use of the environment and natural resources. The policy is for guiding the management of natural resources such as land, water, soil, forest and animals, how it affects the quality of life for both present and future generations. The relevance of this policy is the rights of the local residents of Kitengela to access clean

and healthy environment, protect, stop or discontinue any act or omission that is harmful to environment.

f. National Housing Policy

The new National Housing Policy for Kenya, was passed in parliament on 30th June, 2004 addresses issues such as the right to housing (facilitating progressive realization of the right to adequate housing by all), provision of legal security of tenure to the poorer sections of society, and participation of the inhabitants in the housing and slum upgrading process. One of the key goals of the policy is to facilitate the provision of adequate shelter and a healthy living environment at an affordable cost to all socio-economic groups in the country so as to foster sustainable human settlements. Kitengela residents should be provided with housing units that are habitable with housing support services such as sewer system, drainage system and solid waste disposal services.

g. National Land Policy, 2009

The overall objective of the National Land Policy is to secure rights over land and provide for sustainable growth, investment and the reduction of poverty in line with the government's overall development objectives. The relevance of this policy is the economically viable, socially equitable and environmentally sustainable allocation and use of land within Kitengela Town. In addition, land and land-based resources within the town ought to be effective and efficient.

i. Kitengela Zoning Plan (2012)

Kitengela Zoning Plan is a Local Physical Development Plan for Kitengela Town with an objective of providing a guide to help in development control so as to ensure harmony in location of the different land uses. The plan was prepared under the provisions of the Physical Planning Act Cap 286 (under review) and the Local Government Act Cap 265 (now repealed). The preparation of the zoning plan has been triggered by the rapid rate of urban development in Kitengela town which is foreseen as a menace to the welfare of the local population, natural environment and the performance of the sub-region's economy. The zoning plan is geared towards realization of self-sustaining and controlled future spatial developments. It indicates the seventeen (17) zones indicating land uses for each zone, preferred minimum plot sizes, types of developments, plot settings and permissible as well as prohibited developments.

2.8.3 Institutional Framework

The institutional framework for development control in Kenya rest in most cases at the national government level, county government level and a wide array of professionals working in the private sector who initiate application for development permission processes on behalf of their clients/developers (AAK, 2015). However, other institutions such as CBOs and law enforcement agents also play significant roles in development control.

a. National Government

Under the national government the institutions concerned with development control include the Ministry of Lands, Housing and Urban Development, NLC and the NEMA. Under the Ministry of Lands, Housing and Urban Development, there is the National Physical Planning Council which among other functions ensure the mobilization of adequate resources for the preparation and implementation of physical development plans, policies and strategies and the Director-General of Physical Planning who among other functions overseeing the proper execution of development control at the national and regional level. The relevance of the National Land Commission in Development Control is the management of public land on behalf of the national and county governments through Committees and County offices provided for by the National Land Commission Act (2012). In this regard, they determine the alienation and of public land. NEMA is tasked with the establishment and review of land use guidelines in consultation with the relevant lead agencies as well as evaluation of selected development application depending on their impact on the environment (EMCA, 1999).

b. County Government

In accordance to the County Government Act 2012, the county governments are responsible for spatial planning within the counties. There are various agents responsible for development control within the county government structure which include; County executives, County Government's Technical committee, County Physical Planning Departments, County Assemblies, Land Officers, Land Surveyors and Public Health Officer. The role of County Executive in urban areas or city planning is monitoring of the process of planning, formulation and adoption of the integrated development plan by a city or municipality within the county while the County Assemblies are responsible for approval of county development planning submitted by county executive.

The County Physical Planning Department which include County and City/Municipal Directors of Physical Planning, Planners, Architects, Draughtsmen, Building inspectors and Enforcement section are responsible for preparation of county and local physical development plans, processing of development applications and inspection of construction works. County Government's Technical committee chaired by the Sub-County Administrator is concerned with evaluation of development applications. Land Officers and Land Surveyors are mainly concerned with evaluation of development applications in respect to land ownership and location and plot/land sizes while the Public Health officer evaluates the development application in respect to protection of health and well-being of the general public.

c. Professionals

In the development/construction industry, there is a wide array of professionals working in the private sector who initiate application for development permission processes and implementation of development projects on behalf of the developers. They include Planners, Architects, Engineers, Contractors, Land Surveyors and Environmental Experts. The Planners (Registered and licensed in accordance to the Physical Planners' Registration Act of 1996) are concerned with the preparation and submission of physical planning briefs and/or Land Amalgamation and Subdivision Schemes on behalf of the developers. Registered and licensed Architects and Structural Engineers prepare architectural and structural drawings respectively for developments and submits the same for evaluation. NEMA licensed lead experts undertakes Environmental Impact Assessment for proposed developments on behalf of the developers and submit the EIA reports to NEMA offices for evaluation and subsequent approval (NEMA License). The Contractors are concerned with the implementation of the development projects for and on behalf of the developers in accordance to the approved planning briefs and architectural and structural drawings while the Land Surveyors implement land amalgamation and/or subdivision in accordance to the approved land amalgamation and/or subdivision schemes.

d. Community Based Organizations

Community based organizations such as neighbourhood/residents associations are actively involved in development control. In the spirit of public participation as envisaged in the Kenyan Constitution (2010), the public, through neighbourhood/residents associations are involved in urban planning process. Article 1

(4), Article 6 (2), Article 174 (c and d), Article 184 (1), Article 196 (1), Article 232 (1) d, e, f, Fourth Schedule Part 2 (14), gives citizens the right to manage their own affairs and further their development and the right of participation in the exercise of powers of the state and in making decisions that affect them. Section 22 and the second schedule of the Urban Areas Act (2011), give residents the right to contribute to the decision-making processes of the city or urban area by written or oral submissions to the city or municipal manager or town administrator and to receive prompt responses to their written or oral communications. In this regard, neighbourhood/residents associations participate in formulation of development control regulations for their area of residence as well as play a significant role in their enforcement.

e. Law Enforcement Agents and the Judicial System

With enforcement of development control being through criminal offence, the police support enforcement of development control through two main ways. First, through provision of security to development control officials in cases of demolitions of development control regulations non-compliant developments and serving of enforcement notices and secondly, through enforcement of development control related laws through arrest and charging of violators of development control regulations.

The role of judicial system (the courts) in development control is provision of a forum for resolving development related disputes and enforcement of physical development related laws in a fair and rational manner. They hear and determine development related cases and give their verdict on the same.

2.9 Conceptual Framework

A conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Reichel and Ramey, 1987). When clearly articulated, a conceptual framework has potential usefulness as a tool to assist a researcher to make meaning of subsequent findings (Kyaka, 2012).

For the purpose of this study, the conceptual framework will be used as analytical tool for organizing ideas to achieve the research objectives. Its purpose is provision of an abstract representation of the analysis of development control regulations compliance in Kitengela Town as well as provide a direction of collection and analysis of data. In this regard, it provides the organizing principle for analyzing development control regulations compliance as outlined in the figure below.

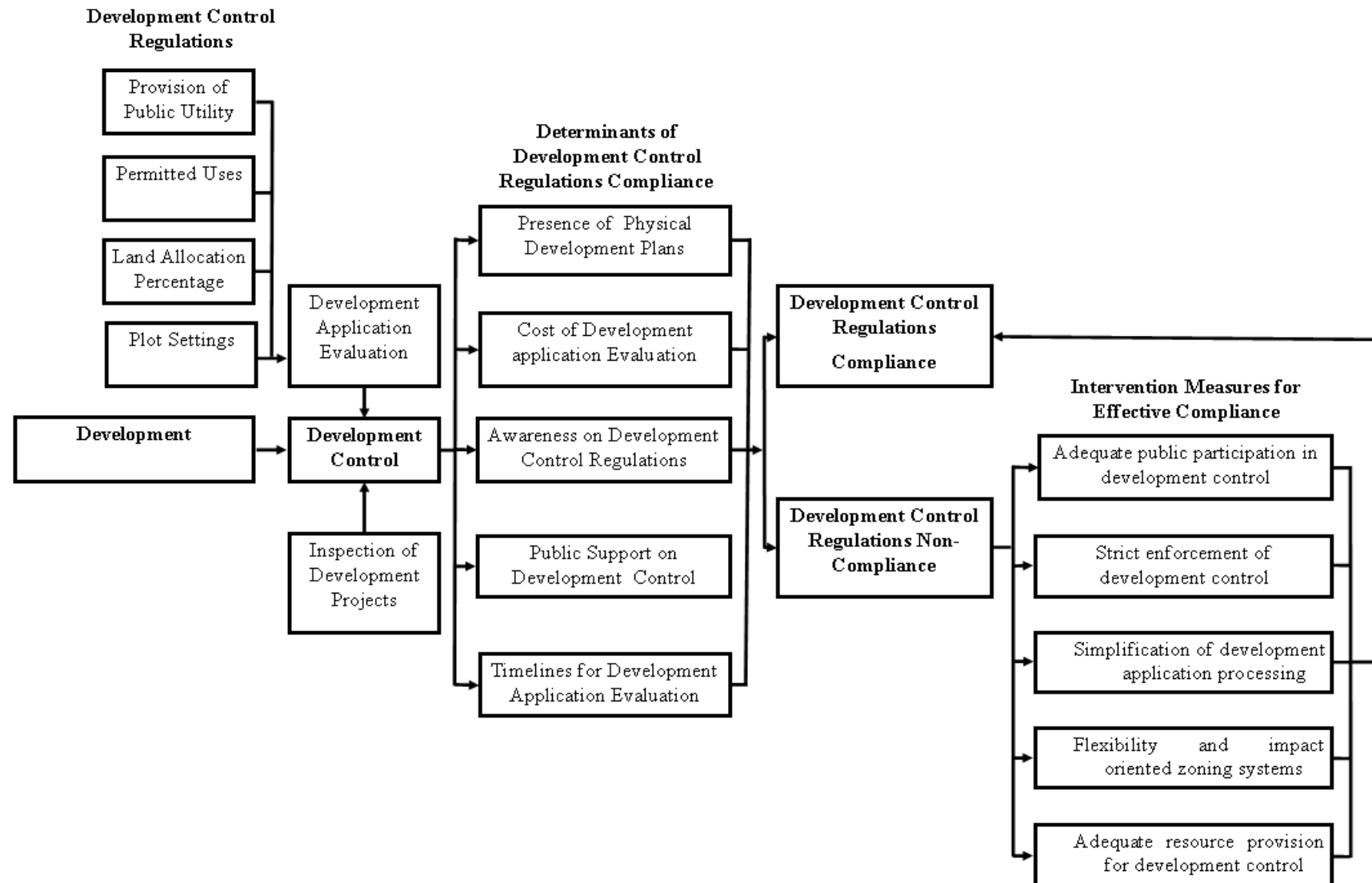


Figure 2-3: Conceptual Framework
 Source: Author's Construct, 2016

It is a requirement by law that all developments need to be subjected to development control process by first ensuring that the development proposals are submitted to the relevant planning authorities for evaluation before implementation. With controlling being part and parcel of an integrated planning of urban centres, development control intervenes in the process of land development, construction, occupancy and use to enable and constrain transactions in accordance with prescribed rules and regulations. This ensures strict compliance to the development control regulations to facilitate the implementation of development plans. The evaluation of the development proposal enables assessment of the degree to which the development proposals adhere to the set development control regulations (such as the permitted minimum plot sizes, building line, setbacks and access road width, permitted maximum plot coverage and plot ratio) for advice on modification of the proposals before the issuance of development permission. Secondly, the implementation of the developments ought to be constantly inspected to make sure that the implementation is in accordance to the development approval provided for the developments.

Based on the evaluation of development application and monitoring of development implementation through regular inspection, it is possible to identify the development control regulations compliant developments and the non-compliant developments. There are several factors affecting development control regulations compliance such as the timeline for development application evaluation, the level of public support for development control, the level of public awareness on development control process, the cost of preparing and submitting development proposals for evaluation and the availability of a physical development plan for guiding and controlling development in the area.

However, based on lessons learnt from best practices in development control (such as Singapore and Botswana), the problem of non-compliance to development control regulations can be addressed through adoption of some or all of approaches/techniques used to ensure effective development control regulations compliance in these countries or formulation of home-made solutions for the local problems depending on the problem being addressed. Some of these approaches include adequate resource provision for development control, impact oriented zoning system, simplification of development application processing, strict enforcement of development control and adequate public participation in development control.

2.10 Conclusion

Development control as a means of ensuring orderly physical development, optimal land use and protection and conservation of the environment, should be inclusive of all stakeholders in the built environment. Each person has a part to play in the development control process since its non-compliance affect us all either directly or indirectly. Kenya as a country ought to borrow a leaf from nations which are internationally recognition of for their good practice and procedures in public land management and development control practices such as Singapore and Botswana. This would to a great extent address the challenges associated with development control regulations' non-compliance such as traffic congestion and inadequate provision of infrastructure facilities hence facilitating the achievement of the development control objectives.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methods and techniques that the researcher will employ in the study. In particular, the chapter will describe the research design, research population, sampling plan, data need matrix, data collection methods, data analysis plan and data presentation plan.

3.2 Research Design

Orodho (2003) defines a research design as the scheme, outline or plan that is used to generate answers to research questions. Research design provides an operational frame within which the facts are placed, processed through analyzing procedures and the valuable research output is produced. The study adopted a descriptive survey research design (non-experimental research design). This research design allows the researcher to observe or measure statistics to assess the relationship between or among variables without manipulation of the independent variables

3.3 Research Population

According to Ngechu (2004), a population is a well-defined or set of people, services, elements, events, group of things or households that are being investigated. The population under study for identification and documentation of the current and previous development control tools used to guide and control physical development in Kitengela Town included all the National and County Government officials concerned with development control while that for investigation of development control regulations compliance level included all the developments within Kia Ngombe 'B' zone. The population under study for assessment of the factors affecting development control regulations compliance and effects of the compliance level included all the developers of the developments within Kia Ngombe 'B' zone and their respective occupants while that for determination of possible intervention measures for the effective development control regulations compliance of Kitengela Town included the National and County Government development control officials and the developers and residents of Kia Ngombe 'B' zone.

The targeted population for this study included all persons over the age of 18 years (adults) residing in Kia Ngombe 'B' Zone in Kitengela Town, all the developments and their respective developers (or their representatives) within that zone and all National

and County Government development control officials within the county. This is justified by the fact that the way developments take place within the zone affects the area residents either directly or indirectly and therefore they are in a good position to describe the effects of the development control regulations compliance level (of the developments within their area of residence/business/work) to the urban spatial structure. The owners of developments within this zone (whether living there or not) are targeted since they are responsible for the way their developments take place in regard to development control regulations compliance hence will provide valuable information in regards to the factors affecting development control regulations compliance, the resultant effects and possible intervention measures. In addition, the developments within the zone are targeted since they will facilitate the investigation of planning standards and building regulations compliance level in regards to compliance to the permitted uses, plot settings, permitted structure types, permitted development with conditions and prohibited developments. The National and County Government development control officials within the county are also targeted due to their in depth understanding of the area's development control regulations as well as the previous and current development control tools used to guide and control development in Kitengela Town and the entire county in general.

3.4 Sampling Plan

For the purpose of saving time and cost (due to restrictions of resources) as well as in order to obtain unbiased estimates of the population status, sampling will be undertaken. This entailed the selection of a sub-group of the population (rather than all possible cases or elements) for the purposes of undertaking the study. At the time of conducting research, it was impossible, impractical or too expensive to collect data from all the potential units of analysis included in the research problem. A smaller number of units (a sample) was chosen in order to represent the relevant attributes of the whole set of units, the population. The sample was drawn from the Developers, Developments and Households of Kia Ngombe 'B' zone as well as the Development Control Officials within Kajiado County (sampling units).

The study had four sampling groups: Developments, Developers, Households and Development Control Officials. The sampling plan for each of the sampling group is as follows;

a. Developments

The sample for developments' sampling group was selected using systematic random sampling (to ensure an equal chance/probability of selecting each unit from within the population) with the aid of the map or image of the study area. Based on the mapping of the developments within the study area with the aid of a satellite image, the number of developments within the Kia Ngombe zone is 400 and hence a sample size of 40 was selected based on Mugenda and Mugenda (1999) recommendation that if there is no estimate available of the proportion of the target population assumed to have the characteristic of interest, 10 percent should be used.

The sampling procedure entailed assigning the developments numbers (on the satellite image) for the formulation of an ordered sampling frame. This was followed by calculation of the sampling interval by dividing the development population size by the sample size to get a sampling interval which in this case is 10.

The sample selection started by randomly selecting a development (using simple random sampling) and then selecting every 10th development in the sampling frame to attain the sample size of 40. The progression through the list was treated as circularly with a return loop to the top once the end of the list was passed.

Map 3-1: Spatial Distribution of Sampled Developments



Source: Adopted from Google Maps with Modifications, 2016

b. Developers

The sample for developers’ sampling group was selected using purposive sampling with an intent to select the 40 developers (or their representatives) of the selected 40 developments even though only 24 developers were accessible for administration of the developers’ questionnaires. For each development selected, the developer (owner) was included in the sample. This was for enhancing consistency in ensuring that the information on development matches with the information from the people who have implemented the developments (the developers). This facilitated selection of the people (developers) with the required information concerning the selected developments such as explanations to the level of development control regulations compliance of their developments, factors affecting development control regulations compliance, the resultant effects and possible intervention measures.

c. Households

The sample for households' sampling group was selected using multistage sampling. Purposive sampling was used to select the developments from which the households' samples were to be drawn while simple random sampling was used to select one household within each of the selected developments. The justification for the purposive sampling of developments from where to draw the households' sample is ensuring that information on the effects of the development control regulations compliance level of the selected developments on the residents is well captured and there is triangulation of information from developers, developments and households.

Within each selected development on the image, one household was selected through simple random sampling (to ensure that each household within the development has an equal chance of being included in the sample) to attain a sample size of 40.

d. Development Control Officials

The sample for the Development Control Officials' sampling group was selected using purposive sampling to select National and County Government official who are concerned with development control within the study area. They include the Kajiado County Physical Planner, Director of NEMA Kajiado County, Public Health Officer-Kajiado East Sub County (Kitengela) and Public Works Officer/County Engineer to attain a sample size of 4.

3.5 Data Need Matrix

The data required for the purpose of the study is based on the five research objectives and is summarized below;

Table 3-1: Data Need Matrix

Objective	Data and Information	Sources
1. To identify and document the previous and current development control tools used to guide and control physical development in Kitengela Town	<ul style="list-style-type: none">○ Development control tools used for the town before the preparation of the Kitengela Zoning Plan in 2012○ Development control tools used for the town from 2012 to present	<ul style="list-style-type: none">○ Kajiado County, Planning, Engineering, Public Health and NEMA offices

<p>2. To investigate the development control regulations compliance levels in in Kitengela Town</p>	<ul style="list-style-type: none"> ○ Plot settings-plot sizes, access roads width, plot coverages, plot ratio, building line and setbacks lengths and parking space provisions ○ Structure types ○ Existing uses ○ Existing development types ○ width and length of access roads 	<ul style="list-style-type: none"> ○ Policy Documents ○ Physical Development Plans ○ Field Survey
<p>3. To assess the factors affecting development control regulations compliance in the Kitengela Town</p>	<ul style="list-style-type: none"> ○ Timelines for development applications processing ○ Development control process ○ Development control enforcement ○ Statutory and professional fees ○ Development control awareness level 	<ul style="list-style-type: none"> ○ Field Survey
<p>4. To establish the effects of the development control regulations compliance level to the urban spatial structure.</p>	<ul style="list-style-type: none"> ○ Social, economic and environmental effects of the development control regulations compliance level to the urban spatial structure of the study area 	<ul style="list-style-type: none"> ○ Field Survey
<p>5. To propose possible intervention measures for the effective development control regulations compliance in the Kitengela Town</p>	<ul style="list-style-type: none"> ○ Ways of enhancing development control regulations compliance in the study area 	<ul style="list-style-type: none"> ○ Field Survey ○ Policy Papers ○ Previous Studies on Development Control

Source: Author, 2016

3.6 Data Collection Methods

There are several methods of data collection; interviewing, instrument administration, observation and examination of documents, materials and artifacts. An inventory of the study area's characteristics in regards to development control regulations compliance was obtained by carrying out a survey of the study area through the above four data collection methods.

Data collection through examination of documents and materials entailed the collection of data which already exists or data which is difficult to obtain from the field such as development control tools for Kitengela town and the possible intervention measures for effective development control based on best practices. It entailed the examination of documents containing information related to development regulations, factors affecting development control regulations compliance, effects of non-compliance to development control regulations and planning intervention measures for effective development control for both published and unpublished literature. Some sources of this type of data (secondary data) included Local Physical Development Plans, Acts of Parliament, Sectoral policies, Central Bureau of Statistic records, Physical Planning Handbook, AAK policy papers, and maps from Survey of Kenya.

Interviewing, instrument administration and observation entailed the collection or gathering of first hand data (primary data) from the field (study area) concerning development control regulations compliance, factors affecting development control regulations compliance, effects development control regulations compliance and possible intervention measures. The instruments used in collection of primary data include questionnaires and checklists. The study utilised household questionnaires and developers questionnaires to collect information regarding the awareness of the existence of development control regulations, factors affecting development control regulations compliance, effects of the development control regulations compliance level to the urban spatial structure and the possible intervention measures effective development control. (*See Appendix 1 for Household Questionnaire and Appendix 2 for Developers' Questionnaires*). A checklist was used to collect information regarding development control regulations compliance such as building lines, plot coverage, setbacks and roads width. (*See Appendix 3 for Checklist*).

Observation method was used to capture the visual characteristics of the study area which was recorded on observation forms and maps. The observation of the study area incorporated physical observation for documentation of the existing situation and mapping of the physical elements in the study area such as buildings/developments, open spaces, transport networks etc. Some of the data collected through physical observation include building heights, structure types, type of land use etc.

Interviews were conducted with the key informants (Kajiado County Physical Planner, Director of NEMA Kajiado County, Public Health Officer-Kajiado East Sub County (Kitengela) and Public Works Officer/County Engineer) due to their advanced knowledge on issues related to development control. (*See Appendix 4 for Key Informants Interview Schedules*).

3.7 Data Analysis Plan

The collected data was analyzed using content analysis (for qualitative data) and descriptive analysis (for quantitative data) such as frequency distribution and basic computation using computer programs such as SPSS and Excel. The data analysis was done to bring out the sense in the data; to make it useful information as noted by Mugenda and Mugenda (2012). The units of analysis for this study were individuals and developments.

Content analysis was used to analyse qualitative data collected through interviews with development control officials, observation and documentary analysis (examination of documents) while descriptive analysis was used to analyse quantitative data collected through administration of research instruments. Aspects analyzed using content analysis include the development control tools for Kitengela Town and Kajiado County in general, main factors affecting development control regulations compliance and proposals on effective development control regulations compliance. Development control tools for each of the development control agencies and the factors hindering development control regulations' compliance were identified as well as the suggestions/proposals of the development control officials on possible intervention measures for effective development control regulations' compliance.

The qualitative data was interpreted to establish patterns, trends and relationships of variables such as the main factors influencing development control regulations

compliance and possible intervention measures for effective development control regulations compliance

Statistical Package of Social Science tool (SPSS) and Excel were used to analyze quantitative data obtained through administration of research instruments (questionnaires and checklist). The aspects analyzed using SPSS include background information of respondents, developments details, factors affecting development control regulations compliance and their respective effects and proposals on effective development control regulations compliance.

Correlation (Pearson correlation coefficient) was used to test the null hypothesis. The correlation test was used due to the ratio level of measurement of the data collected and the perceived linear relationship between building line size and plot coverage percentage. It enabled a decision to be made on whether or not a significant relationship existed between building line size and plot coverage percentage

The analyzed data was interpreted to facilitate measuring of relationships and sub-sequential drawing of conclusions and recommendations for informed decision making as well as to achieve the study's objectives. The quantitative data was interpreted to establish condition, distribution, location and adequacy of physical entities such as developments, roads etc.

3.8 Data Presentation Plan

The presentation of the data (after analysis) depends on the type of the data; qualitative or quantitative. Qualitative data is presented by use of descriptive narratives and photography. Information presented using descriptive narratives include detailed description of phenomena such as development application processing process and detailed intervention measures for effective development control regulations compliance. Information presented using photography entail the visual characteristics of phenomena such as building conditions, congestion and road conditions.

The quantitative data is presented using charts (such as bar graphs and pie charts), frequency tables and maps. Bar charts and pie charts is used to present discrete data such as land use mix of the study area. Frequency tables is used to present summarized categorical or numerical data such as building lines and setbacks, road widths etc. while maps is used to present spatial information such as location and distribution of developments and infrastructure such as roads.

CHAPTER FOUR: STUDY AREA

4.1 Introduction

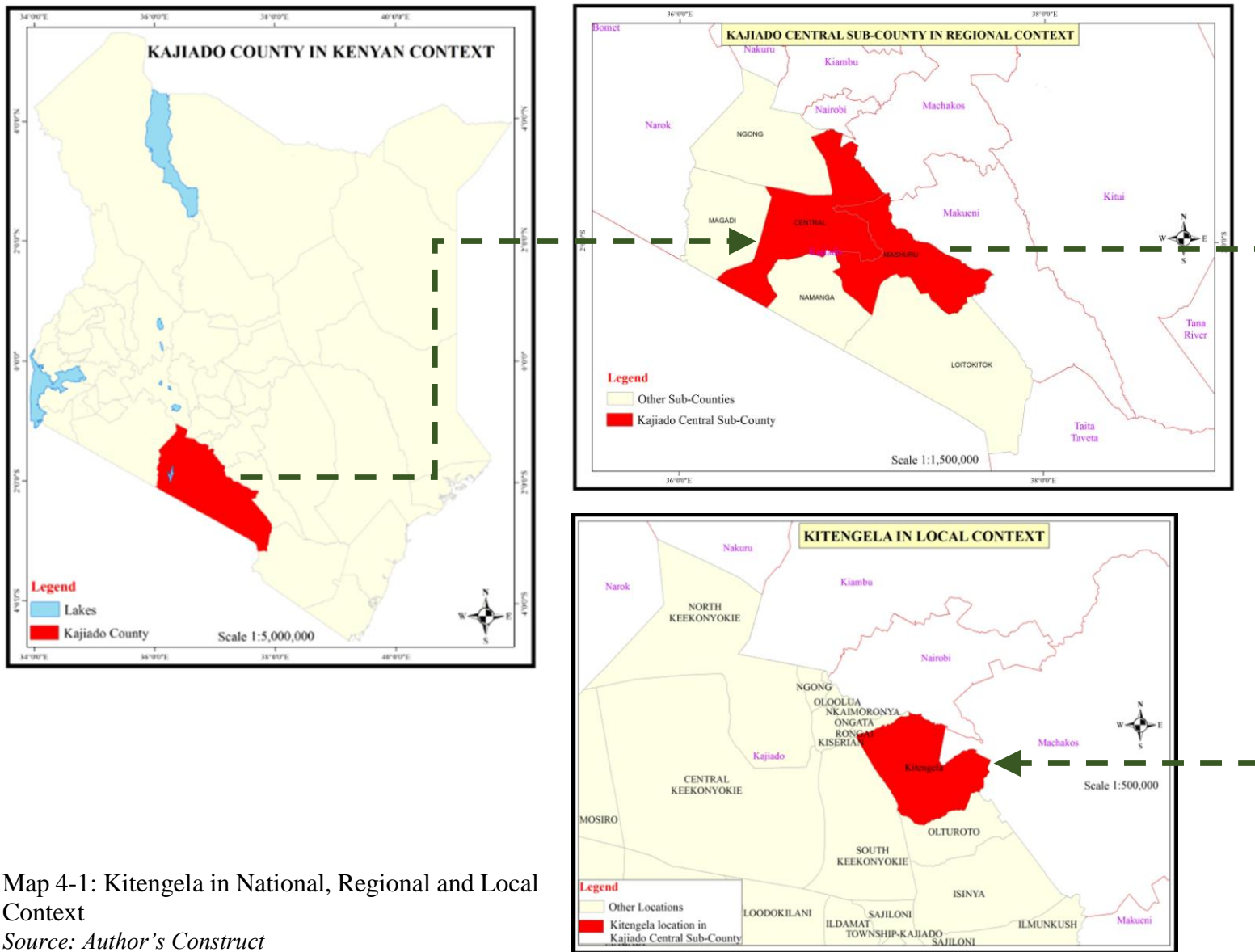
This chapter is concerned with the general characteristics of the study area defining its geographical location, demographic characteristics, socio-economic characteristics, social infrastructure, physical infrastructure, natural physical and geological features and climatic characteristics.

4.2 Geographical Location

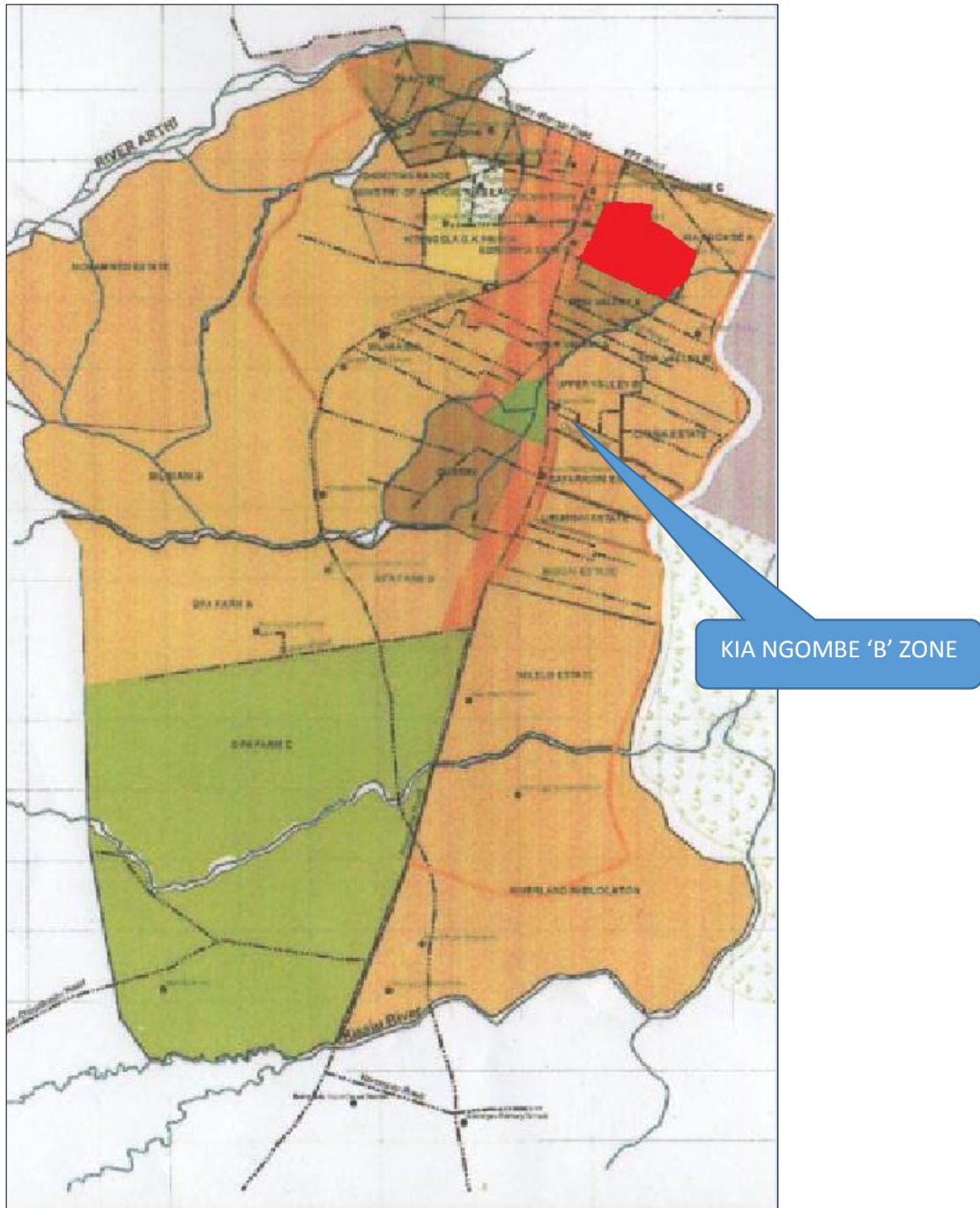
Kitengela Town is located 30 kilometers south of Nairobi City (CBD) within Kajiado East Sub-County, Kajiado County. Kajiado County borders Nairobi City to the North extending to the Kenya-Tanzania border to the South. It borders Taita Taveta County to the Southeast, Machakos and Makueni Counties to the East, Kiambu County to the North and Narok County to the West.

Kitengela as a location comprises an area of approximately 390 km² (GOK, 2001) within Kajiado County and is part of a larger rangeland ecosystem called the Athi-Kaputiei Plains (a 2,456 km² ecosystem). Kitengela town is part of the Nairobi Metropolitan Area. The town borders Athi River town to the North East, Nairobi National Park to the North, Ongata Rongai to the North West, Olturoto to the South and South Keekonyokie to the west. The town is approximately 89.19 km² in size.

Kitengela town has seventeen (17) land use zones which include: Kimmerland, Selelo, Muigai, Upper Valley, New Valley, Commercial Zone, Shooting Range, Korompoi, Downtown, Jua Kali, Parkview, Mohammed, Milimani, Sifa Farm, Kwa Saitoti, Noonkopir and Kia Ngombe (Kitengela Zoning Plan, 2012). Kia Ngombe 'B' zone (the study area) is a high density residential zone. It borders Kia Ngombe 'A' zone to the North and East, Hill Top Commercial zone to the West and New Valley 'A' zone to the South. The zone is defined by Kitengela Hospital road, Hill Top, 3T road, Deliverance Road and Sunrise of Africa Academy.



Map 4-1: Kitengela in National, Regional and Local Context
 Source: Author's Construct



Map 4-2: Kia Ngombe 'B' Zone, Kitengela Town
 Source: Adopted from Kitengela Zoning Plan, 2012

4.3 Demographic Characteristics

The indigenous people of Kitengela town are the Maasai community who are mainly pastoralists. However, there has been an increasing influx of people from other tribal groups mainly from Nairobi and Athi River. Population growth and urbanization have occurred in parallel with land tenure changes in Kitengela. The influx of people from other areas has been due to the availability of land for investment and settlement. This has transformed the area into a cosmopolitan region.

During the 1980's and throughout the 1990's, the towns of Athi River and Kitengela grew rapidly, with industries and an export processing zone established in the area. The 2009 population census counted 58,167 residents of Kitengela up from 17,347 in 1999 and 6,548 in 1989 (GOK, 2001). More than two-thirds of the population of Kajiado County is concentrated in the Kitengela trading centre and other smaller trading centres (Nkedianye, 2004). Given the population size of 58,167 and an area of 89.19km², the population density for Kitengela as a location is approximately 652.17 people per square kilometer. According to the 2009 population census, the urban population of Kitengela town is approximately 8,378.

Kajiado County where Kitengela towns falls is considered to be the wealthiest county in Kenya with poverty level of 11.6% compared to the average poverty level of 45.9% for the country.

4.4 Socio-Economic Characteristics

Kitengela falls on the outskirts of Nairobi City County. The area has undergone great transformation from a group ranch in 1988 to an agricultural town in the 1990's to a robust town with plenty of urban features. Kitengela begun as the Kitengela group ranch made up of 18,292 hectares and 214 registered members (all Maasai) which was subdivided in 1988 in efforts by the Government to encourage private land ownership in pastoral systems with the aim of intensifying and commercializing livestock production (Kristjanson et al., 2002). After subdivision of the group ranch, land fragmentation and sales have continued at a steady and escalating pace (Nkedianye, 2004).

Land fragmentation and land use conversion in Kitengela has been occasioned by immigration of population from Nairobi City. Scarcity of land within the city has propelled relocation of residential developments to areas such as Kitengela, Ongata

Rongai, Ngong and Kiserian. Proximity to the city and ample landscape make Kitengela area and its environs ideal for most businesses. This has been amplified by the refurbishing of the Athi River-Namanga Highway and the expansion of water supply (Export Processing Zone water supply) to Kitengela. Within Kitengela Town, businesses both formal and informal have come up. Establishments flourishing within the larger Kitengela area include industries, large scale farming, commercial institutions/colleges, financial institutions/banks and office complexes.

4.4.1 Local Economy

The local economy of Kitengela as a location is anchored on livestock farming, crop agriculture, industries, mining, trade and commerce and commoditization of land (Kitengela Zoning Plan, 2012). Within Kitengela town, there are two industries that manufacture steel pipes, iron bars and steel products (Ashut Engineering and Prime steel). On the north western side, there are quarries (Ngurunga quarries) where limestone, building stones and gypsum are mined. The type of crop farming practiced in Kitengela is mainly horticultural farming with presence of several flower farms and vegetable farms along the Nairobi-Namanga road as evident by the large number of greenhouses within the area.



Plate 4-1: Flower Farms within Kitengela Town
Source: Author, 2016

Livestock farming is practiced within the outskirts of the town where there is presence of grazing land. The livestock rearing is one of the major economic activity in Kitengela due to the pastoralist lifestyle of the local population. The main livestock in Kitengela include cattle, goats, sheep and donkeys. The milk produced in the area is marketed mainly through hawking around Kitengela town. Within the town, there exists a slaughter house for the processing and supply of livestock produce to the town and city

markets. Commercialization in livestock production is limited as pastoralists market their livestock mainly when the need arises.

Within the town, there are several wholesale and retail shops comprising mainly supermarkets, general stores, service shops, bars/pubs, butcheries and hardwares. There are also banking institutions besides other micro-financial agencies operating in the town. The Jua Kali sector has also grown rapidly and mainly consists of carpentry, tailoring shops, motor vehicle garages, welding and posho-mills. The town is prime with numerous investment opportunities.

The increase in population and the need for land for development and settlement has led to increased sub-division and sale of the same. This act has resulted to the eruption of individuals alleging to be aiding the process as brokers and middlemen as evident in the ever increasing number of land and property firms. In addition, holding land on speculation basis within the town has been on the rise as the land businesses within Kitengela and wider Kajiado County becomes a lucrative business. The locals have been selling their land to the moneyed who buy them in large tracks and then resell them in small portions of an eighth or even quarter acres at a profit.

The Kitengela area has experienced significant real estate growth in the past five years and is poised for explosive economic growth in the next few years. A big contributing factor has been the expansion of Nairobi which has seen its population grow to more than four million resulting in an insatiable need for housing, as well as commercial and industrial zones. The Kenya Export Processing Zone (EPZ) as well as some premier blue chip companies and government parastatals such as the East African Portland Cement, the Athi River Mining, Kenya Meat Commission and Ken chic Limited are located within this locality raising the stakes of real estate development. Real estate development companies (such as Jamii Bora estate and Superior Homes) have been engaging in the execution of planned housing developments on vast swathes of land. These developments are modeled in a way that they offer residential units as well as schools, recreation and religious facilities. The result has been the march of economic activity southward along the Nairobi-Athi River corridor as developers, the government and home-seekers at large search for habitable areas.

4.5 Social Infrastructure

The social infrastructures within Kitengela town include educational facilities, health facilities, religious facilities, community/public purpose facilities and administrative facilities. The provision of these social infrastructure is determined by the zone-based development control regulations. For each zone, the specific social infrastructure allowed/permitted are indicated as well as those allowed with conditions.

Within the town, there are four secondary schools (St. Monica Girls Secondary School, Kitengela International School, Kitengela Girls School and Noonkopir Secondary School) and six full primary schools (Acacia Crest Academy, Kitengela International Academy, Thorn Groove Academy, Neptun, Ebenezer Primary School and Kitengela Prisons Primary School). With the exception of Kitengela Prisons Primary School and Kitengela Girls Secondary School all of these schools are private. The most prominent schools in the town is the Acacia Crest Academy and Kitengela International School. There are also four tertiary educational institutions within the town which include Kenya College of Accountancy (KCA), National Industrial Training Institute (at Namanga-Ngurunga road junction), East African University and KAG (Kenya Assemblies of God) EAST University which have all been established in the last ten years.



Plate 4-2: A University in Kitengela Town
Source: Author, 2016

The literacy level within Kajiado County and by extension Kitengela town is low at 55.4 compared to 66.4 for the country as the county is ranked in position 36 out of the 47 counties in the country in regards to literacy level (Kenya County Facts Sheets, 2011).

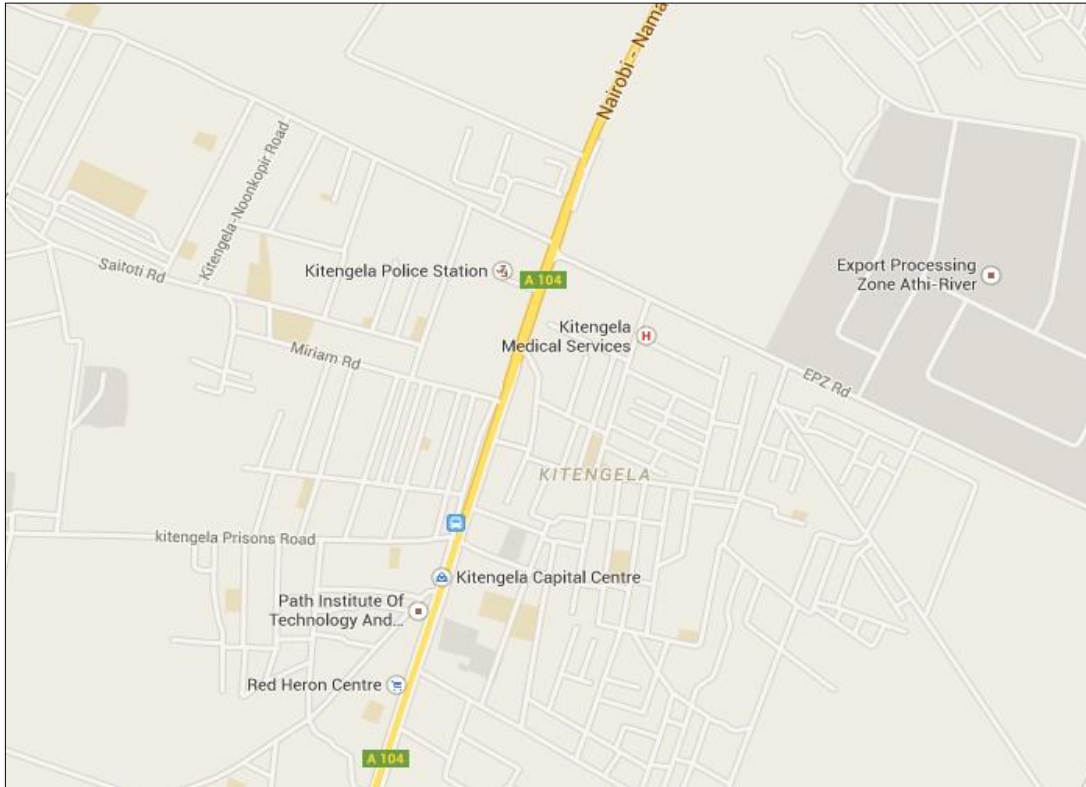
The health facilities in the town include Aga Khan Hospital, Getrudes Hospital, Kitengela Medical, Penda Health Centre, Meridian Hospital and Kitengela Health Centre. With the exception of Kitengela Health Centre, the rest are all private. However, there are county and sub-county public hospitals in the neighbouring towns of Kajiado and Isinya. The county in general has a low doctor-patient ratio of 1:76,000 compared to 1: 26,000 for Kenya county average (Kenya Counties Facts Sheet 2011).

Due to presence of both Christians and Muslims in the town, there are both churches and a mosque within the town. The churches are for both Catholics and Protestants. The prominent churches within the town include St. Monica's Catholic Church, PCEA Church Kitengela and Deliverance Church. The community/public purpose facilities within the town include a children's Home (Kenya Kids), a correctional facility (Kitengela Prison), a Police post and an administration police camp. The administrative facilities include the Chief's office (adjacent to the open air market) and the Sub-county office (adjacent to KCB bank).

4.6 Physical Infrastructure

Kitengela town enjoys the presence of a class 'A' road (Nairobi-Namanga road-A104) which passes at the centre of the town linking the town to Nairobi city, Kajiado, Isinya and Namanga towns and Tanzania through Namanga. The main roads within the town for internal movement and accessibility include Kitengela-Rongai road (Ngurunga road), EPZ road, Noonkopir road, Pinto road, Kitengela Prisons, road, Deliverance road, Acacia road and Old Namanga road.

With the exception of Namanga road and EPZ road, all roads in the town are not paved. According to the Kenya County Facts Sheet 2011, Kajiado County is one of the counties with the worst roads (in terms of condition) as only 38.4% of the roads are in good/fair conditions compared to the country's average of 43.5%. Within Kitengela town, there is only one designated bus terminus within the town which is still under construction. Currently, the residents have been utilizing a road reserve at the junction of Namanga road and Prisons road as the bus terminus. There is also a proposed second bus terminus at the site currently occupied by the Prime Steel Industries.



Map 4-3: Road Network in Kitengela Town

Source: Google Maps

There is also a railway line passing through the eastern side of the town (which form the border of Kajiado and Machakos Counties) even though there lacks a well designated railway station. The town does not have an airport or airstrip due to its proximity to the Jomo Kenyatta International Airport which is just approximately 25kilometers away.

Kitengela Town does not have a public sewer reticulation system. Each individual plot and household in the township manages its own liquid wastes by use of septic tanks, waste water treatment facilities and bio digesters. Due to the high number of new developments coming come within the town, there is a need for a sewer system for the town or even expansion of the EPZA sewer system (serving the neighbouring Athi River town) to serve the town.

Just like liquid waste disposal, each individual plot and household manages its own solid waste. Refuse collection and disposal is currently undertaken by private garbage collection firms even though there is provision of a public dumpsite in the western edge of the town in Noonkopir area.

The town is supplied with water by EPZ water project and supplemented by private boreholes and rain water harvesting measures. However, there is a need to improve water supply in Kitengela through harnessing of river water (Kisaju and Isinya Rivers) through construction of a dam upstream to avoid overreliance on the EPZ water supply which is sourced from Kiambu through partnership of EPZ and Nairobi Water and Sewerage Company.

In regards to power supply, the town is connected to the national electricity grid with presence of a Kenya Power and Lighting Company substation within the town. In addition, the town is well served by various mobile phone service providers such as Airtel and Safaricom as evident in the presence of the several Base Transceiver Stations within the town.

The provision of these physical infrastructure determines the development control regulations for each area/plot. The building line size specification is based on the width of abutting road, development density on availability of public sewer system and width of abutting road, land use type on accessibility and provision of support facilities and services such as solid waste collection and disposal and water supply, road widths on existing road hierarchy and waste disposal mechanism on provision of waste management facilities and services.

4.7 Natural Physical and Geological Features

The landscape of Kitengela is generally plains being part of the greater Athi-Kaputiei Plains. The area mainly consists of wooded grassland, open grassland and scrubs with open grass land having scattered trees (Kitengela Zoning Plan, 2012). The ground cover varies seasonally with rainfall and grazing intensity. The dominant plant species are acacia trees.

There are three rivers within Kitengela town; Ilkeek-Lemedungi River, Green Valley River and Kisaju River (which forms the southern border of the town). Kitengela area being in the Kaputei plains and with undulating topography has caused meandering of the rivers. The geology of Kitengela is characterized by Athi series rocks, Kapiti phonolites and basement system rocks. The major aquifers in the area are in Upper Athi Series due to the availability of tuffs, lake beds and sediments in between the phonolites. Other aquifers are found in basement rocks due to fracturing and exposure of the rocks due to erosion (Ministry of Natural Resources and Wildlife, 1966).

The natural physical and geological features and geology of Kitengela are key determinants of the land use, land use intensity, building height, building density and liquid waste disposal mechanisms. Thus, they are valuable considerations in formulation of area-based development control regulations. For instance, the geology of the area is used to determine the permissible building height of developments based on the soil load carrying capacity while availability of aquifers determine the liquid waste disposal mechanisms as septic tanks, soak pits and pit latrines are discouraged in areas where people rely on underground water supply.

4.8 Climatic Characteristics

Kitengela area is generally dry usually characterised by the long periods of drought as it falls in a semi-arid region. There are two rainy seasons; the short rains between October and December and the Long rain between March and May. The annual rainfall varies between 500mm and 1,250mm. At times the region receives rainfall amounts as low as 250 mm. The rainfall is very unpredictable hence most of the residents do not practice crop farming (rain fed agriculture). The average annual temperature in Kajiado County as a whole is 18.9°C (Dietz, Owiti, Brandt and Otinga, 1986).

The soils are not favourable for growth of most of the crops due to the poor texture which in turn translates to low water holding capacity and high water infiltration rates. The soils are very susceptible to erosion processes such as wind erosion due to their light weight nature.

The poor soils and low rainfall within Kitengela Town has discouraged farming resulting to change in land use from agricultural to other uses such as residential, commercial, industrial etc.

CHAPTER FIVE: STUDY FINDINGS

5.1 Introduction

This chapter presents the major study findings that have emerged from data collection using administration of household questionnaires, developers' questionnaires and checklists, interviews and observation. The collected data is analyzed to come up with findings on key study questions and objectives that the study intended to respond to and achieve. It presents findings on; the socio-economic background of the respondents, the development control tools used to guide and control physical development in Kitengela Town, the development control regulations' compliance level, the factors affecting compliance and the effects of the development control regulations compliance level to the urban spatial structure.

5.2 Response Rate

Table 5-1 shows the responses received from the field for the various categories of respondents. The overall response rate was 87% based on the interviews conducted and questionnaires and checklists filled.

Table 5-1: Response Rate

Research Instrument	Expected Responses	Actual/Received Responses	Response Rate
Household Questionnaires	40	40	100%
Developers' Questionnaires	40	24	60%
Checklists	40	40	100%
Interview Schedules	4	4	100%
Total	124	108	87%

Source: Author, 2016

According to Dixon (2012), a response rate of 50% is adequate while a response rate greater than 70% is very good. This agrees with Mugenda and Mugenda (2003), that a 50% response rate is adequate, 60% good and above 70% very good. This therefore implies that the response rate of 87% is very good and suitable to make a finale for the study.

5.3 Socio-Economic Background of Respondents

The study had three categories of respondents which included: Residents, Developers and the Development Control Officials.

5.3.1 Socio-Economic Background of Residents

Out of the 40 residents interviewed, 53.8% were male while 46.2% were female and their age ranged from 23 to 73 years. Only 34.3% of the interviewed residents are engaged in formal employment (teachers, production supervisors, environmental experts, office administrators etc.) while 65.7% are either unemployed or undertake small-scale businesses such as shop keeping, grocery vending etc. This explains their income levels where 37.5% of the residents earn below Kshs 10,000 per month, 34.4% between Kshs 10,000 and Kshs 20,000 and only 28.1% earning above Kshs 20,000 per month. This explains the fact that only 12.8% of the residents own the housing units they live in with 87.2% being just tenants.

Table 5-2: Monthly Income of Residents

Income Per Month in Kshs	Percentage of Respondents
Below 10,000	37.5
10,000-20,000	34.4
20,001-30,000	15.6
30,001-40,000	6.25
40,001-50,000	3.125
Above 50,000	3.125

Source: Field Survey, 2016

5.3.2 Socio-Economic Background of Developers

The age of the interviewed developers ranged from 25 to 75 years with 54% being male and 46% female. A significant number of the developers (approximately 36%) are below 40 years in age an indication that more young people are investing in real estate. The literacy level among the developers is high with approximately 92% of the developers having completed their secondary education with 70% having completed their tertiary education. Their occupation range from business to civil service with more than 50% of the respondents working directly with national or county government. Their monthly income from their developments range from Kshs 20,000 for semi-permanent row housing to Kshs 160,000 for flats.

5.3.3 Socio-Economic Background of Development Control Officials

The study interviewed four development control officials; Kajiado County Physical Planner, Director of NEMA Kajiado County, Public Health Officer-Kajiado East Sub County (Kitengela) and Public Works Officer/County Engineer. Three of the development control officials were male with only one female (Kajiado County Engineer). All the officials had university degrees contrary to Rukwaro (2011) findings that the key departments involved with development control lacked qualified staff.

5.4 Identification of Development Control Tools and Compliance Levels

This section presents the development control tools used by the various development control agencies to guide and control development in Kitengela Town before and after the preparation of the town's local physical development plan in 2012 as well their compliance levels within Kia Ng'ombe 'B' Zone.

5.4.1 Development Control Tools for Kitengela Town before the Preparation of the Town's Local Physical Development Plan

Before the preparation of the Kitengela Zoning Plan in 2012, different development control agencies used different development control tools to guide and control development within the town. They included both the statutory and non-statutory tools (as noted by Ngetich, Opatia and Mulongo, 2014). The statutory tools (legislations) include the Physical planning Act of 1996 and the Environmental Management and Coordination Act of 1999 (EMCA) which provided for the preparation of development plans and the planning and development regulations and standards which inform development control process. The non-statutory tools included gazetted rules and regulations (the Physical Planning Handbook), Local Authorities Planning and Building Regulations (i.e. the Building Code), physical development plans (i.e. the Kitengela/Isinya/Kipeto Integrated Development Plan of 2010) and Registry Index Maps.

Each development control agency had its own development control tools and the concerned agencies include the Physical Planning Department, Public Health Department, Public Works/Engineering Department and the National Environment Management Authority.

a. The Physical Planning Department

The physical planning department in the now defunct Kajiado County Council used the Physical planning Act of 1996, Physical Development Plans (Kitengela/Isinya/Kipeto Integrated Development Plan of 2010), Physical Planning Handbook of 2007 and Registry Index Maps as tools for development control.

The Physical planning Act of 1996 (Part V on Control of Development) provided the development control process and the agencies responsible for the formulation of by-laws for guiding and controlling development. These by-laws acted as the basis of development control by providing development control regulations.

The Kitengela/Isinya/Kipeto Integrated Development Plan provided development control regulations for guiding and controlling development in Kitengela, Isinya and Kipeto areas. These regulations were in form of permitted structure types, roads' widths and minimum land size. Within Kitengela Town, the regulations include permitted minimum land size of 0.0045 Hectares and highrise developments within the town.

The Physical Planning Handbook provided supplemental guidance and standards on the process and practice of land use planning highlighting the recommended plot coverage, plot ratio, structure types, development densities, building lines, setbacks and roads widths for each land use type.

Registry Index Maps provided information regarding size and dimension of plots and the type of road serving the plots. This facilitated the determination of the appropriate land use for each of the plot.

b. Public Health Department

The main development control tool for the Public Health Department in now defunct Kajiado County Council was the Building Code (The Local Government Adoptive By-Laws-Order 1968). This is through the adoption of Section 126 of the Public Health Act on formulation of by-laws for buildings and sanitation. The building code was used to ensure that public health that is secured and maintained through provision of various standards regarding building materials, building space, lighting, ventilation, height of buildings and height of chimneys. These standards were used as a basis for development control especially for evaluating development applications and inspection of construction works.

c. Public Works/Engineering Department

The Public Works/Engineering Department in the now defunct Kajiado County Council used the Building Code (Edition 1997) as the main development control tool. It was used as a basis for checking the structural stability of buildings/structures by providing various standards regarding building materials (load-bearing requirements, resistance to weather and damp and fire resistance), building sites and ventilation of buildings among others.

d. National Environment Management Authority

NEMA as a development control agent has been utilizing the Environmental Management and Coordination Act of 1999 (EMCA) as its main development control tool. The Act provides various standards and regulations in regards to different developments or land uses with a provision for environmental impact assessment for selected developments. The regulations include: EIA/EA Regulations (Legal Notice No. 101 of 2003), Water Quality Regulations (Legal Notice No. 120 of 2006), Waste Management Regulations (Legal Notice No.121 of 2006) and Noise Regulations (Legal Notice No. 61 of 2009).

The EIA/EA Regulations provides for the developments to undergo environmental impact assessment and annual environmental audits while the Water Quality Regulations provides for the guides for water use and conservation as well as effluent standards for discharge. Waste Management Regulations focuses on management of solid, industrial and hazardous wastes, pesticides, toxic and radioactive substances while the Noise Regulations provides for the acceptable noise limits as a way of managing noise pollution to levels that do not cause a disturbance/nuisance to the public.

5.4.2 The Current Main Development Control Tools for Kitengela Town

Currently, the Kitengela Zoning Plan (2012) is the main development control tool for Kitengela Town. Being a zoning plan, it is considered to supersede the other development control tools in regards to ensuring orderly and sustainable development as noted by AAK (2015). For this reason, it is used as the main development control tool for guiding and controlling physical development within Kitengela Town. The other development control tools are used as supplementary development control tools. The Building Code (Edition 2009) is used to compliment the zoning plan through

provision of the standards regarding building materials, building space, lighting and ventilation which are relevant to both the Public Health and Public Works/Engineering Departments while EMCA is used to compliment the zoning plan through provision of detailed environment related standards and regulations relevant to NEMA. For both the Public Health and Public Works/Engineering Departments, the Kitengela Zoning Plan provides standards regarding building height and building sites specifications while for NEMA, the plan provides standards regarding waste disposal mechanisms, riparian reserve specifications and percentage of vegetation cover at plot level.

5.4.2.1 Kitengela Zoning Plan of 2012

Kitengela Zoning Plan is a Local Physical Development Plan (a Zoning Plan) for Kitengela Town with an objective of providing a guide to help in development control so as to ensure harmony in location of the different land uses. The plan was prepared under the provisions of the Physical Planning Act Cap 286 (under review) and the Local Government Act Cap 265 (now repealed). The preparation of the zoning plan has been triggered by the rapid rate of urban development in Kitengela town which is foreseen as a menace to the welfare of the local population, natural environment and the performance of the sub-region's economy. The zoning plan is geared towards realization of self-sustaining and controlled future spatial developments. It indicates the seventeen (17) zones indicating land uses for each zone, preferred minimum plot sizes, types of developments, plot settings and permissible as well as prohibited developments.

5.4.3 Development Control Regulations Compliance Levels in Kia Ng'ombe 'B' Zone

The study assesses the development control regulations compliance level through inspection (evaluation) of the developments' specifications in comparison to the set development control regulations as provided by the Kitengela Zoning Plan (being the main development control tool for Kitengela Town currently). This facilitates assessment of the level of conformity to the set specifications (development control regulations). The set development control regulations for Kia Ng'ombe 'B' Zone are as provided in Table 5-3 below;

Table 5-3: Development Control Regulations for Kia Ng’ombe ‘B’ Zone

Permitted Land Use	Permitted Structure Type	Plot Setting	Allowed Developments with application of Change of User	Prohibited Developments	Roads	Environment
Residential (High Density Residential Use)	Multi-Dwelling Units (flats)	<ul style="list-style-type: none"> ○ Minimum Plot Size of 0.045 Ha ○ Maximum Plot Coverage of 65% ○ Minimum Building line of 5meters ○ Maximum building height of 4 floors (5 levels) ○ Minimum of 2 parking spaces per one user ○ Minimum of 1 Parking Space for every 2 classrooms for Schools ○ Minimum (Side and Rear) Setbacks of 1.5meters 	<ul style="list-style-type: none"> ○ Mixed Use Developments ○ Schools ○ Community Facilities 	Sound Polluting Joints likes Bars and Industries	<ul style="list-style-type: none"> ○ Collector Roads-12 Meters ○ Access Roads-9 Meters 	<ul style="list-style-type: none"> ○ Riparian Reserve of 30 meters for main rivers ○ Riparian Reserve of 15 meters for small rivers and streams ○ Minimum of 1% of Plot Area to be under Greeneries for Residential Developments ○ Minimum of 0.5% of Plot Area to be under Greeneries for Commercial and Mixed Use Developments

Source: Kitengela Zoning Plan, 2012

5.4.3.1 Land Use Compliance

The land use mix in Kia Ng'ombe 'B' Zone is as in Figure 5-1 below;

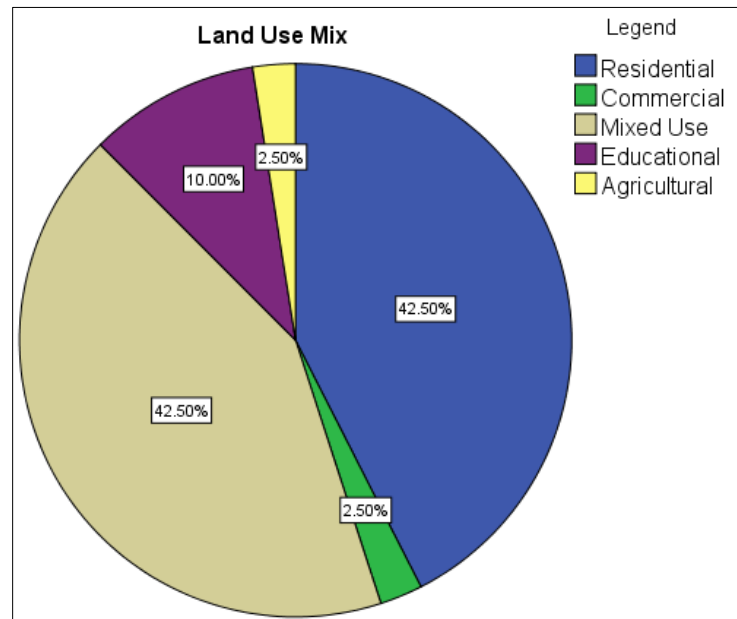


Figure 5-1: Land Use Mix in Kia Ng'ombe 'B' Zone

Source: Field Survey, 2016

The study found out that 95% of the sampled plots/developments are compliant to the recommended land use. 42.5% of the sampled developments are residential (which is the recommended land use) while 42.5% are mixed use and 10% educational which are permitted with a change of user (Kitengela Zoning Plan, 2012). 5% of the developments are non-compliant to the permitted land use with agricultural and commercial land uses accounting for 2.5% each. The commercial developments within the residential zone are mainly developed along the main roads within the zone while the agricultural development is within the low density residential subzone within the wider residential zone where there is presence of comparatively large tracks of land. People are accustomed to having various types of commercial and even agricultural developments close to residential areas or within them and the attempt to segregate uses does not meet with much success especially in towns/cities of developing countries (Courtney, 1978).

5.4.3.2 Structure Type Compliance

On the profile of the developments in respect to structure typology, six structure types were identified; Flats, Row Housing, Bungalows, Maisonettes, Agricultural Farms and Educational Facilities. Some of the structure types are either permanent or semi-

permanent while others have a mix of both permanent and semi-permanent as shown in Table 5-4 below;

Table 5-4: Structure Types in Kia Ng’ombe ‘B’ Zone

Structure Type		Percentage	
1. Flat		37.5	
2. Row Housing	Semi-Permanent	20.0	37.5
	Permanent	10.0	
	Mix of Permanent and Semi-Permanent	7.5	
3. Bungalow		10.0	
4. Maisonette		2.5	
5. Agricultural Farm		2.5	
6. Educational Facility	Permanent	5.0	10
	Semi-Permanent	5.0	
Total		100.0	

Source: Field Survey, 2016

Only 57.5% of the sampled developments are compliant to the permitted structure type within the zone. This include flats, permanent row housing and permanent educational facilities whereby the permanent row housing and permanent educational facilities are only allowed with application of change of user to either mixed use (residential cum commercial) or educational land use. The non-compliant structures include semi-permanent and mix of permanent and semi-permanent row housing, bungalows, maisonettes, agricultural farms and semi-permanent educational facilities. The non-compliance of these structures is due to their semi-permanent aspect, prohibited land use or prohibited land use density.

The construction of the semi-permanent structures is attributed to reduction of construction costs through use of cheaper building materials such as iron sheets (since building materials account for approximately 68% of the total construction cost) and in return reduce costs associated with building material acquisition and labour up to 50% (Syagga, 1993).

The existence of low density residential developments (bungalows and maisonettes) is due to presence of sub-zones within the zone where some sections of the zone are predominantly for low density residential developments while others are for high

density developments. In addition, rejection of such developments cannot be justified purely on the basis of zoning requirements, since development would not create harmful effects in terms of nuisance, pollution, traffic, or an undue demand on existing infrastructure (Dissanayake, 1987).

The existence of agricultural farms within the zone is explained by the original use of the land before the preparation of the town’s zoning plan in 2012. Before the emergence of the town in 1988, land was agricultural (a group ranch) and after the subdivision of the group ranch some land owners did not apply for change of user.

5.4.3.3 Plot Setting Compliance

Plot setting is provided in terms of plot size, plot coverage, building line, setbacks, building height and parking spaces provision specification.

a. Plot size

The plot sizes in Kia Ng’ombe ‘B’ Zone range from 0.05 Hectares (1/8Acre) to 0.80 Hectares (2 Acres) with the average size being 0.05 Hectares (1/8Acre). This is an indication that all sampled plots are compliant to the set recommended minimum plot size of 0.05 Hectares (1/8Acre).

Table 5-5: Plot Sizes in Kia Ng’ombe ‘B’ Zone

Plot Sizes	Percentage
0.05Ha	72.5
0.20Ha	7.5
0.10Ha	12.5
0.40Ha	2.5
0.80Ha	5.0
Total	100.0

Source: Field Survey, 2016

The plot sizes depend mainly on the land use. All plots above 0.20 Hectare (1/2 Acre) are either for educational and agricultural uses since the land requirement for educational facility (Pre-School) is 0.15-0.25 Hectares while that for small-scale agricultural farm is 1-4 Hectares (Physical Planning Handbook, 2007).

Table 5-6: Land Use-Land Size Cross Tabulation

		Land Sizes					Total
		0.05Ha	0.10Ha	0.20Ha	0.40Ha	0.80Ha	
Land Use	Residential	70.6%	23.5%	5.9%	-	-	100.0%
	Commercial	100.0%	-	-	-	-	100.0%
	Mixed Use	94.1%	5.9%	-	-	-	100.0%
	Educational	-	-	50.0%	25.0%	25.0%	100.0%
	Agricultural	-	-	-	-	100.0%	100.0%
Total		72.5%	12.5%	7.5%	2.5%	5.0%	100.0%

Source: Field Survey, 2016

b. Building Line

The study found out that the building line for the sampled developments range from zero to twelve meters. The compliance level to the recommended minimum building line of 5 meters is at 25% with half of the sampled developments in the study having no building line at all.



Plate 5-1: Washrooms within the Building Line Space

Source: Fieldwork, 2016

The building line compliance is lowest among the multi-dwelling residential developments (flats and row housing units) as 93% of the sampled flats have building line non-compliant with 100% of the sampled row housing units being non-compliant. This is due to the use of the building line space for construction of commercial facilities (shops), water tanks and sanitary facilities (washrooms) as a way of maximizing on the available space within the plot.

c. Setbacks

The permitted minimum setback size according to the Kitengela Zoning Plan is 1.5 meters. This is for the both rear and side setbacks. However, the setbacks 'compliance level within Kia Ng'ombe 'B' Zone is 32.5% for rear setback and 25% for side setbacks. The low setbacks' compliance level is as a result of developers trying to maximise on the available space as they view the side and rear setbacks as wastage of space hence end up developing their plots from 'beacon to beacon' (AAK, 2011). In addition, majority of developers use their buildings' outer walls as boundary walls hence avoiding leaving any open spaces around their buildings. This is evident in the orientation of their buildings as majority of the housing units are facing each other with a passage at the centre.



Plate 5-2: Orientation of Developments

Source: Fieldwork, 2016

d. Plot Coverage

The study found out that compliance to plot coverage within Kia Ng'ombe 'B Zone is at 42.5% as 57.5% of the sampled developments occupy more than 65% of the plot area as shown in Table 5-7 below;

Table 5-7: Plot Coverage within Kia Ng'ombe 'B' Zone

Plot Coverage	Percentage
65% and Below	42.5%
Above 65%	57.5%

Source: Field Survey, 2016

The essence of fixing plot coverage is to ensure a healthy environment and allow for expansion and improvement of infrastructural facilities and social amenities (Physical

Planning Handbook, 2007). Its compliance is significantly affected by building line size compliance level. It logical that as the building line size increases, there is a corresponding increase in the size of undeveloped space within the plot (the building line size \times plot width) and hence a decrease in size of plot area covered by the development.

Using correlation, the study established that building line size affected plot coverage percentage as shown in Table 5-8. With a correlation coefficient of -0.602, the relationship between plot coverage and building line size is deemed to be moderate and negative. This means that there is a moderate negative relationship between building line and plot coverage (as the building line size increases, the plot coverage percentage decreases). Based on the fact that increase in building line size results to increase in building line compliance and decrease in plot coverage percentage results to increase in plot coverage compliance, increase in building line compliance would result to increase in plot coverage compliance

Table 5-8: Correlation of Building Line Size and Plot Coverage

		Building Line	Plot Coverage
Building Line	Pearson Correlation	1	-.602**
	Sig. (2-tailed)		.000
	N	40	40
Plot Coverage	Pearson Correlation	-.602**	1
	Sig. (2-tailed)	.000	
	N	40	40
**. Correlation is significant at the 0.01 level (2-tailed).			

Source: Field Data, 2016

With the research hypothesis being ‘*The correlation between building line size and level of plot coverage will be significantly different from zero*’ and the null hypothesis being ‘*The correlation between building line size and level of plot coverage will not be significantly different from zero*’, the null hypothesis is rejected since the correlation between building size and plot coverage is significant. This means that building line size is one of the key determinants of plot coverage percentage but not the only determinant. The compliance of the building line contributes significantly to plot

coverage compliance though there are other factors also contribute/determine the plot coverage compliance such as rear and side setbacks.

e. Building Height

The study found out that the average building height of the sampled developments is one level. 70% of sampled developments are developed up to one level (ground floor only). This attributed to the fact that 60% of the structures are either row housing units, educational facilities, farms house or bungalows (which all have a building height of one level) and 26.7% of the flats are partially completed (currently built to one level only). To this effect all the developments within the zone are compliant to the recommended maximum building height of four floors as none of the sampled development exceeds four floors.

f. Parking Spaces Provision

Parking spaces are one of the determinants of character, form and function of residential neighbourhoods. Adequate provision of parking spaces at plot level plays a great role in reduction of traffic congestion along the abutting roads due to no or fewer cases of roadside parking.

In Kia Ng’ombe ‘B’ Zone, the compliance level to the recommended parking spaces provision stands at 45% as more than half (52.5%) of the developments lack parking spaces entirely. The parking space provision compliance is highest within educational facilities and lowest within row housing. The low parking spaces provision compliance level is as a result of non-compliance with the recommended plot coverage. As the physical development occupies more space on the plot, less space is left for parking purposes. This is evident as 77.3% of developments with parking spaces lower than the recommended number have a plot coverage above the recommended 65% as shown in Table 5-9.

Table 5-9: Parking Space Provision-Plot Coverage Cross Tabulation

		Plot Coverage		Total
		65% and Below	Above 65%	
Number of Parking Spaces	Below 2	22.7%	77.3%	100.0%
	2 and Above	66.7%	33.3%	100.0%
Total		42.5%	57.5%	100.0%

Source: Field Survey, 2016

5.4.3.4 Roads Provision

The compliance level to the recommended access road width in Kia Ng'ombe 'B' Zone is at 32.5% as 67.5% of the sampled developments in the study are served by 6 meter wide access roads. This is explained by the current roads' width non-compliant subdivisions in the area which were undertaken way before the preparation of the town's zoning plan (in 2012) when the town was a group ranch in late 1980s.

5.4.3.5 Environmental Considerations

The set environmental regulations are provided in terms of permitted minimum riparian reserve width and permitted minimum plot area under Greeneries.

In regards to compliance to the recommended plot area under greeneries, the study found out that only the single dwelling residential units (bungalows and maisonettes) and educational facilities are compliant as the high residential developments (flats and row housing units) have majority of their plot area either developed or paved for parking purposes.

The study also found out that out of the 400 developments within Kia Ng'ombe 'B' Zone, only two have sections within the riparian reserve as majority of the plots adjacent to the river are undeveloped. This means that there minimal cases of loss of property or lives due to flooding of the stream/river within the area.

Map 5-1: Developments within the Riparian Reserve



Source: Adopted from Google Maps with Modifications

5.4.3.6 Summary of Development Control Regulations’ Compliance within Kia Ng’ombe ‘B’ Zone

Using the compliance level of the individual development control regulations, the study found out that the average development control regulations’ compliance within Kia Ng’ombe ‘B’ Zone was at 59.5% which is way above the country’s average compliance of 30% (since only 30% of urban towns are settled on the basis of formal plans (GoK, 2008).

Table 5-10: Summary of Development Control Regulations Compliance

Development Control Regulation		Percentage of Compliant Developments
1. Permitted Land Use		95%
2. Permitted Structure Type		57.5%
	i. Permitted Minimum Plot Size	100%

3. Plot Setting	ii. Permitted Coverage	Maximum Plot	42.5%
	iii. Permitted Line	Minimum Building	25%
	iv. Permitted Setback	Minimum Rear	32.5%
	v. Permitted Setback	Minimum Side	25%
	vi. Permitted Height	Maximum Building	100%
	vii. Permitted Parking Spaces	Minimum number of	45%
	4. Permitted Minimum Access Road Width		
5. Recommended Riparian Reserve Width			99.5%
Average Compliance Level			59.5%

Source: Field Survey, 2016

The most violated development control regulations include building line, rear and side setbacks, access road widths, plot coverage and parking space provision stipulations a phenomena common within the low income residential neighbourhoods (UN Habitat, 2000).

5.5 Factors Affecting Development Control Regulations' Compliance

The study identified eight main factors contributing to the above development control regulations' non-compliance level which include;

- i. Maximization of available space
- ii. High Professional and Statutory Fees
- iii. Low levels of Public Awareness
- iv. Ignorance
- v. Corruption
- vi. Poverty
- vii. Poor Enforcement (Inadequate Supervisions and Inspections)
- viii. Complexity of the Development Control Process

However, contribution of these factors to development control regulations' non-compliance differed among the different respondents. Both the interviewed developers and residents cited all of the above factors as contributing to development control non-compliance while the interviewed development control officials only cited maximization of available space, ignorance and poor/inadequate enforcement as the main factors contributing to development control regulations' non-compliance.

It was however important to note that there was a similarity of perception/view on the level of contribution of the above factors to development control regulations' non-compliance between the interviewed residents and developers. Both the interviewed developers and residents (of whom 51.3% having undertaken a development project) cited high professional and statutory fees, corruption and aspiration and aims of developers to maximise returns from land as the main contributors to development control regulations' non-compliance.

Table 5-11: Factors Affecting Development Control Regulations' Compliance

Factors Affecting Development Control Regulations' Compliance	Percentage of Contribution to Non-Compliance (According Developers)	Percentage of Contribution to Non-Compliance (According Residents)
1. High Professional and Statutory Fees	25.0	25.7
2. Corruption	22.5	23.1
3. Aspiration and Aims to Maximise Returns from Land	17.5	17.9
4. Ignorance/Impunity	10.0	10.3
5. Lack of Public Awareness	7.5	7.7
6. Complexity of the Development Control Process	7.5	7.7
7. Poverty	5.0	5.1
8. Poor Enforcement	5.0	2.6
Total	100.0	100.0

Source: Field Survey, 2016

5.5.1 High Professional and Statutory Fees

High professional and statutory fees were cited as the main contributor of development control regulations' non-compliance by both the interviewed developers and residents at 25% and 25.7% respectively.

The preparation of development proposals require the services of professionals like planners, architects, structural engineers and environmental experts depending on the nature of development. However, the amount of fees charged by these professionals has been unaffordable for some of the developers (Opata, Mulongo, Omuterema & Ngetich, 2013). This has resulted to engagement of unqualified/underqualified consultants in a bid to cut cost on the professional fees. In return, this has resulted to preparation of non-compliant development proposals (due to the lack of knowledge about the set development control regulations) by majority of these unqualified consultants which when implemented result to development control non-compliant developments.

In addition, with various development control agencies and each having its own statutory fee, developers are finding the total amount of money spend on the statutory fee consuming a significant percentage of their development budget and in some cases exceeding the cost of erecting development and the value of the plot (Opata, Mulongo, Omuterema & Ngetich, 2014). This results to low level of development proposals submission for evaluation and subsequent advice on possible modification to ensure compliance with the set development standards. In return, this leads to implementation of non-compliant development proposals.

5.5.2 Corruption

The study found out that corruption was the second highest contributor of development control regulations' non-compliance at 22.5% (for developers) and 23.1% (for residents). According to the interviewed respondents (developers and residents) corruption among development control officials and developers contributes significantly to violation of development control regulations' compliance. Non-compliant development proposals are being granted development permission in exchange for a specific amount of money depending on the nature of the development hence encouraging double standards in granting or rejecting approval (Ogundele, Odewumi and Aigbe (2011). This is instigated by both the developers as well as the development control officials as in some cases it is the developers who offer the

development control officials money in exchange of approval of their non-compliant development proposals while in other cases it is the development control officials who ask for the money to approval development proposals which are non-compliant.

5.5.3 Aspirations and Aims of Developers to Maximise Returns on their Land

17.5% of the interviewed developers and 17.9% of the interviewed residents cited the aspirations of developers of seeking to maximise returns from land through optimal development of available space within the plot/land as one of the main factor contributing to violating development control regulations. The quest by the developers to maximize profit by increasing plot coverage and plot ratio of their plots through unauthorized alteration/modification of development proposals during construction was also noted by the interviewed development control officials as one of the main contributors of development control regulations non-compliance. Dissanayake (1987) and AAK (2011) asserts that the high cost of land in urban areas and the increase in demand for rental buildings and residential units is one of the main reason as to why developers are increasing plot coverage and plot ratio of their plots resulting to violation of building line and setbacks provision which negatively affect plot coverage and subsequently provision of parking spaces and other public facilities/spaces within the plot.

5.5.4 Ignorance

The study found out that violation of development control regulations in some cases has been out of ignorance/impunity by some of the developers according to the interviewed development control officials and 10.0% of the interviewed developers and 10.3% of the interviewed residents. Despite having sufficient knowledge about the development control process as well as the development control regulations, some developers choose not to follow the due process of development control nor adhere to the set development standards out of impunity or lack of sufficient knowledge about the resultant effects as noted by Dissanayake (1987).

This results to implementation of non-compliant developments since the due process of development control is not followed hence advice by the development control officials on possible modifications on development proposals are not made.

5.5.5 Lack of Public Awareness

For one to comply with any regulations, he/she ought to be aware about their existence and contents. People cannot comply with regulations if they do not understand what is required (OECD, 2000). The lack of this awareness about the set development control regulations for each of the zones results to violation of some or all of the development control regulations due to lack of knowledge about the '*Dos and Don'ts*' of development.

Within Kia Ng'ombe 'B' Zone within Kitengela Town, 17.5% of the interviewed residents do not know any development control regulation. To this effect, 7.7% of the interviewed residents consider lack of public awareness about the various development control regulations as the main factor contributing to violating development control regulations which is echoed by 7.5% of the interviewed developers. The lack of public awareness among the public has been as a result of inadequate/lack of public sensitization about the set development control regulations and overreliance on development professionals for information about the set development control regulation some of which are quacks. The procedures that guide development control have not been sufficiently shared with the public as relatively high number of developers get to know of the existence of the development control regulations during the submission of the development proposals (Ogundele, Odewumi and Aigbe, 2011). The apparent lack of knowledge on development control regulations directly impacts developers in their understanding of planning policy requirements leading to poor development proposals, low levels of compliance and ultimately weak attempts at enforcement of planning policy as it exists as noted by AAK (2011).

5.5.6 Complexity of the Development Control Process

7.5% of the interviewed developers and 7.7% of the interviewed residents considers the complexity of the development control process as the main cause of development control non-compliance. The complexity of the development control process is seen in term of the high number of departments/institutions involved as well as the time taken. With the average number of institutions/departments for development control within Kajiado County being five (physical planning, public health, public works, NEMA and NCA), some of the developers are finding the number to be a hindrance in submission of development proposals for evaluation. In addition, the time taken for the evaluation of the development proposals in all the development control departments/institutions is

deemed to discourage developers in submitting development proposals for evaluation. The inter-departmental movement of development proposals is tiresome, costly and time consuming for developers. The average time for evaluation of development applications (architectural and structural drawings and planning briefs) is one month however, there are cases of some development proposals evaluation up to six months.

With majority of the developers (53.8% of the interviewed developers) relying on bank loans as the main source of capital for development, timely commencement of construction works is key in ensuring that developments are completed on time for repayment of the loans. Delays in evaluation of development application results to developers proceeding with their developments without statutory approvals (AAK, 2011).

5.5.7 Poverty

5.0% of the interviewed developers considers poverty to be a contributor of development control non-compliance which is echoed by 5.1% of the interviewed residents. Poverty certainly plays an important role in accounting for variations in the degree of compliance with planning regulations especially in the low-income residential zones (Habitat International, 2000). The lack of adequate funds to develop formal structures/developments is one of the reasons for existence of informal/semi-permanent structures/developments. Majority of these informal/semi-permanent structures are non-compliant to development control regulations since they lack development proposals (such as architectural drawings) to guide their developments. Their implementation is mainly guided by sketches made by the developers which do not consider the set planning standards such as plot coverage, building line and setbacks provision.

5.5.8 Poor Enforcement

Poor enforcement of development control was considered to be the highest contributor of development control regulations non-compliance within Kitengela Town and by extension Kajiado County by the interviewed development control officials though the interviewed developers and residents had a contrary opinion. Only 5.0% of the interviewed developers and 2.6% of the interviewed residents cited poor enforcement of development control as one of the main contributors of development control regulations non-compliance.

The interviewed development control officials cited inadequacy of resources to perform enforcing measures as the main reason for the unauthorized alterations of development proposals during construction and lack of strict adherence to the approved development proposals due to poor development supervision and/or inspection. The poor supervision and/or inspection of developments has been attributed to inadequacy of both human and financial resources and lack of relevant supportive system for effective enforcement as noted by Kimani and Musungu (2010). The inadequacy of human and financial resources has provided loop holes for implementation of development control regulations' non-compliant developments projects. With only three physical planners, two engineers, three environmental officers and two development officers doubling as development control enforcement officials and lack of adequate vehicles for development supervisions and inspections, the enforcement development control is very poor within Kitengela Town and Kajiado County. Non-compliant developments takes place without being noticed while other developers implement totally different developments from what is indicated in the approved development proposals due to inadequacy of regular development inspections and supervisions.

5.6 Effects of Development Control Regulations Non-Compliance

The study found out that the non-compliance to some of the development control regulations had significant effects on arrangement of physical developments and spaces at plot and neighbourhood level hence negatively affecting the overall urban structure. This is evident in developments that are unplanned and lacking major public purpose facilities and utility services including; efficient transportation system, efficient drainage and sewer system, proper provisions of sanitation services, adequate access to clean water and adequate access to open spaces and parking spaces as noted by AAK (2011).

The study found out that the presence of these development control regulations' non-compliant developments with inadequate provision of public purpose facilities and utility services have resultant negative effects to the residents living within the Kia Ng'ombe B' Zone which include;

Table 5-12: Effects of Development Control Regulations’ Non-Compliance

Effects of development control regulations non-compliance	Percentage of Residents’ Responses
1. Environmental Degradation	30.8
2. Vulnerability to Loss of Lives and property	28.2
3. Congestion	23.0
4. Inadequacy of Public Purpose Spaces	7.7
5. Loss of Desirable Neighbourhood Character	7.7
6. Inadequacy of Parking Spaces	2.6
Total	100.0

Source: Field Survey, 2016

5.6.1 Environmental Degradation

The study found out that non-compliance to development control regulations leads to exacerbated environmental problems which contribute towards making settlements inhabitable and hence derogating the right of the residents of a clean and healthy environment as recognized and protected under the Kenyan Constitution (Opata, Mulongo, Omuterema, Ngetich, 2013). Environmental degradation is considered to be the greatest resultant effect of development control regulations’ non-compliance with 30.8% of the interviewed residents are experiencing the impacts of environmental degradation which manifests inform of land, air and water pollution.



Plate 5-3: Roadside Dumping

Source: Fieldwork, 2016

Non-compliance to the recommended solid waste disposal mechanisms is greatly contributing to land pollution through roadside dumping (as evident by the 2.5% of the

residents whose main mode of solid waste disposal is roadside dumping) and air pollution through burning of waste by the residents who rely on burning as their main mechanism of solid waste disposal (5% of the interviewed residents). These forms of pollution are causing an increase in cases of disease outbreaks and flash flooding during rainy seasons due to obstruction of drains.

5.6.2 Vulnerability to Loss of Lives and property

The study found out that there has not been incidents of loss of lives or property due to collapse of development control non-compliant developments however, 28.2% of the interviewed residents feel that they are vulnerable to loss of lives and property due to fire outbreak due to the poor state of the developments they reside in. With 27.5% of the sampled structures being informal developments (either semi-permanent or a mix of permanent and semi-permanent row housing) which have very low compliance levels, the occupants feel that the structures are prone to fire outbreaks which may result to loss of lives and/or property. The lack of buffer areas between developments (due to non-compliance to side and rear setbacks) leads to fast spread of fire between developments increasing the number of developments affected by the fire outbreaks (AAK, 2011).



Plate 5-4: Connected Structures
Source: Fieldwork, 2016

5.6.3 Congestion

23% of the interviewed residents cited congestion as the main resultant effect of development control regulations' non-compliance. The congestion is as a result of non-compliance to plot coverage, building line and setbacks. With limited space for movement and circulation within and around the development due to either inadequate provision of setbacks and building line or 'beacon to beacon' form of development,

congestion of people within the development arises (Dissanayake, 1987). People are unable to move or carry objects freely within or around the development due to the narrow nature of the passages between housing units.



Plate 5-5: Narrow Passages

Source: Fieldwork, 2016

In addition, the use of the passages as areas for drying clothes and storage of household goods makes movement within the developments very difficult.

5.6.4 Loss of Desirable Neighbourhood Character

According to 7.7% of the interviewed residents, Kia Ng'ombe 'B' Zone lacks character due to the existing structure typology mix (flats, bungalows, agricultural farms, maisonettes and row housing (some which are semi-permanent)) within the same zone/neighbourhood resulting to undesirable look of the zone (loss of aesthetics). This is due to lack of homogeneity/uniformity regarding building typology and building heights.



Plate 5-6: Non Uniformity Building Typologies

Source: Fieldwork, 2016

With the character of an area being a pattern that manifests itself in a visual framework, neighbourhoods/areas with uncoordinated development patterns have undesirable area character and lack place identity (Taylor, 1997).

5.6.5 Inadequacy of Children Playing Areas

The study found out that 7.7% of the interviewed residents of Kia Ng'ombe 'B' Zone did not have adequate open spaces/children playing areas. As market forces take centre stage in allocation of urban spaces, developers seek to use land in ways that make maximum returns to them and hence very few if not none are interested in provision of public purpose spaces and where they exist developers look for ways to convert them to other more profitable uses (AAK, 2011).

Inadequacy of the children playing areas is caused by non-compliance to plot coverage. As more space within a plot is covered by the physical development, less space is left for public purpose. This results to use of passages, road reserves and neighbouring undeveloped plots as children playing grounds and open spaces since majority of the available open spaces are either too small or heavily populated for use as children playing ground.



Plate 5-7: Inadequacy of Open Spaces
Source: Fieldwork, 2016

5.6.6 Inadequacy of Parking Spaces

2.6% of the residents interviewed also raised concerns on inadequacy of parking spaces. With more than half (52.5%) of the developments lack parking spaces entirely, the residents have resulted to use of passages and adjacent roads for parking resulting to congestion along the passages and the abutting access roads.



Plate 5-8: Use of Passages as Parking Spaces
 Source: Fieldwork, 2016

The inadequacy has been attributed to the non-compliance to the parking space provision specification occasioned by the quest of developers to maximize profit by increasing plot coverage of their plots hence negatively affecting parking space provision as noted by AAK (2011).

5.7 Suggestions on Possible Intervention Measures for the Effective Development Control Regulations Compliance

The study identified seven main possible intervention measures for ensuring effective development control regulations' compliance within Kia Ng'ombe 'B' Zone and by extension Kitengela Town.

Table 5-13: Suggestions of Possible Intervention Measures for Effective Development Control Regulations' Compliance

Intervention Measures	Percentage of Residents' Responses	Percentage of Developers' Responses	Development Control Officials Responses
1. Strict Enforcement	48.8	8.3	√
2. Regular Development Supervisions and Inspections	17.9	41.7	√
3. Public Sensitization	12.8	16.7	√
4. Simplification of the Development Control Process	7.7	8.3	√

5. Listing of Development Professionals	5.1	-	
6. Curbing Corruption	5.1	8.3	
7. Revision of Statutory Fees	2.6	16.7	
Total	100.0	100.0	

Source: Field Survey, 2016

5.7.1 Strict Enforcement of Development Control

48.8% of the interviewed residents and 8.3% of the interviewed developers suggest that strict enforcement of development control would enhance compliance to development control regulations. Similarly, the interviewed development control officials were of the same opinion. Stiffer penalties on offenders would deter developers from violating development control regulations (Yuen, 2007). This would help in addressing ignorance among developers.

5.7.2 Regular Development Supervisions and Inspections

41.7% of the interviewed developers, 17.9% of the interviewed residents and the interviewed development control officials suggested regular development supervisions and inspections as a way of enhancing development control regulations' compliance. The development control officials suggested with adequate staffing and financial resources provision would increase the level of development supervisions and inspections and hence increase development control regulations' compliance level. On the other hand, the developers and residents suggested regular development supervisions and inspections to boost the level of development applications submission for evaluation.

5.7.3 Public Sensitization

The study found out that public sensitization was considered as a remedy to low levels/lack development control awareness level which contribute to development control regulations non-compliance. 16.7% of the interviewed developers, 12.8% of the interviewed residents and the interviewed development control officials suggested adoption of various means of informing the public about the development control process as well as the development control regulations for each zone. Some of the suggested means of sensitizing the public include regular workshops, seminars, focus group discussion and forums. This would change the negative perception the

development control process of being a hindrance rather than a means to achieving sustainable developments (Ogundele, Odewumi and Aigbe, 2011).

5.7.4 Simplification of the Development Control Process

8.3% of the interviewed developers and 7.7% of the interviewed residents suggested simplification of the development control process as a possible intervention measure for effective development control regulations' compliance a suggestion seconded by the interviewed development control officials. The development control officials suggested automation of the development application process as a way of reducing time taken for evaluation of development proposals. This is in agreement with AAK (2011) who asserts that computerization of development applications submission improves on the timelines of granting planning decisions and saves applicant time. On the other hand, the residents and developers suggested the reduction of the number of the development control agencies as a way of saving time, manpower and resources in making follow ups of the development applications.

5.7.5 Listing of Development Professionals

With cases of engagement of unqualified professionals in preparation of development proposals and undertaking of development project implementation, 5.1% of the interviewed residents suggest that the names and addresses of the qualified development professionals should be availed to the general public. This would enhance preparation of development control regulations' compliant development proposals as well as effective implementation of development projects through engagement of qualified professionals in construction works/supervision.

5.7.6 Curbing Corruption

With corruption being one of the main contributors of development control regulations non-compliance, 8.3% of the interviewed developers and 5.1% of interviewed residents suggested curbing of corruption among the development control officials would enhance development control regulations compliance. With stiff jail penalties or jail terms for rouge officials, there would be fewer cases of granting development permission to non-compliant development proposals.

5.7.7 Revision of Statutory Fees

As a way of enhancing development proposals submission for evaluation and subsequent advice on possible modification to ensure compliance with the set development regulations, 16.7% of the interviewed developers and 2.6% of the interviewed residents suggested downward revision of statutory fees. This would make the fees more affordable and hence encourage development proposal submissions.

CHAPTER SIX: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter presents summary of the findings presented in chapter five and the conclusions made by the researcher from the findings. In addition, it also presents the recommendations made by the researcher regarding possible intervention measures for the effective development control regulations compliance.

6.2 Summary of the Study Findings

The purpose of this study is identification and documentation of development control tools used to guide and control physical development in Kitengela Town, investigation of the development control regulations compliance levels, assessment of factors affecting development control regulations compliance and establishment of the resultant effects of development control regulations non-compliance. In addition, the study ought to propose possible intervention measures for the effective development control regulations compliance.

6.2.1 Development Control Tools for Kitengela Town

The study identified the seven main development control tools used for guiding and controlling development in Kitengela Town. Two of them (Physical planning Act of 1996 and the Environmental Management and Coordination Act of 1999) are statutory while five are non-statutory (Physical Planning Handbook, Building Code, Kitengela/Isinya/Kipeto Integrated Development Plan, Kitengela Zoning Plan and Registry Index Maps). Currently, the main development control tool for Kitengela Town is the Kitengela Zoning Plan of 2012. Being a zoning plan, it is considered to be the main tool of development for orderly and sustainable development (AAK, 2015). The plan has the ability to be used by the various development control agencies (i.e. Public Health and Public Works/Engineering Departments and NEMA) due to its safety, public health and environmental considerations. In addition, the plan provides detailed development control regulations covering all the zones in the whole town hence making it the most effective development control tool for Kitengela town.

6.2.2 Development Control Regulations Compliance Levels in Kia Ng'ombe 'B' Zone

The study found out that the overall development control regulations' compliance within Kia Ng'ombe 'B' Zone in Kitengela Town is slightly above average (at 59.5%). The most adhered development control regulations include plot size and building height specifications both at 100% compliance while the most violated include; building line specification (at 25%), side setback (at 25%) and rear setback (at 32.5%). This low compliance of building line and setback specifications is common among the high density (low income) residential areas due to the need to maximize the use to which the plot of land is put (Habitat International, 2000).

6.2.3 Factors Affecting Development Control Regulations Compliance

The study identified eight main factors contributing to development control regulations non-compliance in Kia Ng'ombe 'B' Zone within Kitengela Town which include high professional and statutory fees, corruption, maximization of available space, ignorance, lack of public awareness, poverty, complexity of the development control process and poor enforcement. The study found out that the factors with the highest level of contribution to development control regulations non-compliance according to the development control officials are aspiration and aims of developers to maximise returns from land, ignorance and poor enforcement while the residents and developers cited high professional and statutory fees, corruption and aspiration and aims of developers to maximise returns from land contributing to more approximately 65% of the non-compliance.

These factors are not unique to Kitengela Town since they have been identified in other studies on development control even though not clearly ranked in terms of their level of contribution to development control regulations non-compliance. UN Habitat (1990 a) and AAK, (2010) in their re-assessment of urban planning and development regulations in African cities identified six of the above factors; high professional fees, lack of public awareness, poverty, maximization of available space, poor enforcement and complexity of the development control process due to laxity in evaluating development applications. Ogundele, Odewumi and Aigbe (2011) on their paper on challenges and prospects of physical development control in Nigeria identified; corruption, ignorance, lack of public awareness and poor enforcement while AAK (2015) in their policy paper on managing building development identified lack of public

awareness on development control procedures and poor enforcement. It is however important to note that there are some factors identified by these studies that are not considered to contribute to development control regulations non-compliance in Kia Ng'ombe 'B' Zone within Kitengela Town according to the interviewed respondents. Some of these factors include; lack of physical development plan, political interference and restrictive planning and planning regulations.

6.2.4 Effects of the Development Control Regulations Non-Compliance

The study found out that non-compliance to development control regulations has a significant effects on arrangement of physical developments and spaces which negatively affects the overall urban structure of the zone and by extension Kitengela Town. This undesired arrangement of physical developments and spaces at both plot and neighbourhood levels has resultant negative effects on the inhabitants/residents of the area. Therefore, study identified the six main resultant effects of development control regulations' non-compliance within Kia Ng'ombe 'B' Zone within Kitengela Town which include environmental degradation, vulnerability to loss of lives and property, congestion, inadequacy of open spaces, loss of desirable neighbourhood character and inadequacy of parking spaces. The effects affecting majority (82%) of the residents include environmental degradation (pollution), vulnerability to loss of lives and property and congestion. AAK (2011) on their study on development control frameworks in Kenya asserts that environmental degradation (pollution) and vulnerability to loss of lives and property are among the most adverse effects of non-adherence of urban development control regulations.

6.2.5 Possible Intervention Measures for the Effective Development Control Regulations Compliance

The study identified seven main possible intervention measures for effective development regulations' compliance which include; strict enforcement, regular development supervisions and inspections, public sensitization, simplification of the development control process, listing of development professionals, curbing corruption and revision of statutory fees. These proposals (by interviewed residents, developers and development control officials) are expected to enhance development control regulations' compliance in Kia Ng'ombe 'B' Zone within Kitengela Town and by extension Kajiado County if adopted. The proposals are in line with recommendations made by AAK (2011) and AAK, (2010) on their studies on development control

frameworks in Kenya and re-assessment of urban planning and development regulations in African cities where they proposed strict enforcement, public sensitization, simplification of the development control process and regular development supervisions and inspections as ways of enhancing development control regulations'. These recommendations have been tested and proven in other countries that are more advanced in development control like Botswana and Switzerland

6.3 Study Conclusions

The study concludes that local physical development plans such as zoning plans are the most effective development control tools tool for guiding and controlling developments in urban centers due to their detailed area/zone specific development control regulations. However, in their absence, county government planning and building regulations and gazetted rules and regulations such as building codes and physical planning handbook can be used as it has been the case in Kitengela Town before preparation of the town's zoning plan in 2012.

In relation to development control regulations' compliance, the study concludes that the overall compliance level of a zone/neighbourhood is determined by the compliance level of individual development/buildings. The compliance level of a zone or neighbourhood is the aggregate of individual developments' compliance. The resultant effects of development control regulations' non-compliance affects both the occupants of the individual developments as well as the occupants of the neighbourhood and town at large.

Regarding factors affecting development control regulations' compliance, the study concludes there is need for accountability among the development control stakeholders (policy makers, development control officials, developers and the general public) for effective development control regulations' compliance. With formulation of informed development control policies by the development control policy makers, strict enforcement of development control by the development control officials and adequate participation and compliance of development control regulations by the developers and the public in general, development control regulations' compliance would be enhanced.

6.4 Recommendations

The study has several recommendations regarding challenges faced in the development control process. These recommendations act as the possible intervention measures for the effective development control regulations compliance in Kitengela Town and other urban centres within the country. They are based on the study findings and review of the best practice case studies in development control.

6.4.1 Introduction of a Computerized Development Application System and adoption of One Stop Shop Concept

With complexity of the development control process being one of the key contributor of development control regulations non-compliance, there is a need to simplify the development control process. The simplification can be done in two main ways: First, development control agencies can introduce a computerized development application system and secondly, location of all development control agencies under one roof. The computerized development application system would improve on the timelines of granting planning decisions and save applicant time, manpower and resources. This would enable online consultations and checks on status of development applications. This system has been a success in Kigali-Rwanda and the neighbouring County of Nairobi City which have adopted e-construction permit management system (online development applications submission) reducing the development application evaluation time form one month to two weeks and cutting bureaucracy associated with manual development application submission.

The location of all development control agencies under one roof would enable one stop development application evaluation and reduce the time and resources associated with inter-development control agency movement of development applications. This would to a great extend enhance the level of submission of development application submission. This concept (one stop shop concept) has been a success in delivery of public services in Kenya through the famous Huduma Centers. In addition, the concept has also been adopted by City of Kigali in Rwanda through the web-based information management system for development permits. This has facilitated access various services and information from a single location and through integrated service platforms.

6.4.2 Establishment of an E-Consultation Portal for Development Control

With the low of public awareness on the existing development control regulations among developers, it is important to sensitize the public on the existing development control regulations for their neighbourhood/zone as well as the importance of development control regulations compliance. The public sensitization can be undertaken through regular workshops, seminars, media focus group discussion, public dialogues, forums and exhibition. In addition, the development control agencies can introduce online consultation system with the public through establishment of an e-consultation portal to engage the population on existing development control regulations and proposed new physical development plans. This would enhance public participation in formulation of new physical development plans as well as give the public a clear idea of what they can or cannot build on their land parcels. This also provides certainty and transparency in the planning system and makes development control objectives predictable and accountable. This program has worked in Singapore where government agencies hold public consultations through media focus group discussion, public dialogues, forums, exhibition and competitions. The community works with planners in the plan making process with the key goal being consensus building to create and foster a greater sense of community.

6.4.3 Development of a GIS based Development Control System

As a way of addressing poor development control enforcement, a development control GIS system can be development to aid in approval and monitoring of developments. This would be facilitate effective analysis of the appropriateness of planning applications through provision of data pertaining to planning application (spatial information with their attributes) for the purpose of administrative functions as well as for facilitating planning at strategic level. With its powerful capacity for spatial data management, spatial analysis and visualization, GIS provides planners with tools to implement their work more efficiently especially with support of the interactive and user-friendly interface developed to ease the use of the sophisticated system without the need of advanced technical skill. The system will be able to support planning and decision-making because it offers relatively quick response to analytical questions and monitoring issues.

The adoption of a development control GIS system has been a success in Malaysia where the city of Kuala Lumpur has developed an integrated development control

system designed to cover all the necessary work process involved in development control and approval supported by Geographical Information System (GIS) application. The developed system has facilitated fast and accurate data retrieval, spatial information references and data sharing and integration among the various development control departments/institutions. This has not only facilitated time saving but also helped minimize workload and reduce the use of paper for the development control agencies in Kuala Lumpur.

6.4.4 Devolution of Development Control Institutions to the Sub-County Level

In order to address the challenge of poor enforcement as a result of poor development supervision and inspection, the study recommends devolution of development control to the sub-county level. This would facilitate thorough and regular development supervision and inspection due to reduction in the size of the area the development control officials have to cover. Each of the devolved unit can formulate a timetable for development supervisions and inspections at on least weekly basis. This has been successful with some of the development control agencies within the county such as the public health department which has fully functional offices in each of the sub-county within Kajiado County. It is however important to note that the devolution has to be accompanied by adequate budgetary allocations (to the development control kit) to facilitate hiring of additional development control officials to curb the current shortfall as well as facilitate purchase, servicing and fuelling of vehicles required for development supervisions and inspections.

6.4.5 Enforcement of Development Control through Criminal Offence

As the study has found out that a significant number of developers (approximately 10%) violate development control regulations out of ignorance, there is need for strict enforcement of development control. In this regard, the study recommends enforcement of development control through criminal offence. Enforcement notices in writing ought to be served to developers of non-compliant developments stating the breach of development control, measures and time to be taken to remedy the situation. The offenders can either be jailed, fined heavily (a significant percentage of the project cost) or their non-compliant developments can be demolished at their own cost. This would address the ignorance among developers as well as curb the problem of unauthorized alteration/change of development proposals during implementation of development projects.

This approach of enforcing development control through criminal offence has worked in Singapore where development control regulations' violators are fined of up to S\$10,000 (approximately Kshs 1,000,000) per day for a continuing offence. With adoption of such high fines for offenders, ignorance among developers would be effectively dealt with.

6.4.6 Establishment/Empowerment of Neighbourhood/Residents Associations

As a way of increasing public awareness about development control regulations, supporting development control enforcement and addressing ignorance/impunity among developers, there is a need for establishment of neighbourhood/resident associations in area where they do not exist as well as empowering of the existing ones. The neighbourhood/resident associations can organize for regular workshops, seminars and focus group discussion where the residents can be sensitized on issues touching on development control as a way of increasing the level of development control public awareness.

In addition, through consultation and cooperation with the development control officials, the neighbourhood/resident associations can be used as the preliminary development control agencies where residents can first submit their development proposals for evaluation (to check whether they comply with the set neighbourhood development control regulations) before submission to the formal development control agencies. Developers would then be required to get recommendation letters from their neighbourhood/resident associations to avert any possible disputes occasioned by implementation of the development projects. This would ensure that the residents are aware of the proposed developments within their neighbourhoods as well as aid in monitoring implementation of development projects within their neighbourhood. In the neighbouring Nairobi City County, neighbourhood associations are having positive impacts on development control regulations' compliance especially where they are strong (Karengata, Runda and Kahawa Sukari) since they enforce policing, zoning plans and the building code.

6.4.7 Establishment of an Independent Development Control Oversight Institution

In order to address corruption associated with development control officials, an independent institution can be set up for undertaking regular audits of all the existing developments and the development control officials responsible for granting development permission or supervising non-compliant developments held accountable. Developers would be provided with development inspection chart sheet where the development control officials would record their particulars, the date of development supervision and the stage of the development project implementation. This would enhance accountability of the development control officials in regards to development supervisions and inspections and would be used as a basis for identifying the development control officials involved in cover-up of implementation of non-compliant developments. In addition, stiff penalties (fines and jail terms) for government officials involved in corruption related activities can be established.

This concept of independent oversight institutions has been adopted by the Kenyan Government in various departments (i.e. Independent Policing Oversight Authority) to promote accountability though most of these institutions are facing challenges in regard to staffing. With proper staffing, an independent development control oversight institution would promote accountability among development control officials and hence address corruption issues associated with the development control process.

6.4.8 Zone Based Statutory Fee

Due to the different in land values in the different zones of urban centres, it would be important that the statutory fee would be based on zone's land value. This would enhance equity in regards to statutory fee as developers of developments in areas/zones with high land value would pay more per meter squared than for developers in areas/zones with lower land value. This would significantly increase the number of development proposals which are submitted for evaluation due to the affordability of the statutory fee which is currently a great impediment to submission of development proposals. Just like the model of paying stamp duty in Kenya where a percentage of land value (4%) is paid for land transfer, a percentage of land value depending on a zone can be adopted in determination of statutory fee for development application.

6.4.9 Gazettement and Listing of Registered and Licensed Development Professionals

As a way of curbing engagement of unqualified development experts, all the registered and licensed development professionals should be gazetted and the list of their names and physical addresses be availed to the public either online or as hard copies displayed at all development control offices. Although most of the professional registration boards/bodies do gazette their registered and licensed members, most of these lists are not available to the general public hence the need to provide a platform for accessing the qualified development professionals. This would enhance preparation of development control regulations' compliant development proposals as well as effective implementation of development projects through engagement of qualified professionals in construction works/supervision.

6.5 Suggestions for Further Research

Due to the contextual scope of the study, the study was unable to assess the appropriateness of development control regulations, technical capacity of the development control agencies and effectiveness of devolution of development control to the sub-county level. Therefore the study suggest further research on;

- i. The appropriateness of the development control regulations
- ii. The technical capacity of the development control agencies
- iii. Effectiveness of development control devolution to the sub-county level

REFERENCES

1. Aguilar, A. and Ward P. (2003), Globalization, regional development and mega-city expansion in Latin America: Analysing Mexico City's peri-urban hinterland.
2. Ahmed A, and Dinye R.D, (2011), Urbanisation and the Challenges of Development Controls in Ghana: A Case Study of Wa Township, *Journal of Sustainable Development in Africa* (Volume 13, No.7, 2011)
3. Alexander E.R. (2001). A Transaction –Cost Theory of Land Use Planning and Development Control: Towards the Institutional Analysis of Public Planning. *The Town Planning Review*, 72(1), 45-75. Retrieved from <http://www.jstor.org/stable/40111825>
4. Architectural Association of Kenya, (2011a): A study on Development Control Frameworks in Kenya, AAK Nairobi.
5. Architectural Association of Kenya, (2011b): The Role of Built Environment Practitioners in the Implementation of the Constitution, AAK, Nairobi.
6. Daily Nation (2012b): April 5, 2012, Nation Media Group, Nairobi.
7. DCDM Botswana. (2006). Consultancy services for the Botswana public officers' housing fund feasibility study: Feasibility Report. Gaborone: DCDM Botswana Limited.
8. Desu, M. M. and Raghavarao, D. (1990), *Sample Size Methodology*, Boston: Academic Press.
9. Dissanayake L, (1987). Effectiveness of the development control system for the city of Colombo, Sri Lanka. Working Papers No. 36
10. Gichohi, H. W., 1996, *The Ecology of a Truncated Ecosystem - The Athi-Kapiti Plains*. Ph.D. University of Leicester, Leicester.
11. GOK (Government of Kenya), 2001, Population and housing census. Volume I. Counting our people for development. Population distribution by administrative areas and urban centres. Ministry of Finance and Planning, Nairobi, Kenya. 446 pp.
12. Government of Kenya (1986). The Agriculture Act, Cap 318. Nairobi: Government Printers.
13. Government of Kenya (1987). Building Code. Nairobi: Government Printers.

14. Government of Kenya (2000). Environment Management and Coordination Act, 1999, Nairobi: Government Printers.
15. Government of Kenya (2007). Kenya Vision 2030. Nairobi: Government Printers.
16. Government of Kenya. (2014), Physical Planning Bill, Nairobi: Government Printers.
17. Government of Kenya. 2009 Census Results
18. Government of Kenya. The Public Health Act cap of 242, Laws of Kenya.
19. Hall, P. and Pfeiffer, U., *Urban future 21: A global agenda for twenty-first century cities*. (Routledge) (2000).
20. Heimlich R.E. and Anderson W.D (2011), *Development at the Urban Fringe and Beyond: Impacts on Agriculture and Rural Land*. Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 803
21. Joubert, P., 1957. "Geology of the Namanga-Bissel area." Report No. 39, Geological Survey, Kenya.
22. Kazungu, R., Gitau, J and Gichuru, P. (2011), Planning challenge of Karen and Ongata-Rongai peripheral locations, 47th ISOCARP Congress 2011
23. Kenya National Bureau of Statistics (2009), Demographic and Healthy Survey 2008/9, CBS, Nairobi.
24. Kimani, Mary (2008). Agricultural Land Management for Sustainable Development in Rural Kenya. *Africa Habitat Review Journal* (2) (2008). pp. 100-110.
25. Mace, A. E. (1964), *Sample-Size Determination*, New York: Reinhold.
26. Maina A.D. (2013). Impacts of Urbanization on Land Use Planning, Livelihood and Environment in the Nairobi Rural-Urban Fringe, Kenya, *International journal of scientific and technology research* volume 2
27. Ministry of Lands, (2008). Physical Planning Handbook. Nairobi: Government Printers.
28. Ministry of Natural Resources and Wildlife (1966), Geology of Athi Kapiti plains, Government Printer, Nairobi
29. Mosha, A.C. (1996). The City of Gaborone Botswana: Planning and management. *Ambio*, 25 (2), pp.118 – 125.

30. Mwangi, L.K. (1988). An Appraisal of Plan Implementation and Development Control in Nairobi. University of Nairobi. M.A Planning Thesis Nairobi: Unpublished M.A Planning Thesis.
31. Nkedianye, D. 2004, *Testing the attitudinal impact of a conservation tool outside a protected area: the case for the Kitengela Wildlife Conservation Lease Programme for Nairobi National Park*. MSc. Thesis, University of Nairobi, Kenya.
32. Obabori A.O, Obiuwevbi D.A. and Olomu J.I. (2007). Development Control an Important Regulator of Settlement Growth: A Case Study of Ekpoma, Nigeria. *J. Hum. Ecol.*, 21(4): 285-291 (2007).
33. Odeh, R. E., and Fox, M. (1991), *Sample Size Choice: Charts for Experiments with Linear Models* (2nd ed.), New York:Marcel Dekker.
34. Omwenga M. 2010, Nairobi -Emerging Metropolitan Region: Development Planning and Management Opportunities and Challenges, Nairobi Metropolitan Region, 46th ISOCARP Congress 2010.
35. Opata .G, Mulongo .L, Omuterema .S, Ngetich .K, (2013), Urban Environmental Planning and Development Control of Medium Sized Towns in Kenya. A Case of Eldoret Municipality, *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)* 5(3):351-363
36. Opata .G, Mulongo .L, Omuterema .S, Ngetich .K, (2013), Urbanization and Urban Environmental Development Control Policies and Practices in Kenya, *Research Journal in Organizational Psychology & Educational Studies* 2(3) 132-138
37. Owuor S, (2011). *Trends and Patterns of Urbanization Process in Kenya*. A Paper Presented at the International Workshop on “The impact on mining on urbanization and poverty in Africa” Bagamoyo, Tanzania, 25-28 February 2011.
38. Physical planning Department (2012), *Kitengela Zoning Plan*, Nairobi: Ministry of Lands
39. Physical planning Department (2013), *Ongata Rongai Zoning Plan*, Nairobi: Ministry of Lands
40. Reade E., (1987): *British Town and County Planning*, Milton Keynes, Philadelphia, Open University Press.

41. Republic of Kenya (2009), Sessional Paper No. 3 of 2009 on National land Policy, Government Printer, Nairobi
42. Republic of Kenya, (1996): Physical Planning Act Cap 286 of Laws of Kenya, Government Printer, Nairobi.
43. Republic of Kenya, (2010 a): Constitution of Kenya; Government Printer
44. Republic of Kenya, (2010): Citizen Service Delivery Charter, Ministry of Lands, Nairobi.
45. Republic of Kenya, (2010b): Statistical Abstract 2010, Kenya National Bureau of Statistics, Nairobi.
46. Segopa, Jo'Joseph. (2009). Review of Botswana's Building Standards. Gaborore: Government Printers.
47. Tacoli, C. (1998). Rural–urban interactions: A guide to the literature. *Environment and Urbanization* (10) 1 pp. 147–166.
48. Thompson, M., 2006, *Valuing land-use options in the Maasai Mara*. ILRI Report of the 2004 socio-economic survey. ILRI, Nairobi, 40pp.
49. UN Habitat (1999): Re-Assessment of Urban Planning and Development Regulations in African cities, UN Habitat, Nairobi.
50. UNCHS (UN- Habitat). The state of the world's cities. (Nairobi, Kenya: UN-Habitat) (2001).
51. UNPD (2008), An Overview of Urbanization, Internal Migration, Population Distribution and Development in the World, United Nations Secretariat, New York
52. Wagura N.C. (1996). The Problem of Planning and Need for Development Control. University of Nairobi. Nairobi: Unpublished B.A. Thesis.
53. Wanjogu A.W. (1996). Poor implementation: Its effects in urban areas. University of Nairobi, Nairobi: Unpublished B.A Thesis.
54. Yaakup A.B., Johar F., Mohamed M. and Ngah M.C. (2002a). *GIS for Development Control: The Case of City Hall of Kuala Lumpur, Malaysia*. Paper presented at the GIS Conference, Ho Chi Minh City, Viet Nam, October 17-18.

APPENDICES

Appendix 1-Developers Questionnaire

University of Nairobi

School of Built Environment

Department of Urban and Regional Planning

Analysis of Development Control Regulations Compliance in Kitengela Town

Declaration: This information is confidential and will only be used for academic purposes.

Date of interview Questionnaire number

Name of interviewer

DEVELOPERS QUESTIONNAIRE

A. BACKGROUND INFORMATION

1. a) Name of respondent (optional)
- b) Age of respondent
- c) Sex of respondent: i) Male ii) Female
- d) Level of education of respondent: i) No education ii) Informal iii) Pre-primary
 iv) Primary v) Secondary vi) Tertiary vii) Others (specify)

2. What is your occupation?

B. DEVELOPMENT

3. What is the nature of your development?
 - a. Type of development? i. Residential flat ii. Mixed use flat iii. Commercial flat iv. Row housing v. Maisonette vi. Bungalow vii. Others
(Specify).....
 - b. Number of levels/floors?
4. What is the size of your land in acres?
.....
5. What is the approximate cost of your development?
Kshs.....
6. What is the source of capital for undertaking your development?
 - a. Own savings
 - b. Bank loan
 - c. Micro financial institutions

- d. Cooperative loan
 - e. Others (specify)
7. What is the average monthly income from your development?
Kshs.....

C. DEVELOPMENT CONTROL

8. a. Do you have any plan/drawing for your development? Yes No
- b. If Yes, which one?
- c. If No, what guides your development?
9. Which professionals were involved in preparation of the development application/proposal and the cost of development application/proposal for each professional?

Professionals	Component	Cost (Kshs)
1.		
2.		
3.		
4.		
5.		

10. a. Do you have any development approvals for your development? Yes No
- b. If Yes, which ones?
- c. If No, why?
11. When did you get the development application approvals?
12. What is the total time taken to process your development applications?
13. Which institutions/government departments were involved in development application approval process and the cost of approval at each institution?

Institution/Government Department	Component	Cost (Kshs)
1.		
2.		
3.		

4.		
5.		
6.		

14. Which development control regulations do you know?

.....
.....
.....

15. What are some of the development control regulations you are uncomfortable with and why?

.....
.....
.....

16. What challenges did you face in getting the development approvals named above?

.....
.....
.....
.....

17. In your opinion, what are the causes of non-compliance to development control regulations?

.....
.....
.....
.....

18. In your opinion, what are the effects of non-compliance to development control regulations?

.....
.....
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.....

19. In your opinion, what are the measures which can be adopted to enhancing development control regulations in Kitengela town?

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Thank you

Appendix 2-Interview Schedules

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Analysis of Development Control Regulations Compliance in Kitengela Town

Declaration: This information is confidential and will only be used for academic purposes.

INTERVIEW SCHEDULE FOR KAJIADO COUNTY PHYSICAL PLANNER

1. What is the development application process in Kajiado County?
2. What development control tools/instruments were used to guide and control development before the preparation of the Kitengela Zoning Plan in 2012?
3. What are the set development control regulations for Kia Ng'ombe B zone?
4. What is the general level of development control regulations compliance in Kitengela town?
5. Compared to other zones in Kitengela Town, what is the development control regulations compliance level for Kia Ng'ombe 'B' Zone and the reasons behind the compliance level?
6. What are the main factors affecting development control regulations compliance in Kitengela town in general?
7. What are the effects of the development control regulations compliance level in Kitengela town to the local population?
8. What do you (as a planning department) do to ensure development control regulations compliance in Kajiado County in general?
9. What is the rate the success of the planning department in ensuring effective development control regulations compliance within the county?
10. What do you think can be done to improve the development control regulations compliance level in Kitengela town and Kajiado County in general?

Thank you

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Analysis of Development Control Regulations Compliance in Kitengela Town

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INTERVIEW SCHEDULE FOR DIRECTOR OF NEMA KAJIADO COUNTY

1. What is your role in development control?
2. What are the set environmental regulations for Kia Ng'ombe 'B' zone within Kitengela Town?
3. What is the general level of development control regulations compliance in Kitengela town?
4. What are the main factors affecting development control regulations compliance in Kitengela town in general?
5. What are the effects of the development control regulations compliance level in Kitengela town to the environment?
6. What do you (as NEMA) do to ensure development control regulations compliance in Kajiado County in general?
7. What is the rate the success of NEMA in ensuring effective development control regulations compliance within the county?
8. What do you think can be done to improve the development control regulations compliance level in Kitengela town and Kajiado County in general?

Thank you

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Analysis of Development Control Regulations Compliance in Kitengela Town

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**INTERVIEW SCHEDULE FOR PUBLIC HEALTH OFFICER-KAJIADO
EAST SUB COUNTY**

1. What is your role in development control?
2. What is the general level of development control regulations compliance in Kitengela town?
3. What are the main factors affecting development control regulations compliance in Kitengela town in general?
4. What do you (as Public Health Department) do to ensure development control regulations compliance in Kajiado County in general?
5. What is the rate the success of the Public Health Department in ensuring effective development control regulations compliance within the county?
6. What do you think can be done to improve the development control regulations compliance level in Kitengela town and Kajiado County in general?

Thank you

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Analysis of Development Control Regulations Compliance in Kitengela Town

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INTERVIEW SCHEDULE FOR PUBLIC WORKS OFFICER/COUNTY ENGINEER

1. What is your role in development control?
2. What is the general level of development control regulations compliance in Kitengela town?
3. What are the main factors affecting development control regulations compliance in Kitengela town in general?
4. What do you (as Public Works/Engineering Department) do to ensure development control regulations compliance in Kajiado County in general?
5. What is the rate the success of the Public Works/Engineering Department in ensuring effective development control regulations compliance within the county?
6. What do you think can be done to improve the development control regulations compliance level in Kitengela town and Kajiado County in general?

Appendix3-Checklist

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Analysis of Development Control Regulations Compliance in Kitengela Town

Item	Comments
Land use	
Structure type	
Size of land	
Width of access road	
Building height	
Plot coverage	
Building line	
Rear setback	
Side setback	
Number of parking spaces	
Solid waste disposal mechanism	
Liquid waste disposal mechanism	

Appendix 4-Household Questionnaire

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Analysis of Development Control Regulations Compliance in Kitengela Town

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Date of interview Questionnaire number

Name of interviewer

HOUSEHOLD QUESTIONNAIRE

A. BACKGROUND INFORMATION

1. a) Name of respondent (optional)
- b) Age of respondent
- c) Sex of respondent: i) Male ii) Female
- d) Level of education of respondent: i) No education ii) Informal iii) Pre-primary
 iv) Primary v) Secondary vi) Tertiary vii) Others (specify)
2. What is your occupation?
3. What is your monthly income in kshs?
 - i) 1-10,000
 - ii) 10,000-20,000
 - iii) 20,000-30,000
 - iv) 30,000-40,000
 - v) 40,000-50,000
 - vi) 50,000-100,000
 - vii) Above 100,000
4. Are you the owner of this housing unit or just a tenant? Owner Tenant

B. DEVELOPMENT CONTROL

5. Which development control regulations do you know?

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6. a. Have you or any member of your household undertaken a development project? Yes

No

b. If yes, did you apply for development permission? Yes No

7. Which challenges did you face in getting the development approvals named above?

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8. Which department/institution did you have challenges with?

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9. In your opinion, what are the causes of non-compliance to development control regulations?

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10. In your opinion, what are the effects of non-compliance to development control regulations?

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11. In your opinion, what are the measures which can be adopted to enhance development control regulations adherence in Kitengela town?

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Thank you