



**UNIVERSITY OF NAIROBI**

**SCHOOL OF BUILT ENVIROMENT**

**Evaluation of Building Approval Processes on Construction Project Delivery**

**(Time and Cost) - A study of Nairobi City County**

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**Research project presented in partial fulfillment of Master of Arts degree in  
Construction Management in the Department of Real estate and  
Construction Management**

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## DECLARATION

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

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## **DEDICATION**

This research project is dedicated to my mother who has given me the gift of education and for her support throughout my academic life.

## **ACKNOWLEDGEMENT**

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## **ABSTRACT**

The acquisition of statutory building approvals required by developers has been cited as one of the hindrances to adequate and affordable housing. With the rate of urbanization in Kenya estimated at 32.8% and an annual deficit in housing at 150,000 units, it is inevitable to evaluate the building approval process. Encouraging investment in the construction industry has to be done in tandem with streamlining the building approval process. This research sought to evaluate the impact of building approvals processes on construction project delivery (time and cost). The study employed a qualitative research methodology based on network theory approach. This was necessary to describe and understand the building approval process as tied to the construction process. Data was collected via questionnaires administered to 30 developers. The findings indicate that all developers have acquired one form of approval or another. They further indicate that it actually takes 430 days to acquire building approvals, against an estimated period of 169 days derived from the institutions charters. This represents one year and two months. This is also 261 days more than the estimated period. There is a multiplicity of institutions and laws that govern the approval process. The study found that the impact on total development costs was more on facilitation fees some of which are bribes to help expedite the approval process. Various challenges in acquiring building approvals as revealed by literature were discussed and rated by the developers with the delay in acquiring development approval and uncertainty in approval time being the challenges that were most significant. Interventions were also explored and an increase in the personnel to deal with the approval process was sighted as the most significant. The implications of these findings point to the need for the government to sensitize developers on the approvals applicable to construction projects and evaluate the approval process in order to make Kenya attractive to foreign investment. There is also need to look at the various approvals as well as the institutions in order to determine the viability in the long run of the number of approval and institutions.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Introduction**

This chapter will present a background of the study which will include the basics of the construction industry as well as the required building development approvals. It will also outline the problem statement, objectives, research questions, hypotheses, scope of the study, limitations, and assumptions of the study.

#### **1.1 Background of the study**

The construction industry is a pivotal industry in both developing and developed countries for it plays an important role in economic development and establishes the infrastructure required for socioeconomic development (Oladinrin, Ogunsemi, & Aje, 2012). The role played by the construction industry in economic development in Kenya cannot be over-emphasized with its contribution to GDP increasing steadily from 3.8% in 2008 to 13.6% in 2015 (Kenya National Bureau of Statistics [KNBS], 2016). The construction industry is a source of employment to a huge population and it is estimated that for every 10 jobs directly related to a construction project, another 10 jobs are created in the local economy (Price Waterhouse Coopers [PWC], 2013).

A development approval is a legal document that allows one to undertake a development (Planning Institute of Australia, 2014). The development approval authorizes development to take place and is issued by the various authorities (The state of Queensland, 2016). Development approval may involve seeking planning permission, land grant or lease modification and building plan approval (United Kingdom, 2016).

The construction sector is a significant contributor to gross domestic product (GDP), gross fixed capital formation and employment (United Nations Centre for

Human Settlements, 2016). It is characterized by building and civil engineering works and makes a significant contribution to other sectors of the economy through provision of critical infrastructure (Wells, 1984; Bon & Crosthwaite, 2000).

The rate of urbanization has been rapid with three out of ten people living in urban areas by the mid-20<sup>th</sup> century. UN Habitat further estimates that by the middle of the 21<sup>st</sup> century, half of the population shall be living in urban areas and most areas will be predominantly urban (United Nations Human Settlements Programme [UN Habitat], 2010).

The rate of urbanization in Kenya has been rapid with an estimated 32.8% of its population living in urban centers by year 2014 (World Bank Report, 2015). It is however estimated that this figure will rise to 60% by the year 2030 due to greater rural to urban migration fueled by search for employment and better living conditions (Vision 2030). With this rate of urbanization, it is inevitable that the demand for infrastructure will continue to rise and therefore put immense pressure in the existing ones unless matching infrastructural development is put in place (Sherani, 2012).

The current rate of urbanization in Kenya places a great deal of pressure on all infrastructure and especially housing and social amenities (African Development Bank, 2013). This has not been helped by the continued short fall by National Housing Corporation (NHC) in the targeted number of housing units that should be built annually in order to meet the demand occasioned by this migration. The NHC has only managed to construct 45,000 housing units annually out of an annual target of 150,000 (National Housing Corporation [NHC], 2013). This gap in the capacity of NHC coupled with an inflexible and expensive construction permit system in the construction industry has contributed to the proliferation of slums and deterioration of existing infrastructure in urban areas in Kenya (Haki Jamii, 2012).

While demand for housing and other infrastructure will continue to grow in urban areas, the government and the private sector are only meeting 20 to 30% of this demand (Haki Jamii, 2012). 60% of Nairobi's three million people live in informal settlement, a problem attributed to lack of affordable housing which in turn is attributed to the development approval process (African Population, & Health Research Center, 2002)

## **1.2 Problem statement**

Social infrastructure and services are fundamental for the sustainable growth and development of urban communities. Kenya's growing urban population does not match the numbers of infrastructure being developed on an annual basis. The increased demand for housing among other social infrastructure has resulted in rampant growth of slum areas because demand has surpassed the supply (World Bank Report, 2015).

The current statutory requirements and procedures in the construction industry have been cited as the industry's biggest impediment by existing and new developers. Notably, various authorities are mandated to control and regulate development in the country. However, uncontrolled development has sprung up in recent years and the provision of services that should be done by the National and County governments are found to be lacking by many taxpayers as well as certified contractors. The result of uncontrolled development is the increased waiting time for the contractors who are seeking development approvals, and the construction of poor infrastructure (Achitabwino, 2009).

Governments enact laws to set a standard, protect life and property, and to collect revenues. Regulatory frameworks besides being setup to for good intentions can potentially be inhibitive leading to higher costs of doing business and investment. This has a potentially negative impact of increased cost and therefore a decrease in level of investment in construction (Thorson, 1996).

The process of acquiring these approvals also takes too long, the license regime is large and the process too cumbersome (Muiruri, 2014). There is no guarantee of approval. In addition, some approvals have also been cited to take up to more than a year leading to delayed projects, cost overruns, lost revenues and loss of employment opportunities to the youth. This delay has also been cited as a significant factor in the increase of the cost of buying houses in Nairobi since the overhead costs incurred by the developer are passed on to the consumers (Gachie, 2011).

Most construction industries worldwide face problems and challenges ranging from socio-economic stress, shortage of resources, weak regulatory institutions and weak, expensive and or inflexible regulatory framework (Stroika Group, n.d). The Kenyan construction industry is no different with numerous approvals required for a developer to put up a housing project. This is made worse by the fact that the approvals take longer than is expected, multiple institutions are involved and costs more due to the current increments by the County governments (Muiruri, 2014).

The cost of construction in Kenya has been on the rise due to the escalating cost of building materials and labor. Beside this challenge, securing statutory construction licenses and the costs associated with it has been cited as a significant challenge due to the lack of a centralized system from which all requisite approvals could be obtained and as a result of many regulatory authorities at National and County government levels (Muiruri, 2014).

The multiplicity of institutions involved in the planning and regulation of the construction industry create conflicts and confusion that inhibits the competitiveness of the industry for the local and global market investors (Kimani & Musungu, 2010). This building approval process has been cited as an impediment and a significant red tape that needs to be addressed (Muiruri, 2014). The cost of obtaining these permits has also significantly risen especially with the passing of Finance Bill 2013 by the Nairobi City County government (Kenya



Gazette, 2013). Developers reckon that they are paying almost ten times what they used to pay previously to have the same plans approved (Kimani et al., 2010).

Could the system of building approval be of such impact that it makes developers shy away from investing in the building industry? Network analysis prescribes to sequencing of independent activities in order to determine performance (Nazrul, Draghich, & Sharif, 2001). The construction industry also relies on independent activities that have to be carried out in sequence to arrive at the finished development.

The traditional construction phases are; preliminary design, scheme design, detailed design, tendering phase, construction phase, commissioning and testing and defect liability period. In each of the phases, one form of approval or another is required. Therefore, network analysis was considered feasible to realize the objectives of the study.

This study sought to outline the effects of development approvals on a building project time and cost. The findings of this study will play a significant role in understanding the reasons for the inadequate social infrastructure in the country. More importantly, a review of past literature as well as analysis based on the findings of the study was key in coming up with recommendations that can be utilized to deal with the underlying problem. This study therefore sought to evaluate the building approval processes on construction projects delivery in terms of cost and time by using network analysis.

### **1.3 Research questions**

The research questions are:

- i. What building approvals should a developer meet as they carry out a construction project?
- ii. What is the time and cost variations experienced by developers during the approval processes?
- iii. What are the effects of the cost and time variations to the project delivery?
- iv. What interventions can be employed to increase efficiency in provision of building approvals?

### **1.4 Main objective**

The main objective of the study is:

To evaluate the impact of building approvals processes on time and cost of construction projects.

#### **1.4.1 Specific objectives of the study**

The sub-objectives of this study are:

- i) To examine the building approvals applicable to construction projects.
- ii) To determine the time and cost variations experienced by developers during the approval process.
- iii) To analyze the effect of the cost and time variations to project delivery.
- iv) To suggest interventions that can be employed to increase efficiency in provision of building approvals.

### **1.5 Research Proposition.**

There is a significant impact of the current building approval processes on building project time and cost overrun in Nairobi City County

### **1.6 Justification of the study**

Housing deficit in Kenya remains a pertinent issue as decent and affordable housing is a fundamental right in the constitution of Kenya, 2010. The findings of this study will be useful in establishing the impact of the building approval process to development and therefore aid future governments in streamlining the approval process to enhance a better environment for investment in the construction industry and in the long run assist in bridging the housing deficit.

### **1.7 Significance of the study**

The results of this study will allow the government to identify weaknesses within the approval process in order to rectify them. The study looked at various interventions that can be applied and their relevance in the Kenyan context.

### **1.6 Scope of the study**

The study focused on developers undertaking projects in Nairobi City County. The study also targeted the process of approval that these developers are required to adhere to before the start and during the period of a construction project. The study is qualitative in nature and the research sample comprised of 30 developers working in Nairobi City County. The primary data collection method was the interview questionnaires that were used to determine the developers' perspective on the impact of development approvals on building project time and cost. Further the research used random sampling with Nairobi City County developers being the specific group in mind. In terms of theory, the current study was delimited to network theory and in particular critical path method.

### **1.7 Limitations of the study**

The study area was limited to developers undertaking projects within Nairobi City County. The study also focused on the regulations that apply to private firms in relation to undertaking a building project. Owing to the fact that the study was targeting owners of new buildings within the city, finding them and their

willingness to give independent responses was at stake. However, the researcher obtained a letter from the university giving authority for collection of data. In addition, the researcher considered the services of experienced research assistants to expedite the exercise of data collection.

### **1.8 Assumptions of the study**

This study assumed that the target respondents would provide objective and relevant information in order to achieve the stated objectives. The building approval processes are straightforward. It also assumed that building approval processes and payments are dutifully pursued without any challenges. Finally, the study assumed that the project time and cost is constant for similar projects because statutory approvals are issued within the same time.

### **1.9 Definition of terms**

**Building development approval**– It refers to the regulatory approval that must be obtained prior to commencing a development (The State of Queensland, 2016).

**Building rules consent**–It refers to consent on construction or buildings and structures which assesses the application against the technical requirements of the building code (Aluko, 2011).

**Project cost** –It refers to any expenditure made or estimated to be made, or monetary obligations incurred or estimated to be incurred and are listed in a project plan as costs of public works or improvements.

**Project time** - refers to the duration of each activity in an on-going project

**The construction industry regulating bodies** refer to the institutions mandated to foresee the rightful implementation of the regulations set in the construction industry

**Building approvals** refer to the laws and regulations that all developers and participants of the construction industry must abide to.

**Construction project delivery (time and cost)** refers to the ability of the developer to fulfill their obligation and the proportional change in the developer's profit margins subject to the requirements of the regulating authorities and statutory requirements.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter covers the theoretical framework and a review of literature that is relevant to the topic under study. The review is based on the research objectives highlighted above. This is with the aim of ensuring that through the objectives formulated in the previous chapter can be represented in more measurable terms.

#### **2.1 The construction economic contribution**

##### **2.1.1 The global construction industry**

The global construction industry represented about 13% of the global GDP in 2013 and is expected to rise to 15% by year 2020 (Schilling, 2013). The global construction industry is expected to grow from \$7.2 trillion in 2013 to over \$12 trillion by 2020. In addition, the developing countries are expected to overtake the developed world in the market share of ongoing construction by year 2020 (Schilling, 2013). The construction industry also employs up to 7% of the total global employed population (World Bank Report, 2015).

The construction industry is broad and is seen as a very critical contributor to every nation's GDP. Further, the housing sector is one of the industry's backbones that determine the success or failure of the construction industry as a whole (United Nations Environmental Programme [UNEP], 2003). UNEP indicates that as of 2003, one tenth of the global economy was occupied by construction and building of homes and offices (UNEP, 2003).

There has therefore been an immense focus and academic research on the extent to which the construction industry contributes to the welfare of the society in comparison to other industries (Lind, 2005). Considering the immense contribution, the construction industry makes to the economy, understanding the factors that would affect its performance is key (Busolo, & Ombuki, 2014).

### **2.1.2 The role of construction in development**

The extent of a country's economic development is closely related to the level of activity in the construction sector and this relation has been studied and reinforced by Achitabwino (2009), World Bank (2015) among others. Development of the construction industry should be a deliberate process in order to meet the national economic demand for buildings and other physical infrastructure so that sustainable national economic and social development objectives are achieved (Ministry of Works Tanzania, 2013).

The Economic Commission for Europe posits that economic growth and social equality. Presuppose more construction and more construction contributes to growth (Economic Commission for Europe, 2014). Further, the changes in economic conditions in European countries demonstrated the sensitivity of the construction industry to economic fluctuations.

The construction industry is the backbone of national development and therefore infrastructural expansion to cater for urbanization, industrialization and population growth is majorly dependent on it (Achitabwino, 2009).

### **2.1.3 Construction industry as the backbone of national development**

The construction industry is a major sector throughout the world and not only accounts for a significant proportion of most countries Gross Domestic Product (GDP) and Gross National Product (GNP) but is also a catalyst for economic growth (Sherani, 2012). The rise of Japan, Germany and European economies to present state from the destruction of world war-II is attributable to vibrant construction industry. Further, the construction industry remains the main player in infrastructure and housing development and is accredited with advancing national development agenda (Sherani, 2012). In addition, millions of jobs are created during the chain reaction process of construction activities in the economy.

World Bank (2008) noted that a unit increase in expenditure in the construction sector has a multiplier effect and the capacity to generate income as great as five times the cost of the unit. The report hypothesized that if the economy grows at a rate of 10%, the housing sector has the potential to grow by 14% thereby generating new jobs in millions over a period of time.

This view was also supported by Anaman and Amponsah (2007) who see construction activities and its output as an integral part of a country's national and industrial development. The construction industry is a driver of economic growth in developing economies. Often, it mobilizes and utilizes local human and material resources in the development and maintenance of housing and other infrastructure. Thereby, it creates employment for a significant population locally.

The construction industry generates employment and incomes for the local population and thus significant investment activities in this sector have an effect on virtually all socio-economic aspects of a country's population (Chen, 1998; & Rameezdeen, 2007). This means that the construction industry has a strong linkage with economic activities (Bon, 1988; Bon & Pietroforte, 1990; Bon et al., 1999; Lean, 2001; & Rameezdeen, 2007).

Field & Ofori (1988) concluded that whatever happens to the construction industry would directly and indirectly influence other industries in the economy. Ultimately, the wealth of a country makes it an essential and highly visible contributor to the process of economic growth and development.

#### **2.1.4 Economic impact of the building and construction industry in Kenya**

In Kenya, development in building and construction remains a pivotal area of focus by national and county governments. Case in example is the rise in infrastructure expenditure by 37.6% to KSHS.120.5 billion in financial year 2014/15 as compared to 2013/14 which was among other factors attributed to the accelerated growth of the construction industry by 13.1% compared to a revised growth of 5.8% in 2013 (KNBS, 2015).



In regards to housing, the National Housing Corporation (NHC) completed 243 residential units in Nairobi in 2014/15 as the government expenditure in housing rose to 6.1 billion from 3.5 billion in 2013/14. In the private sector frontier, the value of building works completed in Nairobi City County rose from 52.3 billion in 2013 to 59.1 billion in 2014 (NHC, 2014).

In regards to employment in the construction sector, the number of employees in this sector constituted 6.1% of total formal employment in 2014. The wage employment grew by 10.7% from 129.7 thousand individuals in 2013 to 143.6 thousand in 2014. The private sector registered a greater growth of employment equal to 12.3% i.e. from 111.6 thousand individuals in 2013 to 125.3 thousand in 2014 while the public sector employment grew by 1.1% to 18.3 thousand individuals in 2014. The amount of project financing from commercial banks to the building and construction sector grew by 13.6 per cent from KSHS. 70.8 billion in 2013 to KSHS. 80.4 billion in 2014, mainly due to increased financing of real estate development (KNBS, 2015).

According to Kenya National Bureau of Statistics (2015), the construction industry was one of the main drivers of Kenya's economic growth after registering a significant growth of 13.1% and contributing 4.8% growth to Kenya's GDP. KNBS forecast that the construction industry will continue to grow given the government planned infrastructure projects and the increased pressure on residential construction by the growing urban population in Kenya (KNBS, 2015). The construction industry is the sector at the center of planning, design, construction and maintenance of all infrastructures that forms the basis for most, if not all, economic and social activities (Ofori, 1980). It is closely interrelated and interlinked with other sectors in the economy and is often used as a yardstick for measuring a country's progress towards greater economic development (Ofori, 1980).

The construction industry is an important sector of any economy because it makes significant contribution to economic development. This importance is

underscored by the amount of money allocated to this sector by governments across most economies in their yearly budgets or as observed during the economic crisis of 2008 (Gitau, n.d). Kenya has faced major challenges in the housing sector most notable experiencing an annual shortfall of housing exceeding 300,000 units. There has also been rapid urbanization which is as a result of devolution and realization of vision 2030.

The current short falls in housing in Kenya is attributable to distorted access to land, high cost of finance, existence of rigid building laws and regulations and the deterioration of housing stock due to lack of a maintenance framework (Apiyo, 2016). As at 2012, Kenyan population growth was estimated at 4.2% per annum. Based on this growth and the rate of urban migration, the yearly annual increase in demand for housing in Kenya is 206 000 units annually of which 82 000 are in urban areas. This therefore means the current short falls will only increase leading sprawling slum areas in urban areas (Centre for Affordable Housing in Africa, 2012).

In 2011, the Ministry of Housing estimated that the formal supply of houses to the market reached 50,000 creating a 156,000 shortfall which added up to the two million units existing backlog (Centre for Affordable Housing in Africa, 2012). The first implication of this shortfall in formal housing is that populations that are not catered for (or could not afford to, given the prevailing prices) have to turn towards self-built and informal housing. In urban areas this translates into the growth of slums as indicated by the Kenyan 2009 population census, over 30% of the country's population lives in slums (KNBS, 2009).

## **2.2 The statutory procedures and payments applicable to construction projects**

The following sections will provide a comprehensive summary of the procedure, costs, and time required to obtain various building approvals. It involves

necessary permits, and licenses, completing required notifications and inspections though acquiring the utility connections.

### **2.2.1 Architectural plan approval**

The developer must approach the City Development Department in Nairobi City County to get the architectural plans accepted first. As a result, before submitting the application, the developer needs to pay the relevant fees. When this payment is made, the developer should submit the receipt to City Development Department. This application must have the architectural plans and drawings and a copy of the architect's license. The application is then forwarded to the different departments: Physical Planning, Public Health, Road Department, Water Authority, Fire Department, Electricity Authority, and Water Authority. Every department takes at least one week to clear the respective area of the grants and plans separate permits for sewerage, plumbing, and electrical activities which developer may be involved in during the construction (County, 2016).

Thereafter, the application is forwarded for consent to technical committee which convenes twice a week and gives the approvals. As a result of approval of the building drawings, developer may receive the building permit. Hence, the building permit is approved only provisionally, until the approval engineering drawings. After the building permit is obtained, the developer needs to submit the structural drawings. From 2006, Nairobi City County has been reforming under Rapid Result Initiative, trying to reduce the number of days and eradicate the bottlenecks. Earlier, the approving body was the city county itself. On the other hand, because of the busy schedule and backlog, they decide to transfer responsibility from City County to the technical committee. Due to different reforms, it takes an average of thirty days to acquire this part of approval as opposed to fifty days before. Consequently, the approval time varies since it relies on diligence of the Architect (County, 2016).

From November 2008, the occupancy certificate is in this stage. The last changes to the charges and fees took place in 2011. The associated costs are as in the County finance bill, 2013. (See Appendix III)

### **2.2.2 Submit and obtain the structural plan and final permit**

When the building drawings are approved and changes and comments are made, the developer has to incorporate them into the structural plans and re-submit the application to Nairobi City County for approval. Henry (2013) states that it is the common practice since submitting the plans together are impossible. Additionally, another reason why the second step occurs separately is due to the architectural plans and drawings are checked by the Structural Department at this stage when the structural plans are permitted. The construction works start only after the approval.

The RRI program and internal process of simplification in Nairobi City County takes ten days to acquire the structural approval compared to the previous 25 days (Henry, 2013). The firm should have the following apparatus approved: building drawings. The last changes to the charges and fees took place in 2011. The procedure has taken 10 days. The costs include structural plan acceptance fee as detailed in the County finance bill, 2013.

### **2.2.3 National Environment Management Authority (NEMA)- EIA license**

Due to the enactment of the Environment Management and Coordination Act in February 27, 1999 firms have acquired approval of project from NEMA. Therefore, the projects bearing all risk categories are subject to acceptance by NEMA. The regulation concerning environmental approvals of Kenya has been set in place since 1999.

The licensed environmental expert should be hired to prepare the project report to be submitted to National Environment Management Authority. In recent years, NEMA has begun enforcing rules more vigorously. Thus, the legislation is not apparent on which categories of buildings the regulation could apply to but most

counties require it for every commercial construction. As a result, NEMA conducts the periodic inspections during construction.

When new projects during inspection do not have environmental approval, they can order the project to be closed and erected objects demolished (Henry, 2013). The developer should hire an environmental expert to make the environmental report and deal with approval from NEMA. This procedure should take thirty days. It previously cost the developer 0.1% of building cost but this has since been scrapped off by the government in a bid to encourage investment in the housing market (Wanzala, 2017).

#### **2.2.4 Receive and request on-site inspection through the county government**

When the construction is finished alongside statutory inspections, the developer lodges an application for an occupancy certificate. The application is forwarded to Assistant Director of Enforcement so that an inspector is assigned for final inspection of the construction. Frequently, it must be combined visit from different departments. It takes five days and the cost is KSHS. 1,000.

#### **2.2.5 Obtain occupancy certificate**

When the construction is finished alongside the statutory inspections, the developer lodges the application for the occupancy certificate. Moreover, the occupancy certificate is offered when the Nairobi City County deems the site is in compliance with granted architectural drawings. It takes 14 days and the costs KSHS. 900 for first 930 square meters + KSHS. 500 for each additional 93 square meters or part thereof over 930 square meters (KNBS, 2015).

#### **2.2.6 Sewerage and water installation**

The applicant needs to submit an Application for Sewerage and Water Supply Form acquired from Nairobi City Water and Sewerage Company. The applicant is needed to pay KSHS. 1, 100 for estimates and survey fees and attach the receipt

of payment to the application form. (National Economic and Social Council [NESC], 2016).

The applicant is required to attach the developer's firm certificate of registration and the PIN number. Moreover, the Nairobi Water Company can grant the application after the documents are issued. Consequently, after approval, the applicant pays KSHS. 6, 000. Therefore, the applicant is responsible for payment of water, sewer, meter rent, refuse collections charges and conservancy. The process takes 30 days.

The Table 2.1 shows a list of the costs incurred for a warehouse construction as per the fees discussed above. This is the fee chargeable for a warehouse worth KSHS. 5, 871, 649

*Table 2.1: Fees charged by construction industry regulating authorities*

Regulating Institution	Fee Charged	% Fee Charged	Days	Fee as a percentage of total cost
Nairobi City County Government	347, 939	85.62%	85	5.93%
Nairobi City Water and Sewerage Company	5, 000	1.23%	32	0.085%
National Environmental Management Authority (NEMA)	2, 936	0.72%	30	0.05%
NEMA Licensed Expert	50, 000	12.30%	5	0.85%
Survey of Kenya	500	0.12%	1	0.0085%
Grand Total	406, 375	100.00%	153	6.92%

Source: World Bank, 2016

## **2.3 Legal framework**

Kenya National Bureau of Statistics (2015) states that there are a multiple of statutes that guide the planning and building sector in Kenya. Besides, there being multiple statutes, there are several regulatory authorities that have different mandates and mechanisms for enforcing building and construction standards (Kimani et al., 2010). In addition, the laws governing the building and construction industry have all gone through multiple partial or full revisions making it a tall order for developers to keep track of what law(s) apply where and when.

### **2.3.1 Physical Planning Act, Amended 2015**

This is an act of Parliament that makes provision for the planning, use, regulation and development of land and for connected purposes in Kenya. Article 56 states that, subject to the provisions of this Act and the Urban Areas and Cities Act, 2011, and the County Governments Act, 2012, each county government may, in the area under its jurisdiction control or prohibit the use or development of land or buildings for the proper and orderly development of the area; control or prohibit the sub-division of land or existing parcels of property; consider and approve all development applications; grant development permissions to applicants; ensure compliance with the provisions of this Act or any other relevant written law; and to protect and preserve all land reserved for open spaces, parks, urban forests and green belts (NESC, 2016).

The Physical Planning Act, 2015 gives effect to Article 66 (1) of the Constitution which provides that the State may regulate the use of any land, or any interest in or right over any land, in the interest of defense, public safety, public order, public morality, public health, or land use planning (NESC, 2016).

This Act replaces the Physical Planning Act, No. 6 of 1996 and intends to provide for the planning, use, regulation and development of land in Kenya. The Act guides the preparation and implementation of physical development plans at all

levels of government, the administration and management of physical planning in Kenya, the procedures and standards for development control and regulation of land use and physical planning, the co-ordination of physical planning between the two levels of government, dispute resolution, and the functions of and relationships among planning authorities.

It also deals with the establishment, functions and powers of planning institutions. These are the National Physical Planning Consultative Forum, the Cabinet Secretary, the National Land Commission, the National Director of Physical Planning, and the County Physical Planning Consultative Forums.

The Act deals with the types of physical development plans, their contents, the process of their preparation, revision, modification or withdrawal, resolution of disputes in relation to physical plans and uses of physical plans. These include the National Physical Development Plans, the Regional Physical Development Plans, the County Physical Development Plans, the Local Physical Development Plans and Special Area Plans (NESC, 2016).

The Act also sets out the objectives of development control, the authority of planning authorities to undertake development control, the procedures for obtaining planning permission by developers, offences in relation to development control and the preservation of heritage sites during development, among other matters. It further addresses the enforcement of development control permits or licenses and makes provisions for enforcement notices and requisition notices among other issues.

### **2.3.2 The County Government Act (2012), Amended 2015**

This Act provides for the election, functioning, control of, tasks and powers, etc. of county governments as provided for under Article 176 of the Constitution (NESC, 2016). It also provides for a wide variety of matters relating to public administration at local level. A county government shall be responsible for planning and development of its county. This act provides for the establishment of



County Government; to define their functions and to provide for matters connected therewith and incidental thereto.

### **2.3.3 Nairobi City County Finance Bill - 2013**

This is an Act of the Nairobi City County Assembly to provide for the various taxes, fees and charges for services, and for other revenue raising measures by the county government; and for matters incidental thereto.

The act stipulates amongst other charges, fees chargeable on building plans and permits depending on the size of the structure and the zone it is located within the city. The fees charged on a percentage of the total cost of the project depending on the size of the structure and the density class under which the development location is classified by the Nairobi City County Government.

### **2.3.4 National Construction Authority Act (2011)**

This act of Parliament provides for the establishment, powers and functions of the National Construction Authority (NCA) and for connected purposes (NESC, 2016). The functions of the Authority as given in article 5 is to oversee the construction industry and coordinate its development by promoting and stimulating the development, improvement and expansion of the construction industry; advising and making recommendations to the Minister on matters affecting or connected with the construction industry; undertaking or commissioning research into any matter relating to the construction industry; prescribing the qualifications or other attributes required for registration as a contractor under this Act.

Further the NCA is expected to assist in the exportation of construction services connected to the construction industry; provide consultancy and advisory services with respect to the construction industry; promote and ensure quality assurance in the construction industry; encourage the standardization and improvement of construction techniques and materials; initiate and maintain a construction industry information system; provide, promote, review and co-ordinate training

programs organized by public and private accredited training centers for skilled construction workers and construction site supervisors (NESC, 2016).

The authority is also responsible for accrediting and registering contractors and regulating their professional undertakings; accrediting and certifying skilled construction workers and construction site supervisors; developing and publishing a code of conduct for the construction industry; and do all other things that may be necessary for the better carrying out of its functions under the Act.

The act in article 31, gives NCA through the minister the power to impose a levy known as the construction levy on construction work carried out by persons registered under this Act. The levy is described as an amount not exceeding an equivalent of 0.5%, of the value of any contract whose value exceeds five million shillings. In addition, the Minister may make regulations prescribing the manner of payment of the levy. In January 2017, the levy was since scrapped to allow investors to invest more in the building sector.

### **2.3.5 The Occupational Safety and Health Act, No. 15 of 2007 and revised in 2010**

the Act provides for the health, safety and welfare of persons employed, and all persons lawfully present at workplaces and related matters. It is obligatory for a developer to provide and maintain plant and systems and procedures of work that are safe and without risk to workers' health. A developer must ensure safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances. Provision of such information, instruction, training and supervision of workers as is necessary is very crucial maintain safe and healthy workplace (NESC, 2016).

Workplace and work environment that is safe, without health risks and adequate as regards facilities and arrangements for the worker's welfare at work should be maintained. Workers should be well informed of any risks and imminent danger related to new technologies and they should participate in the application and

review of safety and health measures. A developer must also ensure proper cleanliness, ventilation, lighting, drainage of floor, sanitary convenience, avoid overcrowding and control air pollution, noise and vibration at the workplace.

Every occupier is required to establish a safety and health committee at the workplace in accordance with regulations prescribed under the law. Preventive and protective measures should be taken after proper risk assessment (at least once a year) to ensure that all chemicals, machinery, equipment, tools and process are safe and without risk to health and comply with the requirements of safety and health provisions in the Act (Occupational Safety and Health Act, 2007).

In addition, the act requires that the developer registers the site of development as a workplace with the director of occupational safety and health detailing: name of workplace, address and location, name of occupier, name and address of owner of premises, nature of work carried on or proposed, and name of manager, list of chemical substances used or intended including chemical safety data sheet.

The developer is also expected to specify mechanical power used or intended and its nature, whether passenger or goods lifts are used or intended including type, description and number; country and year of manufacture; date of last examination; maximum permissible load and total number of persons employed. The employer is then supposed to pay a prescribed fee and on satisfaction of the director the workplace is registered.

### **2.3.6 Public Procurement and Disposal Act, 2015**

In the construction context, this act governs the procurement and disposal of public property. It defines who a contractor is, the form of tendering (open) and the procedures to be applied in both the procurement and disposal of property (NESC, 2016).

### **2.3.7 Environmental Management and Coordination Act, 1999**

This established the National Environment and Management Authority (NEMA) to cater for all issue affecting the environment. Developers are required to submit an Environmental Impact Assessment (EIA) to the authority who then, on examination of the assessment, gives recommendations on whether the development will be carried out and how it will be carried out.

Article 58 (1 and 2) on application for an Environmental Impact Assessment License states that notwithstanding any approval, permit or license granted under this Act or any other law in force in Kenya, any person, being a proponent of a project, shall before for applying for financing, commencing, proceeding with, carrying out, executing or conducting or causing to be financed, commenced, proceeded with, carried out, executed or conducted by another person any undertaking specified in the Second Schedule to this Act, submit a project report to the Authority, in the prescribed form, giving the prescribed information and which shall be accompanied by the prescribed fee (NESC, 2016).

Further, the proponent of a project shall undertake or cause to be undertaken at his own expense an environmental impact assessment study and prepare a report thereof where the Authority, being satisfied, after studying the project report submitted under subsection (1), that the intended project may or is likely to have or will have a significant impact on the environment, so directs.

Subsection (3) under this article states that the environmental impact assessment study report prepared under this subsection shall be submitted to the Authority in the prescribed form, giving the prescribed information and shall be accompanied by the prescribed fee.

### **2.3.8 Proposed National Building Regulations**

The regulations are a revision of the building code of 1968 undertake to encourage the use of innovative design, new materials and new construction

methods; optimization of resources and; adherence to building and planning standards.

They provide guidance on site planning, building site operations, building design, building and infrastructure services, disaster management, construction and maintenance of all buildings. The regulations regulate the designing, planning and the supervision of the erection of any building or structure by stipulating approvals, fees and permits required before the commencement of any development.

These Regulations are a guide on good planning and building practice (NESC, 2016). They set out, in the simplest and shortest way possible, requirements to ensure that buildings will be designed and built in such a way that persons may live and work in a healthy, safe and convenient environment. The overall aim of these regulations is to encourage optimal use of resources; enhance safety, health and convenience; and to improve acceptability and compliance of these Regulations.

Article A - 6 subsection A - 6.5 states that no person shall develop or cause to be developed any building on land where development permissions applicable to the area have not been granted. Subsection A - 7.1 states that any person intending to erect any building shall submit to the approving authority a location plan; site plan; drainage installation drawing; firefighting installation drawing; particulars of any existing building which is to be demolished and details of the method of demolition to be used (NESC, 2016).

Additional plans and particulars may be required by the approving authority in regards to general structural arrangements; general arrangement of artificial ventilation; fire protection plan; and any certificate contemplated in these regulations.

### **2.3.9 Work Injury Benefits Act (2007)**

The Act provides for compensation to employees for work related injuries and diseases contracted in the course of their employment. The Act requires employers to maintain an insurance policy in respect to liability under the Act, register with director including furnishing prescribed particulars of their business including any additional particulars and notification of change.

Employers are also expected to keep a register of earnings and other prescribed particulars of all employees; produce the register on demand for inspection by Director; retain register for 6 years. Insurance premiums are determined based on the size of the project, contractor's previous claims and the insurer. These are additional costs to the developer.

### **2.3.10 The Survey Act, Chapter 299**

This act of Parliament makes provision in relation to surveys and geographical names and the licensing of land surveyors, and for connected purposes (NHC, 2013). Article 32 of this act states that no land shall be deemed to have been surveyed or resurveyed until the plan thereof has been authenticated by the signature of the Director or of a Government surveyor authorized in writing by the Director in that behalf, or by the affixing of the seal of the Survey of Kenya. A certified survey plan is therefore mandatory when applying for approvals of development plans by other relevant authorities.

## **2.4 Institutional framework**

A statutory regulation is defined as “a law on some point of detail, supported by an enabling statute, and issued not by a legislative body but by an executive branch of government”. (Duhaime's Law Dictionary, 1998).

The Business Dictionary defines a statutory regulation as “something, such as official approval, a license, or a permit that is required by law for engaging in a

certain activity (such as land development, mineral or oil exploration, sale of securities)”).

Statutory regulations are formulated and enforced by national or county government bodies. In Kenya’s construction industry, these bodies include Survey of Kenya, National Environmental Management Authority (NEMA), National Construction Authority, County Governments, National Housing Corporation (NHC) and Nairobi City Water and Sewerage Company, Directorate of Occupational safety and Health (DOSH) amongst others (Stroika Group, n.d).

#### **2.4.1 The Survey of Kenya**

The Survey of Kenya is responsible for establishing and maintaining a national geodetic control network that covers the whole country to facilitate other surveys and research, to produce and maintain plans of property boundaries in support of land registration and to ensure security of land tenure, to produce and maintain plans of property boundaries in support of land registration and to ensure guarantee and security of land tenure, to produce and continuously update national topographical basic maps for the whole country at various scales for development planning and for production of other maps.

They are also tasked to inspect and maintain national and international boundaries, to prepare and publish the National Atlas of Kenya, as a documentation of National Heritage and promotion of Nation’s identity. Further, they are responsible for carrying out hydrographic surveys for safe navigation, exploration and exploitation of natural resources of rivers, lakes, seas and oceans, calibrating and maintaining survey equipment in order to ensure correct measurements, providing quality control and assurance of geographical data produced by other organizations and establishing and maintaining National Spatial Data Infrastructure (Survey Act Cap 299 of the Laws of Kenya).

Developers are therefore required to obtain survey plans from Survey of Kenya when applying for a building permit with other regulatory authorities such as

County Government and National Environmental Management Authority which cost KSHS. 500.00.

#### **2.4.2 The County Government of Nairobi**

The county government of Nairobi through its development control section requires developers to submit architectural drawings for approvals before commencing with the development. Upon the enactment of the Nairobi City County Finance Bill of 2013, the fees levied on a building project were consolidated and the methodology for computing the fees changed to one based on the size of the building. Henceforth, the fees chargeable are percentage cost which varies depending on the type of building (NHC, 2013),

The developer is required to furnish the development control section with a copy of the title deed, survey plan of the plot from Survey of Kenya, land rate receipt for the current year showing up to date payments to the county government and architectural drawings.

The drawings and annexed documents are reviewed by all relevant departments within the county government then approvals issued. The developer then submits the structural drawings for approval accompanied by the approved architectural layouts, county government approval letter (for Architectural drawings), design calculations, G.A. drawings, sample R.C. drawings for main elements, signed indemnity forms, engineering practicing certificate and structural certificate. This approval takes a period of 40 days.

Further, the developer applies for signboard permit by submitting a signage drawing at a fee of KSHS. 25,000 which takes 1 week; an excavation permit based on the structural drawings at a cost included in the initial approval cost which takes 1 week; and a hoarding permit by submitting a hoarding line drawing at a fee included in the original cost which also takes one week to be approved. A tree-cutting permit is also required at fee of KSHS. 500 and similarly takes one week.



Once the plans are approved by the Nairobi City County, the developer must submit the hard copies of the development plans to be stamped despite having sent them online and must notify the county of the commencement of the work. The development control section of the Nairobi City County must also be informed once the foundation or excavation is completed for inspection (NHC, 2013).

Upon completing the construction, statutory inspection of the structure is undertaken by the development control section of Nairobi City County after which the developer applies for occupancy certificate. The certificate is a requirement from the Planning and Building Regulations 2009, certifying that all structural works of the structure constructed were carried according to approved structural designs and is safe for the purposes it was intended for.

The certificate is issued only to completed developments that have complied with all approvals and that have also gone through regular inspections at the required stages. The application must be accompanied by a copy of approved building plans; approved structural plans; structural Engineer's indemnity form; architect's report; plumber's certificate; and a filled form from Kenya Bureau of Statistics.

The occupancy certificate approval takes 14 days and is issued once the City County development control section is satisfied the building is in compliance with the approved architectural drawings.

#### **2.4.3 Nairobi City Water and Sewerage Company**

The Nairobi Water Company was incorporated in December 2003 and is a subsidiary of the County Government of Nairobi and operates through six administrative business centers in Nairobi, with three dam stations, one spring, three water treatment plants and two wastewater treatment plants.

The Nairobi Water Company is responsible for providing water and sewerage services in Nairobi. The company was formed after the enactment of the Water

Act of 2002 and prior to its creation, water and sewerage services were provided by the Water and Sewage Department of the Nairobi City County (NHC, 2013).

To obtain a connection to water service lines, the developer submits mechanical drawings showing fittings and connection details in the target structure to Nairobi Water Company. The developer is also expected to provide information on the quantity of water required in the target structure. The developer pays KSHS. 6000 as inspection and connection assessment fees. The company undertakes the connection cost assessment then furnishes the developer with the total cost for the connection.

Once the developer has paid the fee charged, they are connected to the water system. This process of approval takes 30 days. The same procedure applies when applying for connection to the sewer system except that in this case developer must specify wastewater quantities to be produced. The approvals for connection to the sewer system also take 30 days but can run concurrently with the connection to the water system.

#### **2.4.4 National Construction Authority (NCA)**

The NCA is responsible for awarding certificates of proficiency to contractors, skilled construction workers and construction site supervisors a process that takes 10 to 12 weeks. With the approval of the Minister, NCA is allowed to impose fees or any other charges as it deems fit in respect of any of its functions or powers.

Further, with the approval of the Minister, they are tasked to facilitate, or promote the establishment or expansion of companies, corporations or other bodies to carry on any activities related to construction either under the control or partial control of the Authority or independently; and to receive, in consideration of any services that may be rendered by it, such commission or payments as may be agreed upon with any person.

#### **2.4.5 The Kenya Power**

The developer applies for power connection by submitting the electrical contractor's license issued by the energy regulatory commission (i.e. the works must be carried out by a contractor of the approved class as per energy regulatory commission classes of licenses), an installation test certificate, type of connection specifications, scaled site plan, clear & detailed route sketch leading to the premises where power is required, load schedule and connection details, and certificate of incorporation.

Kenya power undertakes an assessment of the cost of the connection and furnishes the developer with a quote of fees chargeable within a period of 3 to 4 weeks. The fees charged vary depending on such factors as proximity to existing power lines and transformer.

#### **2.4.6 Directorate of Occupational Safety & Health Services (DOSHS)**

Section 44 of the Occupational Safety and Health Act, 2007 requires that before any person occupies or uses any premises as a workplace he shall apply for the registration of such premises by sending to the Director of Occupational Safety and Health Services a written notice containing the particulars set out in the Fourth Schedule of the Act at a fee of KSHS. 5000.

Further, it is an offence for any person to occupy or use any premises as a workplace without first having been issued with a certificate of registration. The occupation approval process takes 3 to 4 weeks.

#### **2.4.7 Water Resource Management Authority (WRMA)**

The Water Resource Management Authority (WRMA) is a state corporation under the Ministry of Environment, Water and Natural Resources established under the Water Act 2002 and charged with being the lead agency in water resources management.

The functions of the Authority are to develop principles, guidelines and procedures for the allocation of water resources; to monitor, and from time to time reassess, the national water resources management strategy; to receive and determine applications for permits for water use; to monitor and enforce conditions attached to permits for water use; to regulate and protect water resources quality from adverse impacts and to manage and protect water catchments in accordance with guidelines in the national water resources management strategy.

The authority is also charged to determine charges to be imposed for the use of water from any water resource; to gather and maintain information on water resources and from time to time publish forecasts, projections and information on water resources; to liaise with other bodies for the better regulation and management of water resources; to advise the Minister concerning any matter in connection with water resources (Water Resource Management Authority, 2013).

Where a developer needs to sink a borehole as part of a development project, WRMA requires them to apply for a drilling permit by submitting an application form and an EIA license from NEMA for the borehole. The approval for drilling takes 3 to 4 weeks. The developer is also expected to apply for a borehole abstraction permit by submitting meter documentations and chemical analysis report and this approval takes up to one week.

#### **2.4.9 Telephone and Internet Connection**

For telephone and internet connection, the services are provided by various players including but not limited to Telkom Kenya Limited, Safaricom Limited, Airtel Kenya among others. The cost and period required varies with each service provider but on average takes 1 week. For landline telephone connection with Telkom Kenya, an application fee i.e. deposit of KSHS. 2, 300 per line and installation cost of KSHS. 3, 394 per line is charged.

## 2.5 Approvals matrix

Table 2.2 shows a summary of the literature review on the building approval process. This is linked to the project phases and shows the required documents, fees payable and the estimated approval duration.

*Table 2.2: institutions responsible, requirements by developers and time each approval takes*

<b>Project Phase</b>	<b>Approval/ Permit Required</b>	<b>Application Made To (Issuer)</b>	<b>Required Documents/ Fees</b>	<b>Estimated Approval Duration</b>
Preliminary Design	Survey plans	Survey of Kenya	1. Copy of title deed 2. Application fee of KSHS.. 500	1 day
Scheme Design Stage	Architectural drawings Approvals	Nairobi City County	1. Photocopy of the title deed 2. Photocopy of the survey plan of the plot 3. Land rate receipt of the current year showing up to date payments to the county council 4. Architectural drawings in PDF 5. Building plan	30 Days

			approval fee: as per the Nairobi City County Finance Bill - 2013.	
Detailed Design/Product Implementation Stage	Structural Drawings Approvals	Nairobi City County	<ol style="list-style-type: none"> <li>1. Approved Architectural layouts</li> <li>2. The council approval letter (for Architectural drawings)</li> <li>3. Design calculations</li> <li>4. All General arrangement drawings</li> <li>5. Sample representation of concrete drawings for main elements</li> <li>6. Signed indemnity forms</li> <li>7. Engineering practicing certificate</li> <li>8. Structural</li> </ol>	10 Days

			<p>certificate</p> <p>6. Building plan approval fee: as per the Nairobi City County Finance Bill -2013.</p>	
<p>Tender Documentation/ Tendering Stage</p>	<p>EIA License</p>	<p>NEMA</p>	<ol style="list-style-type: none"> <li>1. Client acceptance of Conditions.</li> <li>2. EIA approved project report</li> <li>3. Layout drawings – (approved but if not yet, the submitted drawings will suffice in submission to be followed up with approved drawings later if NEMA requests)</li> </ol>	<p>30 days</p>

			<ul style="list-style-type: none"> <li>4. Land ownership documents</li> <li>5. Change of user approval (only if a change in land-use is required for the project)</li> </ul>	
Construction Stage	NCA Registration	National Construction Authority (NCA)	<ul style="list-style-type: none"> <li>1. Application form (NCA 2014 Act)</li> <li>2. Compliance certificate</li> <li>3. Submission of Main Contract document (Client &amp; Main Contractor).</li> </ul>	14 days
	Workplace Registration	DOSH	<ul style="list-style-type: none"> <li>1. Number of workers employed, or intended to be employed</li> <li>2. Male/Female Ratio</li> </ul>	3-4 weeks



Construction Stage			<ol style="list-style-type: none"> <li>3. Location of sanitary facilities</li> <li>4. Location of eating place</li> <li>5. Name and credentials of safety representatives</li> <li>6. Payment of KSHS. 5,000.</li> </ol>	
	Signboard Permit	Nairobi City County	<ol style="list-style-type: none"> <li>1. Signage board drawing</li> <li>2. Application fee (KSHS. 25,000)</li> </ol>	1 week
	Excavation Permit		<ol style="list-style-type: none"> <li>1. Structural drawings</li> <li>2. Application fee (included in architectural/structural fee)</li> </ol>	1 week
	Hoarding Permit		<ol style="list-style-type: none"> <li>1. Hoarding Line drawing</li> <li>2. Application fee (included in architectural/structural fee)</li> </ol>	1 week
	Tree cutting permit			<ol style="list-style-type: none"> <li>1. Application fee (KSHS. 500 per tree)</li> </ol>

	Temporary power	Kenya Power Company	<ol style="list-style-type: none"> <li>1. Specify type of connection required on the application form</li> <li>2. Scaled site plan in PDF</li> <li>3. Clear &amp; detailed route sketch leading to the premises where power is required</li> <li>4. Load schedule and connection details</li> <li>5. Certificate of Incorporation/Registration</li> <li>6. Fees based on quotation received from Kenya Power</li> </ol>	2 weeks
	Temporary Water	Nairobi Water and Sewerage Company	<ol style="list-style-type: none"> <li>1. Mechanical drawing showing fittings</li> <li>2. Application fee</li> <li>3. Water quantities required/ waste quantities to be</li> </ol>	2 weeks
	Temporary Sewer			2 weeks

			produced	
	Water Connectio n	Nairobi Water and Sewerage Company	1. Mechanical drawing showing fittings and connection details 2. Application fee (KSHS. 5000) 3. Water quantities required/ waste quantities to be produced	30 days
	Sewer Connectio n			30 days
	Power Connectio n	Kenya Power Company	1. The Electrical Contractor's License issued by ERC –the works must be carried out by a contractor of the approved class as per ERC classes of licenses 2. Installation test certificate 3. Specify type of connection required on the	3-4 weeks

			<p>application form</p> <p>4. Scaled site plan in PDF</p> <p>5. Clear &amp; detailed route sketch leading to the premises where power is required</p> <p>6. Load schedule and connection details</p> <p>7. Certificate of Incorporation/Registration</p> <p>8. Fees based on quotation received from Kenya Power</p>	
	Telephone & Internet Connection	Telkom Kenya Limited/ Safaricom Limited/ Airtel Kenya	<p>1. Application form</p> <p>2. Application fee (Deposit of KSHS. 2,300 per line and Installation cost of KSHS.3,394 per line)</p>	1 week
	Borehole drilling	Water Resource	<p>1. Application form</p> <p>2. EIA license from</p>	3-4 weeks

	permit	Management Authority (WRMA)	NEMA for the borehole	
	Borehole abstraction Permit	Water Resource Management Authority (WRMA)	<ol style="list-style-type: none"> <li>1. Meter documentations</li> <li>2. Chemical Analysis report.</li> </ol>	1 Week
	Certificate of compliance of installed equipment i.e. lifts, boilers etc.	DOSHS	<ol style="list-style-type: none"> <li>1. DOSHS - who appoint from Inspector of heavy equipment Kenya and boilers inspectors of Kenya</li> <li>2. Application form</li> <li>3. Boiler Inspection by relevant Government Inspector.</li> <li>4. Registration with directorate of industries.</li> </ol>	28 days
	KEBS Certification	Kenya Bureau of Standards	<ol style="list-style-type: none"> <li>1. Samples of materials to be tested (either</li> </ol>	14 days

		(KEBS)	imported or prefabricated)	
	Occupational Certificate	Nairobi City County	<ol style="list-style-type: none"> <li>1. Approved drawings</li> <li>2. As-Built drawings</li> <li>3. Application fee(Included in Architectural/Structural fee)</li> </ol>	14 days

Source: Author, 2017

## 2.6 Network analysis

Network analysis is the sequencing of problems concerned with measuring performance e.g. total time or total cost. It is useful for designing, planning, coordinating and controlling. (Massie, 1987) Network analysis is suitable in construction projects as each project is and does not involve repetitive activities. The two most common techniques are Critical Path Method (CPM) and Programme Evaluation and Review Technique (PERT).

CPM was the discovery of M.R. Walker of E.I. Du Pont de Nemours & Co. and J.E. Kelly of Remington Rand, circa 1957. The first test was made in 1958, when CPM was applied to the construction of a new chemical plant. In March 1959, the method was applied to a maintenance shutdown at the Du Pont works in Louisville, Kentucky. Unproductive time was reduced from 125 to 93 hours.

PERT was devised in 1958 for the POLARIS missile program by the Program Evaluation Branch of the Special Projects office of the U.S. Navy, helped by the Lockheed Missile Systems division and the Consultant firm of Booz-Allen & Hamilton. The calculations were so arranged so that they could be carried out on

the IBM Naval Ordinance Research Computer (NORC) at Dahlgren, Virginia (Nazrul et al., 2010).

PERT charts and CPM charts are often used interchangeably; the only difference is how task times are computed. Both charts display the total project with all scheduled tasks shown in sequence. The displayed tasks show which ones are in parallel, those tasks that can be performed at the same time. A graphic representation called a "Project Network" or "CPM Diagram" is used to portray graphically the interrelationships of the elements of a project and to show the order in which the activities must be performed. For the purposes of this research, CPM will be used.

### **2.6.1 Basic concepts in CPM**

In this area basic concepts are explained. Various terms are used in network analysis. Some basic ones that are relevant to this research will be explored.

A project is composed of a set of activities or tasks which usually have some kind of interdependency. A network is a series of interrelated activities that lead to the accomplishment of a common goal or project. It consists of activities and events. Nodes (either circles or rectangles) represent activities, or milestones in the project linked by labeled vectors (directional lines) representing events in the project. The direction of the arrows on the lines indicates the sequence of tasks. An activity is time consuming and is necessary in the achievement of the overall goal. An activity is represented by the nodes. An event is a particular instant in time and marks the end of an activity and/or the beginning of another activity. An event is a milestone and can only be achieved when all preceding activities have been accomplished (Nicholas, & Steyn, 2008)

Network diagram is the pictorial representation of the related events and activities that make up a project. It must show a starting activity and an ending activity. The directional lines, representing events, connect the different activities. The time an activity takes is labeled within the node.

A node is an ending activity to two or more activities, while a burst is the beginning activity of two or more activities. The activities are classified as: Preceding activities, succeeding activities and concurrent activities. One activity can be preceding to one event and it can be succeeding to another event. It can be concurrent to one or more activities.

A dummy activity is an activity that has zero time or resources but is used to ensure that the sequence of events and activities is portrayed correctly in the network. It is a simulated activity of sorts, one that is of zero duration and is created for the sole purpose of demonstrating a specific relationship.

For a network diagram to be correct all activities must be known and the sequence of the activities in the project must be known. An estimate of the time to be taken for each activity must also be known.

Critical path is a continuous chain of activities connecting the first and last event and require the maximum amount of time compared to any other path from first to last event. It controls the completion date of the project as any delays on any of the critical path activities leads to a delay in the total project. Critical path determines the least time it would take to finish a project. The activities along the critical path are called critical activities. The delivery of any of the critical activities is to be monitored to prevent any delay in total project time.

Float is the duration by which an activity can be delayed without the total project time being affected. It is the difference between the latest start time and the earliest start time of an activity. Critical activities do not have float. Non-critical activities have room on which they can start early or start later depending on the float amount without affecting the total project time.

### **2.6.2 Network Analysis (CPM) for Building approval**

As discussed earlier the building approval process consists of various permits in the various stages of construction. The table 2.3 shows the chronology of the permit acquisition. Each permit acquisition process will be represented by a node



(rectangle). Concurrent, subsequent and succeeding permit acquisition is defined by the stage of construction process from inception to completion.

The aim of the use of network theory for the research was to determine what was the optimal time as stipulated in the various charters. Actual time taken was also collected from the field and the mean for each approval was obtained. The variation between the planned time and actual time was used to make conclusions. Table 2.3 presents a summary of the time involved in acquiring each approval for a network diagram.

*Table 2.3: Summary of time involved to acquire each approval for network diagram*

<b>PROJECT PHASE</b>	<b>APPROVAL/ PERMIT REQUIRED</b>	<b>ESTIMATED APPROVAL DURATION (DAYS)</b>
Preliminary Design	Survey Plan	1 day
Scheme Design Stage	Architectural drawings Approvals	30 Days
Detailed Design/Product Implementation Stage	Structural Drawings Approvals	10 Days
Tender Documentation/ Tendering Stage	EIA License	30 days
	NCA Registration	14 days
	Workplace Registration	28 days
	Signboard Permit	7 days
	Excavation Permit	7 days
	Hoarding Permit	7 days
	Tree cutting permit	7 days
	Temporary power	14 days

Construction Stage	Temporary Water	14 days
	Temporary Sewer	14 days
	Water Connection	30 days
	Sewer Connection	30 days
	Power Connection	28 days
	Telephone & Internet Connection	7 days
	Borehole drilling permit	28 days
	Borehole abstraction Permit	7 days
Commissioning & Testing Stage	certificate of compliance of installed equipment i.e. lifts, boilers etc.	28 days
	KEBS Certification	14 days
	Occupational Certificate	14 days

Source: Author, 2017

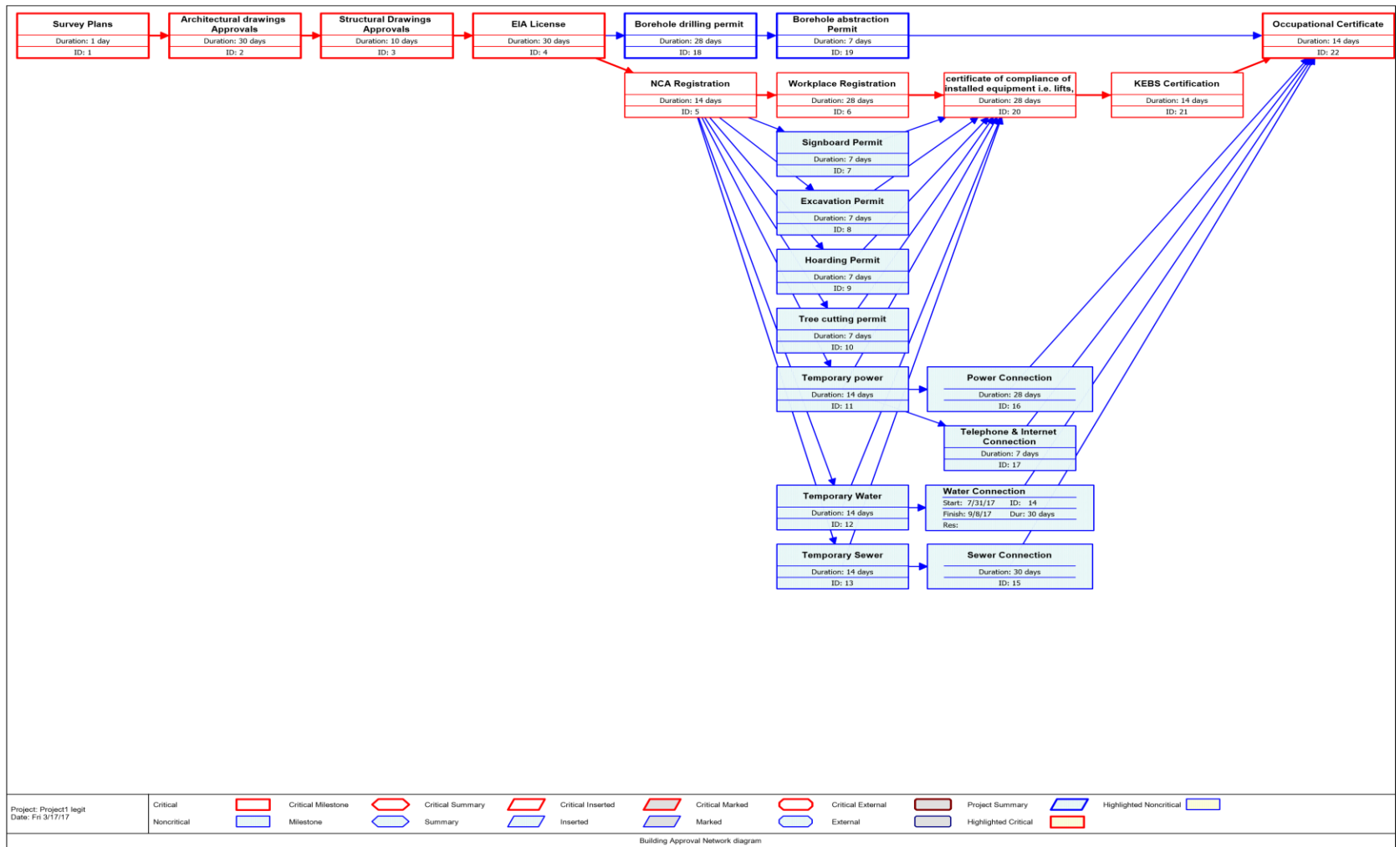


Figure 2. 1: Network diagram representing the building approvals in a network diagram (CPM)

Source: Author, 2017

### **2.6.3 Analysis of the building approvals network diagram (CPM)**

The network diagram shows all tasks with the initial activity being survey plans and the completion activity being the issuance of an occupation certificate by the Nairobi city county. There are various paths to completion.

The critical path is: Survey Plans – 1 day, Architectural drawings approval- 30 days, Structural Drawings Approvals – 10 days, EIA License – 30 days, NCA Registration – 14 days, Workplace Registration -28 days, certificate of compliance of installed equipment i.e. lifts, boilers etc.- 28 days, KEBS Certification- 14 days, Occupational Certificate- 14 days. This represents the path with longest period of 169 days. All the approvals in the path must be considered and applied for in good time to make sure that the process is completed in good time and there are no delays or penalties incurred.

This means that the period that can be taken to acquire all building approvals is 169 days. This represents five and a half months. Although some approvals are acquired after the construction is done such as; certificate of compliance of installed equipment i.e. lifts, boilers etc., KEBS Certification and Occupational Certificate, they still are to be acquired if the building is to be used and are therefore to be complied with and thought out before and during construction.

NCA registration is also a burst activity that must happen before Workplace Registration, Signboard Permit, Excavation permit, Hoarding Permit, Tree cutting permit, Temporary power, Temporary Water, Temporary Sewer. It is therefore a critical activity that has 8 approvals pegged to it.

Some of the non-critical activities such are telephone and internet connection, tree cutting permit, hoarding permit, Temporary power, Temporary Water, Temporary Sewer, Borehole drilling permit and Borehole Abstraction Permit may not apply to all projects. They vary depending on the kind of project. They are however part of the approval system and are of importance to the process.

## **2.7 Challenges developers face while acquiring statutory approvals**

The real estate development progress is mostly cumbersome and complex. The development process is subject to changes eventually as the economic, at both national and local levels, influences it. The success often relies on the attention to detail of process and quality of judgments which guides it. In the general context, the real estate development is commonly dynamic, with the fast changes happening in the link among construction, regulation, property management, finance, and technological advances. The real estate industry of Kenya is growing as the younger generation realizes that the capital gains made from the property is a quick path for wealth accumulation during these times of inflation. The challenges of real estate development are varied and many. There is restricted access to the land in face of rising need for housing resulting to high property prices. The land market of Kenya is highly unorganized. Information concerning who owns different pieces of land is not even readily available and legal and administrative systems for transferring titles are cumbersome. The uncertainty which surrounds the use, title and development has resulted to immense insecurity in urban land market. Nonetheless, the soaring land prices amid the different cost elements; the cost of land is more expensive with other being quoted in foreign currencies (Government of the Republic of Kenya, 2003). Adding to land problem, is the high cost of building materials both imported and local. It has resulted to increased cost of buildings in the past decade making it intricate for the average Kenyan to acquire house before retirement. Additionally, the increasing cost of buildings in many developing states is because to over reliance in imported building materials. The state of affairs to large extent is as a result of low production at level, lack of finance, lack of adequate mechanization.

Building and development permits are prerequisite for housing development in Kenya. High submission cost, delays, partial examination of designs and improper checks are issues besieged with permit acquisition. Improper sitting of the building materials, the use of unapproved drawings, floods, demolishing

unauthorized buildings, the use of unapproved drawings, and building on waterways are effects of the issue. The conflict situation results between developers and the various authorities (Government of the Republic of Kenya, 2003). Based on such constraints, people buy land and because they fear encroachment develop without recourse to the laid down procedure of acquiring necessary building approvals. Therefore, the considerable number of developed properties has no permits.

## **2.8 Challenges in the planning and building sector in Kenya**

The building and construction industry is governed by a multiplicity of statutes and institutions. The Ministry of Transport, Infrastructure, Housing and Urban Development is in charge of supervising all Government and public institutions construction works. The County governments are in charge of the approval and inspection of all developments in their jurisdiction. On the other hand, the Ministry of Health oversees all public health issues and occupational health and safety in the industry. The activities of these agencies remain largely uncoordinated (Kimani, 2010).

The building industry lacks a comprehensive and integrated framework within which to operate due to the many pieces of legislation scattered in many statutes. The scattered nature of the legislation makes it difficult for developers to understand and comply with the requirements and creates further ambiguities that make effective enforcement of the law difficult (Kimani, 2010).

The multiplicity and lengthy statutory requirements in the construction industry have continually been cited as a major impediment in the quest of making Kenya a competitive investment destination globally (Musyoki, 2015). This is reinforced by the current ranking of Kenya at no. 108 out of 189 economies on ease of doing business (World Bank, 2016).

World Bank (2016) reckons that the approval process takes long and the charges for the permits are also high further making the outputs from the construction

sector costly. Despite the president's directive that the construction sector fees be harmonized and scaled down, nothing much has happened. This is attributed perhaps to the notion that developers are rich which is misplaced as majority of the projects are funded through loans (Musyoki, 2015).

## **2.9 The state of current regulatory framework**

According to Kenya Private Sector Alliance (KEPSA) CEO, the laws and regulations governing the construction industry in Kenya especially in regards to the permit system needed overhaul or review in order to ease the cost of doing business in this sector thereby attracting foreign direct investment (Kariuki, 2015).

The vision 2030, the blue print for Kenya's long term national development is anchored on the economic, social and political pillars respectively. In this strategy the vision for housing and urbanization is "an adequately and decently housed nation in a sustainable environment" (Vision 2030).

This vision will be achieved through better development and access to affordable housing, enhanced access to adequate finance for developers and buyers and pursuit of targeted key reforms to unlock the supply potential of the housing sector (Kimani et al., 2010).

## **2.10 Effect of time and cost variation**

Construction projects are done within a specified time the scenario which calls for proper time management in specific eliminating all the avenues of disruptions and delays. The study by Chan and Kumaraswamy (1998) on the causes of construction delays in Hong Kong discovered differences in perceptions as to the causes of delays with various group of participants in civil engineering and building works. They further suggested the biases of various industry groups could be direct blame for delays to other parties. Schilling (2013) investigated the causes of delays in building construction in Thailand and established that the delays were caused by statutory procedures and payments. The research

concludes that there are a number of causes of disruption and delays and their impact put the construction projects at immense risk which have an effect on their performance. These causes are statutory procedures and payments, design changes, information delays, delays in payment of the contractors, compensation issues, and poor project management. Similarly, the effects of the delays are negative social impact, disputes, idling resources, cost overrun, and time overrun.

### **2.11 Interventions that can be employed to increase efficiency in provision of building approvals**

There have been calls to consolidate the approval institutions and host them in one location in order to make it possible for building approvals and site visits to be done jointly. This rationalized organization structure will then give way to only one fee being charged to a developer covering all the aspects of the various approvals and inspection. This is seen as the only path to the government cutting the bureaucracy in the construction sector regulation which has been a stumbling block to the business environment (Musyoki, 2015).

If regulatory compliance costs on the construction industry could be reduced by 10%, this could have a strong positive effect on GDP. Significantly, it is predicted that a 10% reduction of costs to non-residential construction would have the biggest positive effect on GDP (Stoeckel & Quirke, 1992). This finding was reinforced by macroeconomic modeling conducted on behalf of Construction Innovation by ACIL Tasman (2005), who found that improvement of productivity in the construction industry would have significant improvement in GDP over time.

Recently, Kenya suffered a massive tragedy in Huruma estate when a building collapsed leaving 52 people dead. In his article, Kariuki (2016) noted that the building was a disaster waiting to happen. The root of the problem was the uncontrolled development as well as corruption at the local authorities as noted by the civil engineers who visited the site. "...Civil engineers who visited the site of



the tragedy, said corruption is literally bleeding the construction industry if the number of lives lost and bodies maimed in past tragedies is anything to go by...” (Kariuki, 2016, p.1). While other contractors are waiting for more than one year to get the development approvals, others are building without meeting the standards subject to corruption, bribery, and abuse of office by officials.

Botswana is a developing economy that has managed to address its problems related to building approvals. The country’s blueprint, Vision 2016, outlined a clear plan to have most of the populace accessing good quality shelter in both urban and rural areas. The inclusion of this proposal in their blueprint was based on analysis of the population growth as indicated in their 2001 census. In 1999, the country followed through with the white paper on housing that was proposed in 1982. Hence, Botswana has managed to implement its proposed plan in order to address the problem of social infrastructure; something which is challenging to Kenya because of the many obstacles such as corruption.

In a report prepared by the World Bank Group, Botswana’s building standards are better than Kenya’s in terms of time, cost, and the building quality control index. One of the most frustrating aspects for Kenyan developers is the amount of time they have to wait to get approvals from the relevant authorities. More so, the waiting period is indefinite. Despite an indication that the waiting process should take approximately 169 days, it goes more than one year. Botswana, on the other hand, has a waiting period of approximately 110 days. Interestingly, the waiting period can never go beyond 4 months. The difference in waiting time for the development approvals is proof enough that Kenya should benchmark Botswana’s swift development approval process. Besides, a long wait will result to increased costs.

For instance, the National Housing Policy (2000) primary goal was to facilitate provision of decent and affordable housing throughout Botswana. More importantly, it seeks to promote development in the country to eliminate poverty encourage economic empowerment in the country. Furthermore, the policy

encompasses institutional capacity building, land, finance, subsidies, rentals, housing standards, building materials, housing legislation, district housing, Botswana Housing Corporation (BHC), and private sector participation. Since the implementation of the policy in 2000, positive changes have been noted in Botswana's housing sector. Each of the participants has become more committed to doing his or her part.

Kenya should therefore emulate the teamwork exhibited by the various participants in the issues regarding buildings and development. The collaboration among the various stakeholders in Botswana has made it easier and the process shorter for constructors to attain development approvals as well as embark on their development projects. More importantly, the local authorities have taken a firm stand on the quality of buildings that are developed in the country. The local authorities are responsible for development control in all areas of planning in the country. To ensure that this responsibility is carried out dutifully, the local authorities have come up with a profile of building inspectors who make sure that all the developments carried out are in agreement with the Development Control Code, Building Standards, Town and Country Planning Act. Essentially, the numerous checkpoints increase the level of accountability and reduce cases of corruption or fraudulent activities. Notably, the same has translated in the length of time a contractor wait to attain a development approval in the country. Attaining building approvals collaboration and cohesiveness among the various parts of regulating bodies may help Kenya harmonize the requirements of the building approval process.

The county governments are in charge of the development approvals in Kenya. However, there are other institutions involved such as NEMA, National Construction Authority (NCA), Kenya Power, Water Resource Management Authority, and Kenya Bureau of Standards (KEBS) among others.

In the World Bank Group 2016 Report, Botswana has managed to curb the problem of the long wait through the implementation of the National Housing

Policy in 2000. Essentially, all the institutions involved in the development approval process are seen coordinating and working together to ensure that the process is completed within a maximum of four months.

The approving institutions should start with a plan on how fewer individuals should be mandated to review and approve the development proposals at the institutional level. Essentially, this arrangement will reduce the length of time these proposals stay in one institution. In the same way, the process will be faster from one institution to the other and hence reduce the waiting time. Besides, project time and cost are dependent variables that correlate with the length of time a development approval takes. Hence, a reduction in the length of time in each institution will reduce the total project time and cost and vice versa.

Additionally, the increased wait time for development approvals is greatly affected by the continued political interference in the country. Both politicians and bureaucrats are crucial agents in the process of growth and development of the public welfare. In the World Bank (2004) report, it was noted that numerous projects are often left incomplete or delivered to a poor quality. It was noted that the failure to complete these projects undermines the welfare of citizens across the globe to an estimated cost of US\$150 billion. The impact of the failure varies across nations and is dependent on global inequalities.

Research shows that the high levels of competition help get things done, especially projects that would have otherwise been left incomplete. However, the politicians are seen to influence the bureaucratic arm of government to raise the productivity of these arms of government but only to satisfy their short-term electoral concerns. Hence, projects that should have been approved earlier and completed to serve the public are left pending to meet the needs of the politicians who now manipulate the bureaucrats in these institutions such as the local government.

Furthermore, the issue of corruption persists as noted in a survey carried out in 39 counties. From the report, it was noted that corruption is manifested in these offices through bribery, abuse of office, nepotism, favoritism, and conflicting interests (Mukinda, 2016). These forms of corruption have resulted in poor service delivery at the county level, delayed development projects, and high levels of discrimination. It was proposed that an anti-bribery compliance policy should be implemented at the county level to enhance public contribution towards budgeting and project implementation process. Besides, it was proposed that it would ensure value for money in social infrastructure and ultimately reduce corruption.

The 2016 World Bank research on ease of doing business worldwide, Kenya was ranked 108 out of 189 economies. Whereas there was an improvement of the ranking by 21 places from the year 2015, the difficulty and complexity in obtaining construction permits affected the Kenya's overall ranking which reinforces the call for a review or overhaul of the current permit system in the construction industry (World Bank, 2016).

The ranking was based on the procedures, time and cost of building a standard warehouse. The research evaluated the procedures, time and cost involved in obtaining all necessary licenses and permits, submission of all required notifications, requesting and receiving all necessary inspections and obtaining utility connections (World Bank, 2016). The professional fee charged on a formal housing structure is approximately 11% of its total cost of construction. This in itself cuts down the developers' profit margins and is a major contributor to low access to housing in Kenya (Obaga, 2014).

The Kenyan government having recognized the uncompetitive state of its statutory requirements and procedures in the construction industry, setup a special committee under the Ministry of Transport, Infrastructure, Housing and Urban Development in November 2015 constituting construction regulators and stakeholders to look into this challenge of obtaining construction permits that has

dragged the country down in global business competitiveness index (Matiang'i, 2015).

Whereas Kenya is not lacking in statutes dealing with urban planning, building standards, and management and governance issues in the building and construction industry, the fragmentation and dispersion of these statutes and responsible institutions needs urgent attention (World Bank, 2015).

Besides the legislative material being found in different statutes, they have been amended severally, leading to a chaotic result, not to mention regulations, circulars, and issuances of guidance that make the picture even more complex. This creates the difficulty of knowing with reasonable certainty which provisions apply, where to find them, and what they mean (World Bank, 2015). Streamlining the permit approval processes is thus seen as the point of departure in regards to making the Kenyan building and construction industry competitive locally, regionally and globally.

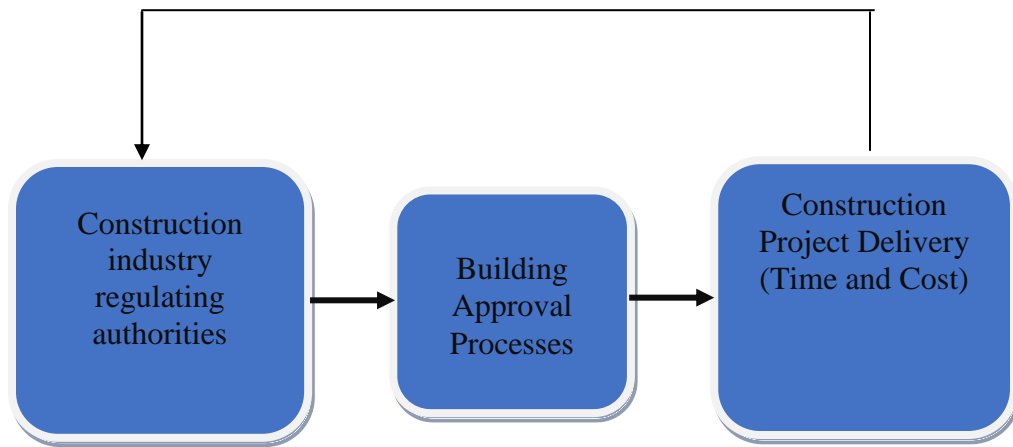
## **2.12 Conceptual framework**

Kenya's construction industry is regulated by various institutions. These institutions operate independently of each other, are hosted in different locations and have different requirements which make it cumbersome for developers seeking approvals (Musyoki, 2015).

This multiplicity of institutions and legal requirements coupled with significant costs in form of fees have been cited as a contributor to the higher cost of housing and making Kenya's construction industry uncompetitive in the global ranking index on ease of doing business (World Bank, 2016).

This study therefore explored the regulators in charge of the construction industry and the role they play. The research further explored the effects of the current statutory requirements put in place by current regulating authorities and institutions.

This study established the inadvertent effects the statutory requirements had on developer's investments especially in regards to profit margins, project delays and any confusion created by the current multiplicity of regulating entities and the various requirements. The construction industry regulating authorities and statutory requirements are the independent variables while the Construction Project Delivery (Time and Cost) is the dependent variable.



*Figure 2.2: Conceptual Framework*

Source: Author, 2017

Therefore, the operational framework is such that the developer's delivery in terms of time and cost and in extension income or profit is dependent on the statutory requirements and the requirements of the regulating bodies.

## **CHAPTER THREE**

### **RESEARCH METHODS**

#### **3. Introduction**

This chapter describes the research design. The general cross sectional survey design is first described. The sampling design, data collection and analysis procedures are then discussed. Finally, the data presentation and ethical issues are reported.

This study aimed to establish the building approvals a developer should meet in order to achieve a construction project, to determine the time and cost variations in construction projects, the effect of the time and cost variation and the intervening measures that could be employed to increase efficiency in provision of building approvals.

#### **3.1. Research design**

The cross sectional survey was employed in this study in order to review the existing statutory and payment requirements applicable in the construction industry in Kenya. This method was also used to determine the time and cost variation and the effect of the time and cost variation in a construction project. Further, intervening measures that could be employed to increase efficiency in provision of building approvals were explored from questionnaires and literature review of countries that have robust approval systems in the construction industry (Zikmund, 2003).

Descriptive research seeks to generate ideas, insights, and hypotheses, and reviewing existing research. Wren, Stevens, & Loudon, (2002) posits that literature review techniques and personal interviews, should be employed in order to address the research questions adequately and objectively.

This study therefore employed 30 structured questionnaires with developers of residential, commercial and industrial developments from the Kenya Property

Developers Association (KPDA) coupled with literature review to achieve the set objectives. A qualitative analysis method was employed to map out the contents of the various statutory requirements in the construction industry.

### **3.2. Sampling design**

Population is the focus group of a scientific study. In the current study, the population or unit of analysis is the developers working in Nairobi City County and are members of the KPDA.

Population frame refers to the list of all the elements in the sample population that are used to derive the sample. In this case, the population includes all the KPDA members working in Nairobi City County. Today, there are 132(N) registered members. However, all these members cannot be included because of the large number. Therefore, a population sample was derived to include developers who have at least one-year experience in the business.

The sample size refers to the number of observations in the research. It is denoted by “n” and is always a positive integer. Sample sizes vary depending on the scope of the research. 30(n) members took part in the study through random sampling.

The researcher used simple random sampling to arrive at the 30 participants. It is seldom necessary to sample more than 10% of the population provided that the resulting sample is not less than 30 and not more than 1000 units (Arleck &Settle, 1995).

The researcher chose to use simple random sampling because of the particular nature of the study. Therefore, the researcher identified all the KPDA members and randomly picked those that would help meet the objectives of the research. One of the criteria used was that they had to be practicing in Nairobi City County and active during the time of the study. The participants were chosen on the basis of the knowledge that they could have encountered the problem being investigated in the current study.



### **3.3. Data collection techniques**

Data collection is the act of administering research tools. In this study, a questionnaire was used because it would capture information in an effective manner. In addition, it was convenient for the participants because they could have it for some time, answer appropriately and send it back to the researcher within the agreed time. Moreover, the questionnaire was prepared in a computer friendly manner to allow those who needed a soft copy to fill it without any difficulties.

The researcher administered the questionnaire as both a soft copy and a hard copy depending on the availability of the respondent. At the initial stage, a meeting was set up with the respondent whereby the intentions of the research as well as its objectives were explained. Secondly, the respondent was assured of the nature of confidentiality of the information given and was given the option to remain anonymous. The respondents who used a hard copy were given these copies during the meeting and the same was collected a week later to allow ample time to go through the questions. For those who preferred a soft copy, it was forwarded to them via email and a response was expected a week later as well.

The questionnaire, as attached in appendix (I), was extensive as follows: general information from the respondents regarding their years of experience, the number of projects they are involved in and annual expenditure; The developers acquisition of building approvals, which of the approvals they had acquired and their interactions with the various institutions; The time taken to acquire the various approvals and the commensurate costs; the effect of the time and cost to the overall project time and cost; the challenges faced while acquiring building approvals and interventions that can be employed to increase efficiency in provision of statutory approvals.

### **3.4. Types and sources of data**

This study employed both secondary and primary information due to the nature of the problem under study. Primary data constituted both qualitative and quantitative data obtained using questionnaires in key informant interviews. Secondary data was obtained through reviews of existing research in other democracies on the issue under study.

Kombo et al., (2010) define two types of data i.e. primary and secondary data. Primary data refers to data collected by the researcher in the field while secondary data is information obtained from repositories, journals and libraries among others.

### **3.5. Data analysis and presentation**

Gliner et al., (2000) define data analysis as the process of assigning meaning to data collected in order to address research questions thereby achieving the purpose of the research. Data analysis involves cleaning, organizing, identifying patterns, interpreting the results and determining what to report in order to address the research objectives (Connaway & Powell, 2010). This study employed qualitative analysis methods which involved analyzing the cross cutting themes from literature review and targeted developers' interviews. MS Excel and charts were used for analysis.

### **3.6. Ethical issues**

Mugenda, et al., (2003) indicate that ethical issues related to confidentiality, anonymity and voluntary consent of the sample population to be very important in research. The respondents should therefore be accorded privacy and the researcher should guarantee their confidentiality. The researcher in this study therefore ensured that all respondents involved were accorded utmost privacy and confidentiality during and after the study.

### 3.7. Matrix of data needs, sources and analysis techniques

This chapter has established the research design, study population, sampling design, methods of data collection, data analysis and ethical issues concerning data collection which the study shall employ in order to achieve the purpose of this research.

*Table 3. 1: Data needs, sources and analysis techniques*

<b>Investigative questions</b>	<b>Data needs</b>	<b>Data Sources</b>	<b>Analysis Technique</b>
What building approvals should a developer meet as they carry out a construction project?	- Statutory procedures and payments applicable to construction projects -Legal framework review - Institutional framework review	Secondary data Interviews Observations	Pie Charts Bar Graphs
What is the time and cost variations experienced by developers during the approval processes?	-Estimated approval time and cost. Actual approval time and cost	Primary data Interviews	Network diagram
What is the effect of the cost and time variation to the project delivery?	- Estimated approval time and cost. -Actual approval time and cost	Primary data Interviews	Bar graphs Percentages
What interventions can be employed to increase efficiency in provision of building approvals?	-Challenges review -Suggested interventions from literature	Secondary data Interviews	Bar graphs Percentages

Source: Author, 2017

## CHAPTER FOUR

### RESULTS

#### 4.0 Introduction

This study aimed at evaluating the impact of building approvals processes on construction project delivery in terms of time and cost. The study looked at the building approvals applicable to construction projects, determining the time and cost variation, analyze the effect of the cost and time variation to the delivery of construction project delivery and suggest Interventions that can be employed to increase efficiency in provision of building approvals. Accordingly, this chapter contains a presentation, discussion and analysis of the results drawn from the survey data. The analysis reveals four themes. Three main themes with emergent sub themes – the approvals acquired, the effect to time and cost and the effect of the time and cost variation.

#### 4.1 Survey response rate

The response rate to questionnaires depends on the willingness of the people to respond to the questionnaires. Studies using questionnaires such as this expect a higher response rate that leads to larger data samples and statistical power as well as smaller confidence intervals around sample statistics. However, even if the questionnaires are administered to the target population and incentives such as reminders used, a response rate of 100% is rarely achieved (Rogelberg & Stanton, 2007). This fact has been further acknowledged by Baruch (1999), who reported that the average response rate for questionnaires used, as the basis for published academic studies is significantly less than 100% and even more troubling, from 1975 to 1995 declined from 64.4% to 48.4%. A study by Baruch & Holtom, (2008) aimed at assessing the long term trends in response rates to surveys used in management and behavioral science research found out that whereas Baruch (1999) pointed out to a clear trend of decline in response rate through the years, response rate for behavioral science had stabilized at an average aggregate of 50%

by 2008. Other scholars such as Cook et al. (2000) have argued that the response representativeness is more important than response rate in survey research but only if it bears on representativeness of the population being studied.

The primary data in this study was supplemented with secondary data which was sourced from various sources. A sampling frame was prepared and simple random sampling of 30 eligible participants was selected.

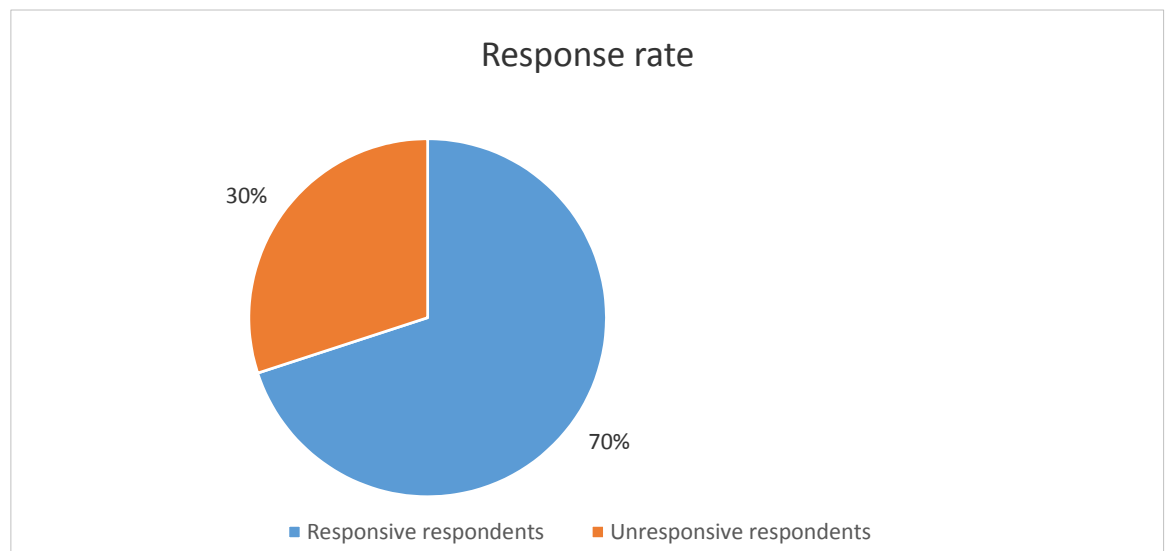
The response rate in this study is presented in the Table 4.1.

*Table 4. 1: Survey response rate*

<b>Contracting partner type</b>	<b>No. of issued questionnaires</b>	<b>No. of returned questionnaire</b>
Developer	30	21

Source: Author, 2017

The information in the table above can be presented as a pie chart as shown in figure 4.1.



*Figure 4.1: Survey response rate*

Source: Author, 2017

The response rate of 70% surpasses the 50% response rate established by Baruch & Holtom (2008) and is thus considered adequate. The lack of response from 9 of the developers could be because the directors were too busy or it was company's policy not to complete questionnaires. None of the questionnaires were rejected. The survey for this study was conducted with 30 different developers over 3 months' period from March to May 2017

## 4.2 Bio-data

The purpose of this section was to collect general information and demographic data from the respondents. Additionally, the section was intended to set the context for the questions in the subsequent sections. The section established the experience of the developers surveyed with the current building approval processes.

### 4.2.1 Age of firms

The age of the firm was grouped into groups of 5 years up to twenty years. The data on the Table 4.2 and figure 4.2 summarizes the spread in terms of age of the respondent firms.

*Table 4.2: Age of firms*

<b>Working Experience</b>	<b>Building works</b>
1-5 years	9
6-10 years	4
11-15 years	2
16- 20 years	5
Over 20 Years	1

Source: Author, 2017

This information can also be presented in a pie chart as shown in figure 4.2.

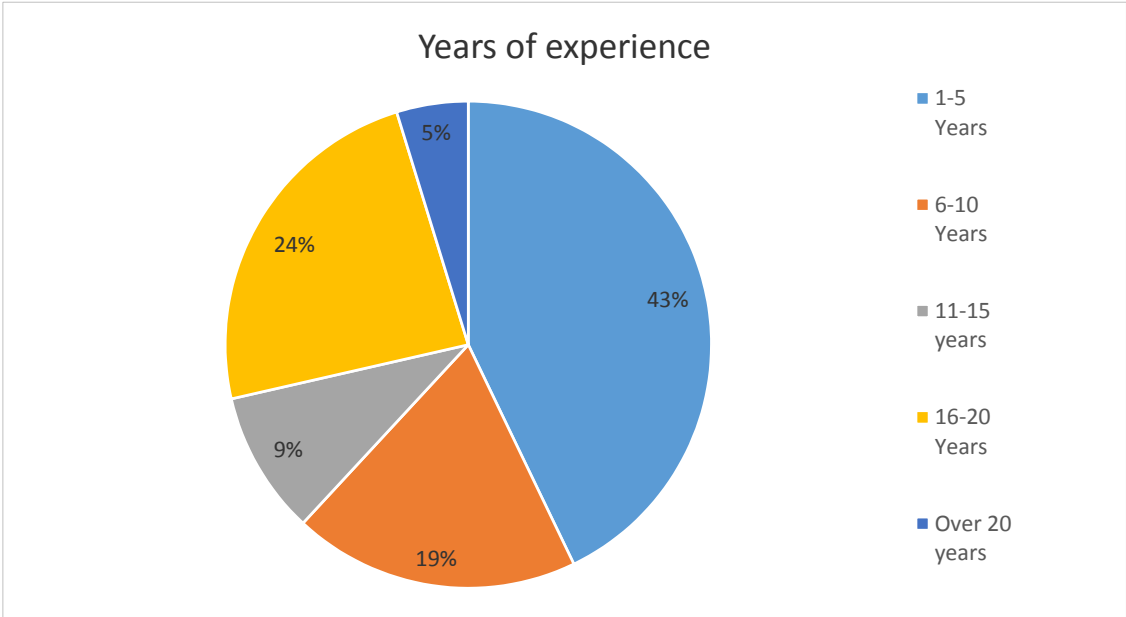


Figure 4.2: Age of firms

Source: Author, 2017

The majority of the firms, 43%, have 1 to 5 years’ experience. This suggests that there is a high number of new entrants in the construction developers’ industry. This group therefore had encountered the building approval process in recent times and therefore would provide relevant study data.

The other firms 6 to 10 years at 19%, 11 to 15 years at 9%,16 to 20 years at 24%, over 20 years at 5%. These firms, 57%, were therefore in operation before the current government and would therefore provide insight on the extent of change approval processes has gone through over the various regimes.

**4.2.2 Number of projects currently being undertaken**

This section was intended to establish whether the respondents are currently involved in any projects and therefore actively involved in acquiring building approvals. The type of development was also included to understand the type of

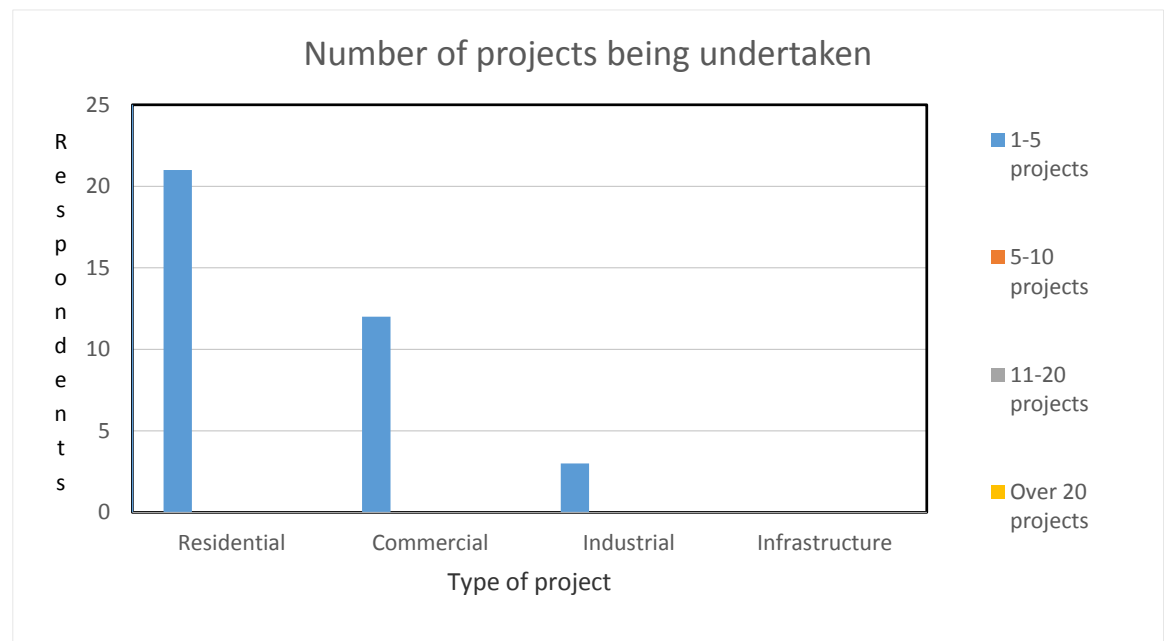
developments that the respondents were currently involved in and if that was a factor in acquiring development approvals. The data on the table 4.3 and figure 4.3 summarizes the spread in terms of type of project and the number of projects in each type of project.

*Table 4.3: Projects being currently undertaken*

<b>Project type</b>	<b>1 - 5 Projects</b>	<b>5 -10 Projects</b>	<b>11 - 20 Projects</b>	<b>Over 20 Projects</b>
Residential development	21	0	0	0
Commercial development	12	0	0	0
Industrial development	3	0	0	0
Infrastructure development	0	0	0	0

Source: Author, 2017

This information can also be presented in a bar graph as shown in figure 4.3.



*Figure 4 3: Projects being currently undertaken*

Source: Author, 2017



All of the respondents had 1-5 projects in each project type. This is probably because construction is a capital-intensive undertaking and therefore a developer may not be willing to engage in too many projects,

None of the respondents was undertaking an infrastructure project. 100% of the respondents were in residential developments while 57% were involved in commercial projects. Only 14% were undertaking industrial projects. This means that residential developments are most popular with developers. This is probably due to the rate of return of investment being higher for residential developments. There is also a higher demand for housing than any other development. This suggests that, under the right conditions, provision of adequate housing can be realized.

#### **4.2.3 Firm’s average annual expenditure**

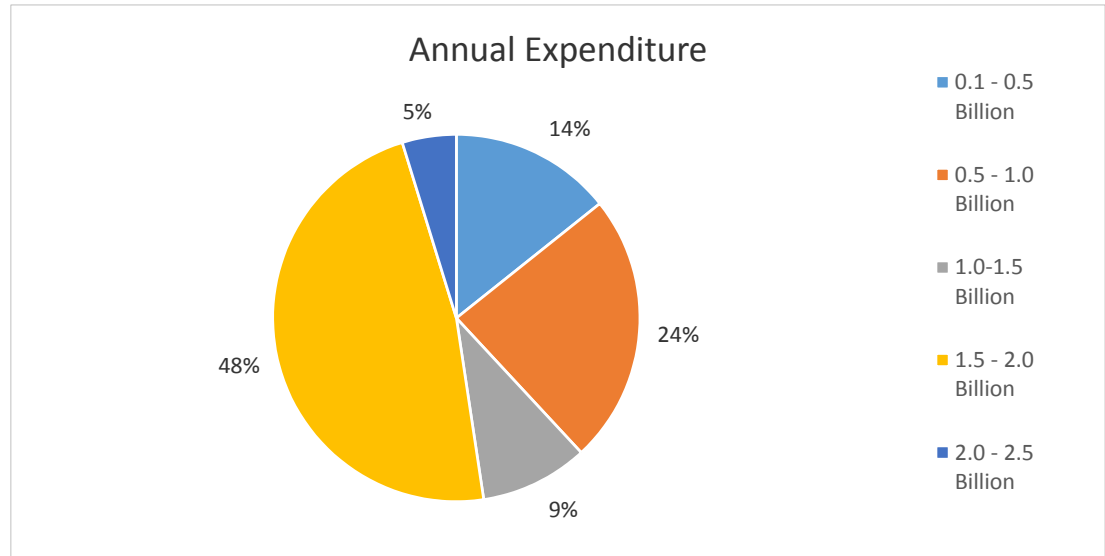
This section was intended to establish the developers’ annual expenditure and therefore establish the impact of building approval costs on the total cost of the project. The table 4.4 shows the frequency of developer’s annual expenditure.

*Table 4.4: Average annual expenditure*

<b>Annual expenditure (in KSHS.)</b>	<b>Frequency</b>
Less than 0.1 Billion	0
0.1-0.5Billion	3
0.5 - 1.0Billion	5
1.0 – 1.5Billion	2
1.5 – 2.0 Billion	10
2.0 - 2.5 Billion	1
2.5 Billion& above	0

Source: Author, 2017

This information can also be represented in a pie chart as shown in figure 4.4.



*Figure 4 4: Average annual expenditure*

Source: Author, 2017

It is clear that that most of the developers have an annual expenditure of 1.5 – 2.0 billion at 48%. Followed by 0.5 – 1.0 billion at 24%. It is assumed that the higher the investment, the higher the likelihood that the developer will be keen on the approval process. With a higher investment, the developer would also expect a smoother and well managed building approval process.

### **4.3 Building approvals**

This section was to examine the building approvals applicable to construction projects in line with the first objective.

#### **4.3.1 Acquisition of building approvals**

This section was to establish whether the developers have acquired any building approvals while carrying out their developments. 100% of the respondents had acquired one form of development approval or another. This therefore suggests

that the respondents have experience required in dealing with building approvals required in construction projects.

#### 4.3.2 Approvals that have been acquired

This section was to establish which approvals developers take up in the process of development. The data is presented in Table 4.5.

*Table 4.5: Acquired approvals*

Key	Approval	Yes		No	
		Count	Percentage	Count	Percentage
1	Survey plans from Survey of Kenya	21	100%	0	0%
2	Architectural drawings Approval from Nairobi City County	21	100%	0	0%
3	Structural Drawings Approval from Nairobi City County	21	100%	0	0%
4	EIA Report/ EIA License from NEMA	21	100%	0	0%
5	NCA registration from National Construction Authority	21	100%	0	0%
6	Workplace Registration from Directorate of Occupational Safety & Health Services (DOSHS)	21	100%	0	0%
7	Signboard Permit from Nairobi City County	21	100%	0	0%
8	Excavation Permit from Nairobi City County	21	100%	0	0%
9	Hoarding Permit from Nairobi City County	19	90%	2	10%
10	Tree Cutting Permit from Nairobi City County	18	86%	3	14%
11	Temporary power from Kenya Power Company	15	71%	6	29%
12	Permanent Power from Kenya Power Company	21	100%	0	0%
13	Temporary Water from Nairobi Water and Sewerage Company	15	71%	6	29%

14	Permanent Water from Nairobi Water and Sewerage Company	21	100%	0	0%
15	Temporary Sewer from Nairobi Water and Sewerage Company	15	71%	6	29%
16	Permanent Sewer from Nairobi Water and Sewerage Company	21	100%	0	0%
17	Telephone and Internet Connection	6	29%	15	71%
18	Borehole Drilling Permit from Water Resource Management Authority (WRMA)	17	81%	4	19%
19	Borehole Abstraction permit from Water Resource Management Authority (WRMA)	17	81%	4	19%
20	Certificate of compliance of installed equipment i.e. lifts, boilers etc. from Directorate of Occupational Safety and Health Services. (DOSHS)	16	76%	5	24%
21	KEBS certification from Kenya Bureau of Standards.	10	48%	11	52%
22	Occupational Certificate from Nairobi City County	21	100%	0	0%

Source: Author, 2017

This information can also be presented in a bar graph as shown in figure 4.5.

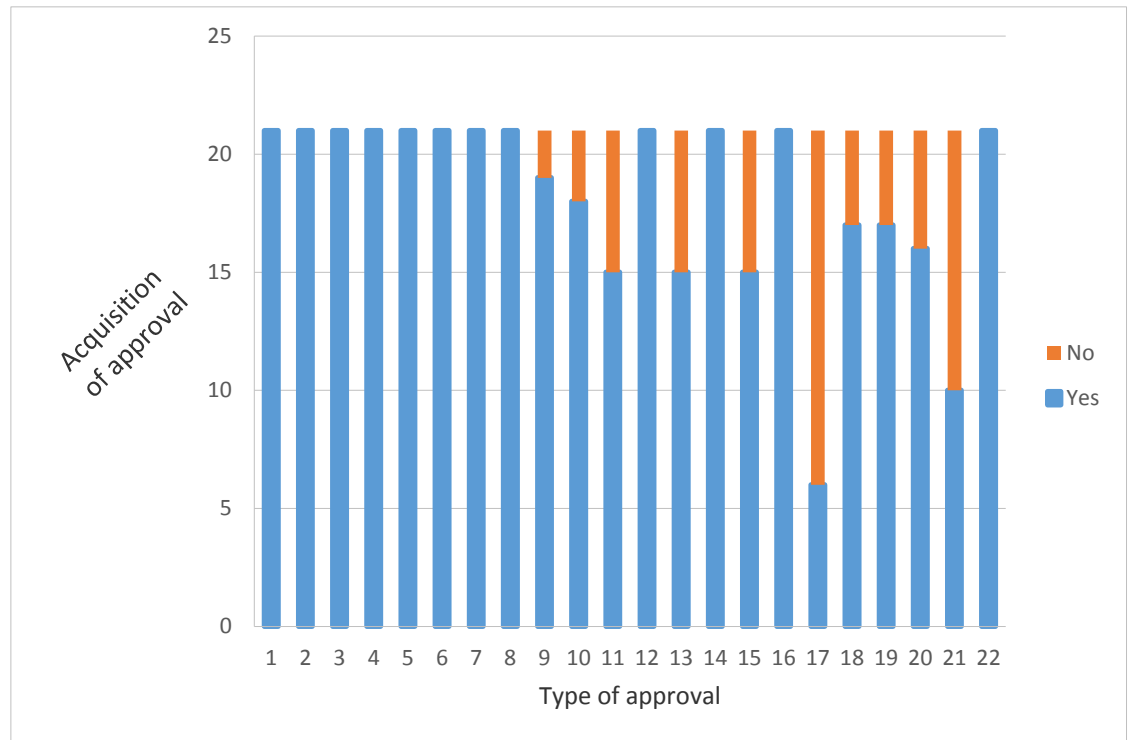


Figure 4.5: Acquired approvals

Source: Author, 2017

From the above statistics it is clear that all the developers have acquired survey plans, architectural drawings approval, structural drawings approval, EIA report/ EIA license, NCA registration, workplace registration, signboard permit, excavation permit, permanent power, permanent water, permanent sewer and occupation certificate. This is probably because the above approvals constitute those that are mandatory for any construction development to take place.

The critical path comprises of: survey Plans, architectural drawings approval, structural drawings Approvals, EIA license, NCA Registration, workplace registration, certificate of compliance of installed equipment, KEBS certification and occupational certificate.

The approvals that do not lie in the critical path are; signboard permit, excavation permit, permanent power, permanent water and permanent sewer. The approvals on the critical path that the respondents had not all acquired are certificate of compliance of installed equipment and KEBS certification both acquired at 76%.

90% of the respondents have acquired the hoarding permit. The 10% who had not acquired the permit may be because their area of development already had a permanent form of fencing.

Tree cutting permit acquisition is at 86%. The 14% who had not acquired the tree cutting permit may be because their areas of development did not have trees that required cutting for the development to take place or the trees were cut without acquiring the permit.

Temporary power, temporary water and temporary sewer permits acquisition is at 71%. The 29% who had not acquired the permits may be because their areas of development already have permanent power, permanent water and permanent sewer connections and therefore there was no need to acquire temporary ones. They may also have had other sources of power, water and sewer and therefore did not require these services.

Telephone and Internet connection are at 29% acquisition. This may be because these services are personalized and therefore the users of the development would get their own preferred service providers and service type.

Borehole drilling and borehole abstraction permits acquisition is at 81%. The permits are taken subsequently. The 19% who had not acquired this permit may be because their developments did not have boreholes and they did not therefore need the permit.

Certificate of compliance of installed equipment and KEBS certification acquisition were at 76%. The 24% who had not acquired the permits may be because they had not installed equipment that needed the permit or they do not know about the permit.

This section therefore shows that not all approvals are acquired by developers in order to undertake their developments.

#### 4.3.3 Ease of acquiring the various approvals from the various institutions

This section was to examine the ease of dealing with the various institutions involved in the process of acquiring the various building approvals. The following parameters were used: 1=easily accessible, 2=moderately accessible, 3=neutral, 4=difficult in accessibility, 5=extremely difficult in accessibility.

Due to the subjective nature of the data, the following analysis was used:

To analyze the most accessible institutions, measures 1-easily accessible and 2- moderately accessible were added up.

To analyze the most difficult in accessibility, measures 4- Difficult in accessibility, and 5- Extremely difficult in accessibility, were added up.

Parameter 3 - neutral was disqualified in analysis as this was taken as an undecided respondent.

The data collected is presented in Table 4.6.

*Table 4.6: Ease of acquiring approvals from various institutions*

Approval	Ease parameter	Accessible	1	2	3	4	5	Inaccessible
Survey of Kenya (SoK)		52%	0	11	2	6	2	38%
Nairobi City County (NCC)		14%	0	3	5	5	7	57%
National Environmental Management Authority (NEMA)		43%	1	8	5	5	2	33%
National Construction Authority (NCA)		33%	0	7	4	7	3	48%
Directorate of Occupational Safety & Health Services (DOSHS)		48%	0	10	6	4	1	24%

Kenya Power Company (KP)	5%	0	1	2	8	10	86%
Nairobi Water and Sewerage Company (NWSC)	5%	0	1	5	6	9	71%
Telephone and Internet Connection Provider (T, ISP)	90%	12	7	2	0	0	0%
Water Resource Management Authority (WRMA)	33%	3	4	6	5	3	38%
Kenya Bureau of Standards (KEBS)	19%	0	4	7	10	0	48%

Source: Author, 2017

The information presented in the table can also be given in a bar graph as shown in figure 4.6.

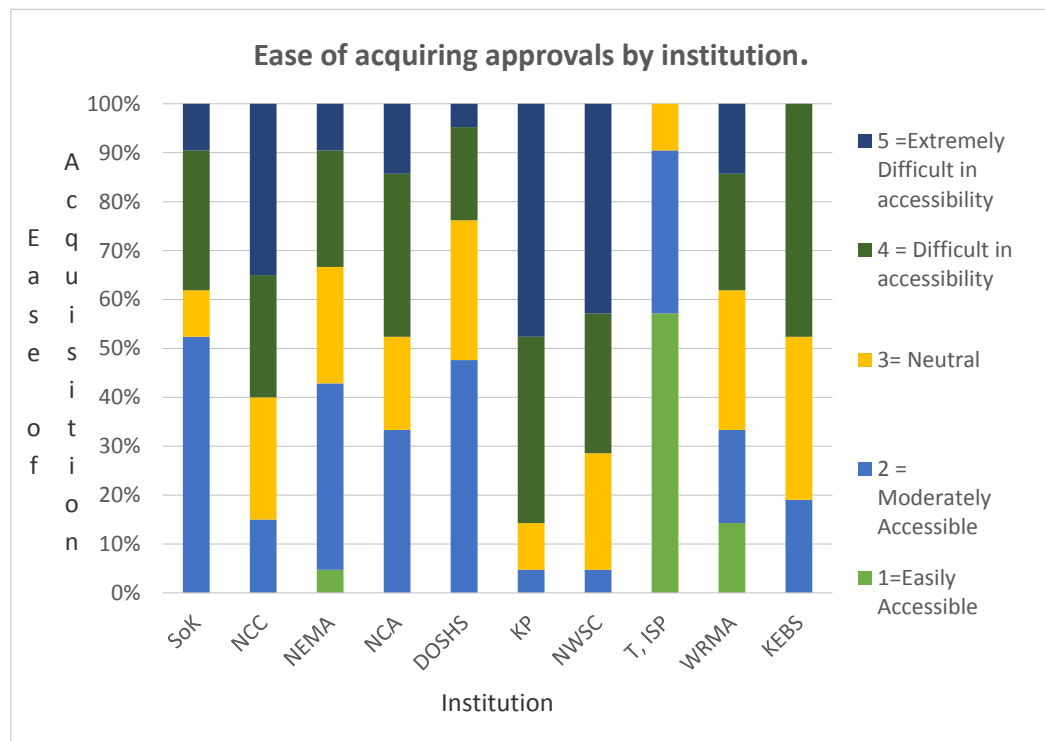


Figure 4.6: Ease of acquiring approvals from various institutions

Source: Author, 2017



From the above statistics, the Telephone and Internet service provider is the most easily accessible. This may be due to the fact that perhaps service provision is a key selling point for the service providers.

The next most accessible as per the data collected is the Survey of Kenya followed by Directorate of Occupational Safety and Health Services

The most difficult in accessibility is Kenya Power Company followed by Nairobi Water and Sewerage Company (NWSC) and Nairobi City County (NCC). The NCC has adopted the online approval process that is supposed to make the approval process more efficient.

#### **4.3.4 Time taken to acquire approvals**

This section was to examine the actual time taken to acquire each of the building approvals. All 21 respondents provided the time they had taken while acquiring the approvals they had been able to acquire in the course of carrying out their developments. The data collected has been presented in Table 4.7.

Table 4.7: Time taken to acquire approvals

PROJECT PHASE	Respondent	Time Taken (days).																					Mean
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Preliminary Design	Survey plans	30	7	14	90	14	30	5	7	14	14	7	10	3	5	10	14	7	10	14	5	10	15
Scheme Design Stage	Architectural drawings Approval	60	90	120	90	90	60	70	60	120	150	60	90	90	60	90	120	150	90	60	45	120	90
Detailed Design/Product Implementation Stage	Structural Drawings Approval	60	90	60	45	60	45	60	45	90	90	30	45	90	30	30	60	90	45	60	90	60	61
Tender Documentation/Tendering Stage	EIA Report/EIA License	90	60	14	90	45	60	90	45	30	49	40	90	45	60	90	40	60	90	45	60	60	60
	NCA registration	60	30	120	7	30	30	45	49	30	60	60	30	45	30	60	90	56	60	21	30	30	46

Construction Stage	Workplace Registration	60	14	10	7	30	45	14	21	60	30	45	30	30	45	21	30	14	21	45	30	30	30
	Signboard Permit	60	4	21	30	60	30	14	10	21	14	14	30	21	45	60	21	21	14	21	15	10	26
	Excavation Permit	60	3	21	30	60	21	14	14	21	14	14	21	21	30	45	14	14	30	45	21	30	26
	Hoarding Permit	30	3	49	30	60	-	14	21	14	14	14	30	21	-	60	21	21	14	45	21	30	27
	Tree Cutting Permit	-	3	14	30	60	30	14	14	-	14	14	30	21	-	60	21	14	30	45	21	30	26
	Temporary power	30	21	35	30	45	-	-	30	-	30	21	45	30	-	35	21	-	21	45	-	14	30
	Permanent Power	60	30	35	90	150	90	60	120	90	150	60	45	90	60	90	60	120	150	90	150	120	91
	Temporary Water	30	7	45	30	30	-	-	45	-	30	45	21	45	-	30	21	-	30	45	-	21	32
	Permanent Water	60	14	90	45	90	30	49	120	60	45	60	45	60	60	75	45	60	90	60	45	90	62

	Temporary Sewer	30	30	45	30	45	-	-	60	-	30	60	45	60	-	45	30	-	60	45	-	60	45
	Permanent Sewer	60	60	90	60	90	45	60	120	75	60	75	60	75	45	75	60	60	90	60	60	90	70
	Telephone and Internet Connection	30	-	1	-	5	-	-	7	-	-	-	-	-	-	10	-	-	-	-	-	7	10
	Borehole Drilling Permit	30	30	21	45	-	-	28	60	30	45	49	30	21	-	14	30	21	45	14	-	21	31
	Borehole Abstraction permit	30	30	21	30	-	-	28	30	30	45	30	60	21	-	21	30	14	30	21	-	45	30
	Certificate of compliance	30	49	45	60	14	21	-	45	60	21	-	45	-	30	45	45	30	-	30	-	30	38
	KEBS certification	-	30	-	45	-	30	-	-	21	-	-	14	-	-	30	45	21	-	30	-	21	29
	Occupational Certificate	30	14	45	60	120	30	45	60	90	120	60	90	45	30	75	45	90	49	30	60	90	61

Source: Author, 2017

Figure 4.7 shows the network diagram based on the actual time taken while acquiring building approvals.

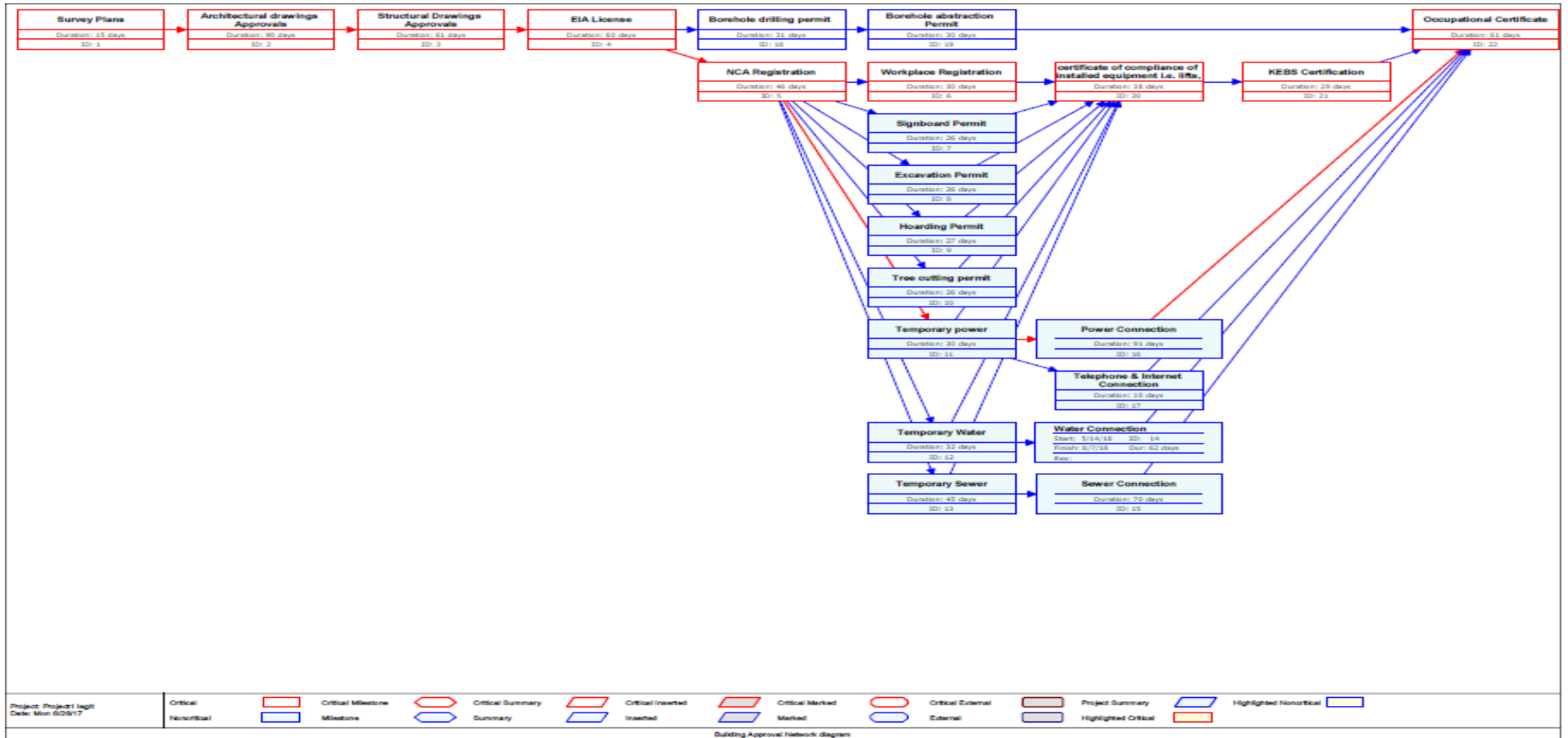


Figure 4.7: Network diagram on actual time taken for building approval processes

Source: Author, 2017

The estimated approval duration and the critical path remains the same in the actual approval duration. However, the period of approval has changed and is actually longer. The critical path is: Survey Plans – 15 days, Architectural drawings approval- 90 days, Structural Drawings Approvals – 61 days, EIA License – 60 days, NCA Registration – 46 days, Workplace Registration -30 days, certificate of compliance of installed equipment i.e. lifts, boilers etc.- 38 days, KEBS Certification- 29 days and Occupational Certificate- 61 days. This results in a total period of 430 days. This is 261 days more than the estimated 169 days. The assumption made here is that approvals in the path were applied for in good time.

The critical path suggests that the period that can be taken to acquire all building approvals is 430 days. This suggests that nine additional months will be lost in acquiring approvals. The Table 4.8 shows the increase in project time between estimated approval time from the various service charters and literature and the actual project time as analyzed from the collected data.

*Table 4.8: Increase in approval time between estimated and actual approval duration*

<b>Project phase</b>	<b>Approval/ permit required</b>	<b>Estimated approval duration (days)</b>	<b>Actual approval duration (days)</b>	<b>Increase in time in days</b>
Preliminary Design	Survey Plan	1 day	15 days	14
Scheme Design Stage	Architectural drawings Approvals	30 days	90 days	60
Detailed Design/Product Implementation Stage	Structural Drawings Approvals	10 days	61 days	51

Tender Documentation/ Tendering Stage	EIA License	30 days	60 days	30
	NCA Registration	14 days	46 days	32
	Workplace Registration	28 days	30 days	2
	Signboard Permit	7 days	26 days	19
	Excavation Permit	7 days	26 days	19
Construction Stage	Hoarding Permit	7 days	27 days	20
	Tree cutting permit	7 days	26 days	19
	Temporary power	14 days	30 days	16
	Temporary Water	14 days	91 days	77
	Temporary Sewer	14 days	32 days	18
	Water Connection	30 days	62 days	32
	Sewer Connection	30 days	45 days	15
	Power Connection	28 days	70 days	42
	Telephone & Internet Connection	7 days	10 days	3
	Borehole drilling permit	28 days	31 days	3
	Borehole abstraction Permit	7 days	30 days	23
	Commissioning & Testing Stage	certificate of compliance of installed equipment i.e. lifts, boilers etc.	28 days	38 days
KEBS Certification		14 days	29 days	15
Occupational Certificate		14 days	61 days	47

Source: Author, 2017

All project approvals take longer than the estimated time. The increase in time is not uniform across the entire process. Some approvals are more time consuming than others.

The approvals with the most increase in time are: temporary water from Nairobi Water and Sewerage company – 77 days, architectural drawings approval from Nairobi City County – 60 days, structural drawings approval from Nairobi City County -51 days, occupational certificate from Nairobi City County – 47 days and permanent power from Kenya Power Company – 42 days.

This is in line with the findings of the ease of acquiring building approvals, where the most difficult institution in accessibility is Kenya Power Company followed by Nairobi Water and sewerage company (NWSC) and Nairobi City County (NCC).

The approvals with the least increase in time are: workplace registration from Directorate of Occupational Safety & Health Services (DOSHS) – 2 days, telephone and internet connection – 3 days, borehole drilling permit from Water Resource Management Authority (WRMA) – 3 days, survey plans from Survey of Kenya – 10 days and certificate of compliance of installed equipment from Directorate of Occupational Safety & Health Services (DOSHS) – 10 days.

This is in line with the findings of the ease of acquiring building approvals, where the most accessible institution is Telephone and Internet service provider followed by Survey of Kenya and Directorate of Occupational Safety and Health Services (DOSHS).

This suggests that there is a relationship between accessibility and additional time taken to acquire approvals. The institutions considered most accessible had the least additional time in building approval acquisition. The institutions considered least accessible had the most additional time in building approval acquisition. There is therefore a direct correlation between accessibility and



approval time. The higher the accessibility of an institution, the less the time taken to acquire an approval.

#### **4.3.5 Approvals cost**

This section was to examine the actual cost incurred to acquire each of the building approvals. 16 out of the 21 respondents reckoned that the cost is normally stipulated to them by the various institutions and therefore do not have control over the cost. Before the approval is given, an invoice is issued with the cost of the approval. 5 of the 21 respondents did not respond to this question at all.

#### **4.4 Effect of the statutory approvals on project time and cost**

This section was to examine the effect of the building approvals process on the delivery of the construction projects in line with the third objective.

##### **4.4.1 Each building approval effect on project time**

The purpose of this section was to determine the effect each of the approvals had had on the project time. The data in the table 4.9 and figure 4.9 summarizes the spread in terms of the 21 respondents' effect of each building approval on project time. The following parameters were used: **1**= not significant, **2**= a little significant, **3**= neutral, **4**=majorly significant, **5**= totally significant

Due to the subjective nature of the data, the following analysis was used;

To analyze the least significant effect on project time, measures 1-not significant and 2- a little significant were added up. To analyze the most difficult in accessibility, measures 4- majorly significant and 5- totally significant were added up. Parameter 3 - neutral was disqualified in analysis as this was taken as an undecided respondent. The data collected is presented in Table 4.9.

Table 4.9: Effects of approvals on project time

Permit	Least effect	Frequency					Most effect
		1	2	3	4	5	
a) Survey plans from Survey of Kenya	57%	0	12	4	2	3	24%
b) Architectural drawings Approval from Nairobi City County	0%	0	0	1	6	14	95%
c) Structural Drawings Approval from Nairobi City County	0%	0	0	6	7	8	71%
d) EIA Report/ EIA License from NEMA	24%	1	4	5	5	6	52%
e) NCA registration from National Construction Authority	19%	0	4	5	1	11	57%
f) Workplace Registration from Directorate of Occupational Safety & Health Services (DOSHS)	29%	0	6	6	2	7	43%
g) Signboard Permit from Nairobi City County	33%	0	7	6	2	6	38%
h) Excavation Permit from Nairobi City County	10%	1	1	12	2	5	33%
i) Hoarding Permit from Nairobi City County	32%	0	6	2	6	5	58%
j) Tree Cutting Permit from Nairobi City County	0%	0	0	6	6	6	67%

k) Temporary power from Kenya Power Company	13%	1	1	6	1	6	47%
l) Permanent Power from Kenya Power Company	24%	4	1	4	2	10	57%
m) Temporary Water from Nairobi Water and Sewerage Company	13%	1	1	5	4	4	53%
n) Permanent Water from Nairobi Water and Sewerage Company	38%	6	2	7	0	6	29%
o) Temporary Sewer from Nairobi Water and Sewerage Company	7%	0	1	8	2	4	40%
p) Permanent Sewer from Nairobi Water and Sewerage Company	52%	8	3	1	1	8	43%
q) Telephone and Internet Connection	67%	4	0	2	0	0	0%
r) Borehole Drilling Permit from Water Resource Management Authority (WRMA)	29%	1	4	3	4	5	53%
s) Borehole Abstraction permit from Water Resource Management Authority (WRMA)	29%	1	4	3	4	5	53%
t) Certificate of compliance of installed equipment i.e. lifts, boilers etc. from Directorate of Occupational Safety and Health Services. (DOSHS)	25%	0	4	2	2	8	63%

u) KEBS certification from Kenya Bureau of Standards.	50%	0	5	0	2	3	50%
v) Occupational Certificate from Nairobi City County	43%	1	8	4	2	6	38%

Source: Author, 2017

This information can also be presented in the bar graph as shown in figure 4.8.

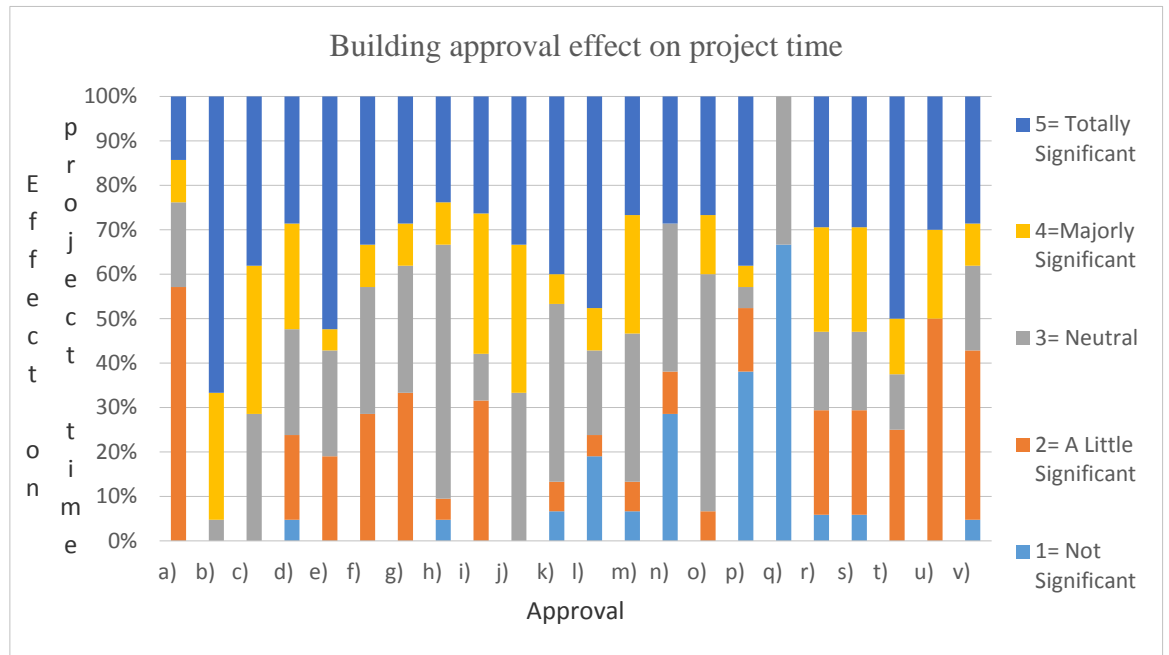


Figure 4.8: Effects of approvals on project time

Source: Author, 2017

From the above statistics, it is clear that telephone and Internet connection approval time has the least effect on project time according to developers at 67%.

This is followed by Survey plans at 57%.

This is in line with the findings of the ease of acquiring building approvals, as well as the time taken to acquire approvals, where the most accessible institution is Telephone and Internet service provider followed by Survey of Kenya.

Architectural drawings approval from Nairobi City County has the most effect on project time at 95% according to developers. This is in line with the actual project time where architectural drawings approval takes 60 days more than the estimated project time and has the most impact in increasing project time. This is followed by structural drawings approval from Nairobi City County and tree cutting permit from Nairobi City County

#### **4.4.2 Each approval effect on project cost**

The purpose of this section was to determine the effect each of the approvals had had on the project cost. The data in the table 4.10 and figure 4.10 summarizes the spread in terms of the 21 respondents' response on the effect of each building approval on project cost. The following parameters were used: **1= Not Significant, 2= Little Significant, 3= Neutral, 4=Major Significant, 5= Totally Significant**

Due to the subjective nature of the data, the following analysis was used;

To analyze the least significant effect on project cost, measures 1-not significant and 2- a little significant were added up. To analyze the most difficult in accessibility, measures 4- majorly significant and 5- totally significant were added up. Parameter 3 - neutral was disqualified in analysis as this was taken as an undecided respondent. This data has been presented in the Table 4.10.

Table 4.10: Effect of approvals on project cost

Permit	Least effect	Frequency					Most effect
		1	2	3	4	5	
a) Survey plans from Survey of Kenya	71%	3	12	2	4	0	19%
b) Architectural drawings Approval from Nairobi City County	0%	0	0	13	2	6	38%
c) Structural Drawings Approval from Nairobi City County	29%	2	4	10	2	3	24%
d) EIA Report/ EIA License from NEMA	43%	1	8	6	5	1	29%
e) NCA registration from National Construction Authority	0%	0	0	3	6	12	86%
f) Workplace Registration from Directorate of Occupational Safety & Health Services (DOSHS)	38%	5	3	12	1	0	5%
g) Signboard Permit from Nairobi City County	14%	0	3	16	2	0	10%
h) Excavation Permit from Nairobi City County	10%	0	2	16	3	0	14%
i) Hoarding Permit from Nairobi City County	5%	1	0	14	4	0	21%
j) Tree Cutting Permit from Nairobi City County	22%	1	3	11	4	0	22%
k) Temporary power from Kenya Power Company	13%	0	2	10	3	0	20%

l) Permanent Power from Kenya Power Company	29%	1	5	12	2	1	14%
m) Temporary Water from Nairobi Water and Sewerage Company	40%	2	4	6	2	1	20%
n) Permanent Water from Nairobi Water and Sewerage Company	14%	1	2	15	2	1	14%
o) Temporary Sewer from Nairobi Water and Sewerage Company	6%	0	1	10	3	1	26%
p) Permanent Sewer from Nairobi Water and Sewerage Company	14%	2	1	14	3	1	19%
q) Telephone and Internet Connection	33%	1	1	4	0	0	0%
r) Borehole Drilling Permit from Water Resource Management Authority (WRMA)	0%	0	0	7	3	5	47%
s) Borehole Abstraction permit from Water Resource Management Authority (WRMA)	17%	0	3	6	2	6	47%
t) Certificate of compliance of installed equipment i.e. lifts, boilers etc. from Directorate of Occupational Safety and Health Services. (DOSHS)	44%	1	6	2	2	5	44%
u) KEBS certification from Kenya Bureau of Standards.	70%	0	7	3	0	0	0%
v) Occupational Certificate from Nairobi City County	14%	1	2	12	4	2	29%

Source: Author, 2017

This information can be presented in a bar graph as shown in the figure 4.9.

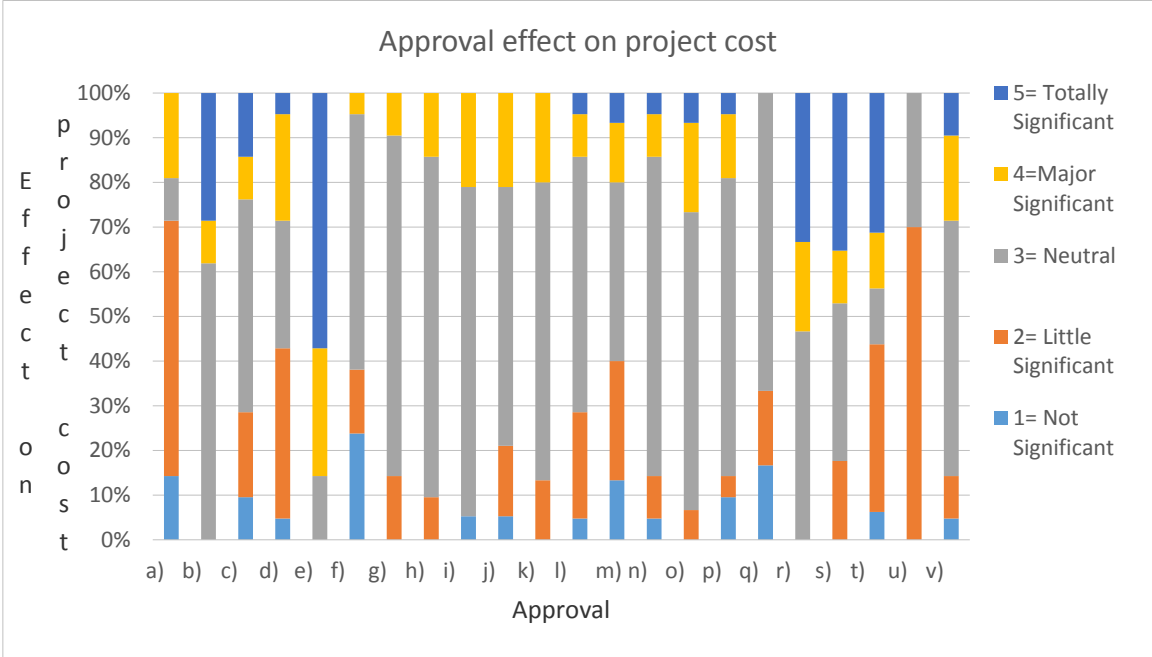


Figure 4.9: Effect of approvals on project cost

Source: Author, 2017

The approval considered by developers to have the most impact on project cost was the NCA registration at 86%. Developers have had to pay the approval at 0.1% of project cost. However, the NCA cost has since been scrapped off as from January 2017. Borehole Drilling Permit, Borehole Abstraction permit at 47% and Certificate of compliance of installed equipment costs at 47% were also considered to significantly affect the project cost. These approvals are acquired on a need basis for those who have boreholes and installed equipment.

The approval considered by developers to have the least impact on project cost was the survey plans from Survey of Kenya at 71%. This is in line with accessibility of institutions where the Survey of Kenya was considered one of the most accessible institution.



Overall, developers do not consider most costs charged to most of the approvals to be of great significance to the overall project cost and this may be why there was a high frequency on the neutral parameter.

#### 4.5 Challenges faced while acquiring statutory building approvals

The purpose of this section was to determine the hurdles faced by developers while acquiring approvals. This would inform future lawmakers on the areas of improvement in order to guarantee an effective and efficient building approval process. The data on the table 4.11 and figure 4.10 summarizes the spread in terms of the 21 respondents' extent in facing each of the challenges listed. The following parameters were used: **1= Not Significant, 2= A Little Significant, 3= Neutral, 4=Majorly Significant, 5= Totally Significant.**

In order to rank the challenges; the least significant challenge measures 1-not significant and 2- a little significant were added up. To analyze the most significant challenge, measures 4- majorly significant and 5- totally significant were added up. Parameter 3 - neutral was disqualified in analysis as this was taken as an undecided respondent. The data collected has been presented in the Table 4.11.

*Table 4.11: Challenges faced while acquiring statutory approvals*

<b>Challenges</b>	<b>Least significant</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Most significant</b>
a) High submission costs	4%	0	4	6	4	7	52%
b) Delay in Acquiring development approval	4%	0	1	2	3	15	85%
c) Uncertainty in approval time	4%	0	1	3	2	15	81%
d) Partial or no examination of design by the approving institution.	52%	0	11	3	2	2	20%

e) Improper checks by the approving institution personnel	53%	5	6	5	3	2	24%
f) Corruption	29%	0	6	3	4	8	57%
g) Multiple Institutions for approval	0%	0	0	2	6	13	91%
h) Multiple Permits and Legislation	0%	0	0	2	5	14	91%
i) Political interference	43%	3	6	12	0	0	0%
j) Unqualified/lack of commitment from approving personnel and inspectors.	14%	1	2	4	4	10	66%

Source: Author, 2017

The information in Table 4.11 can also be presented in a bar graph as shown in figure 4.10.

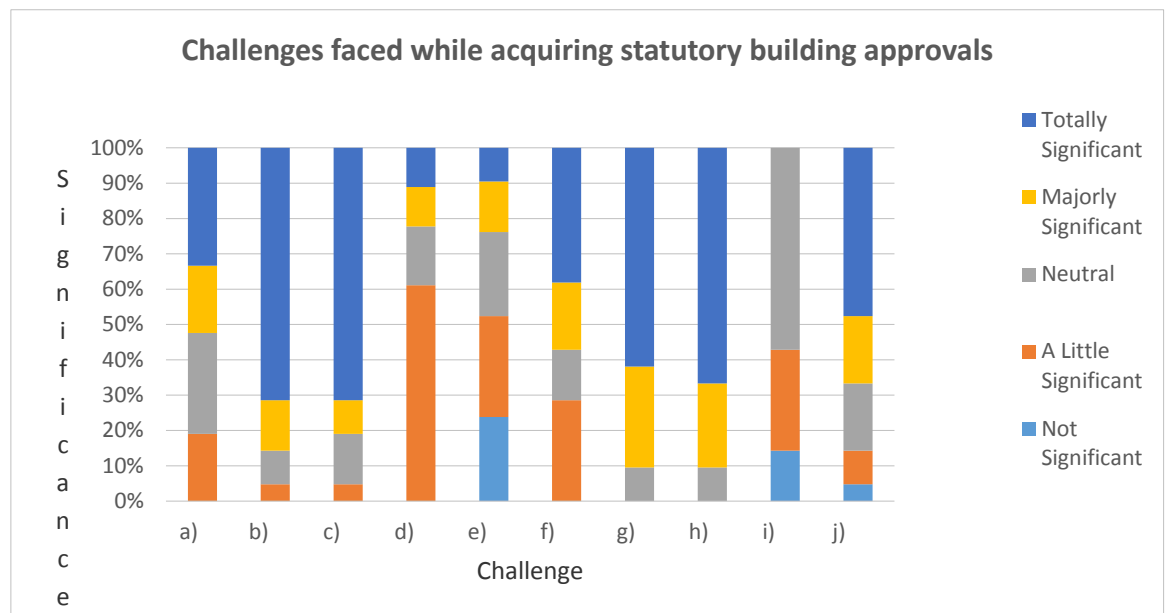
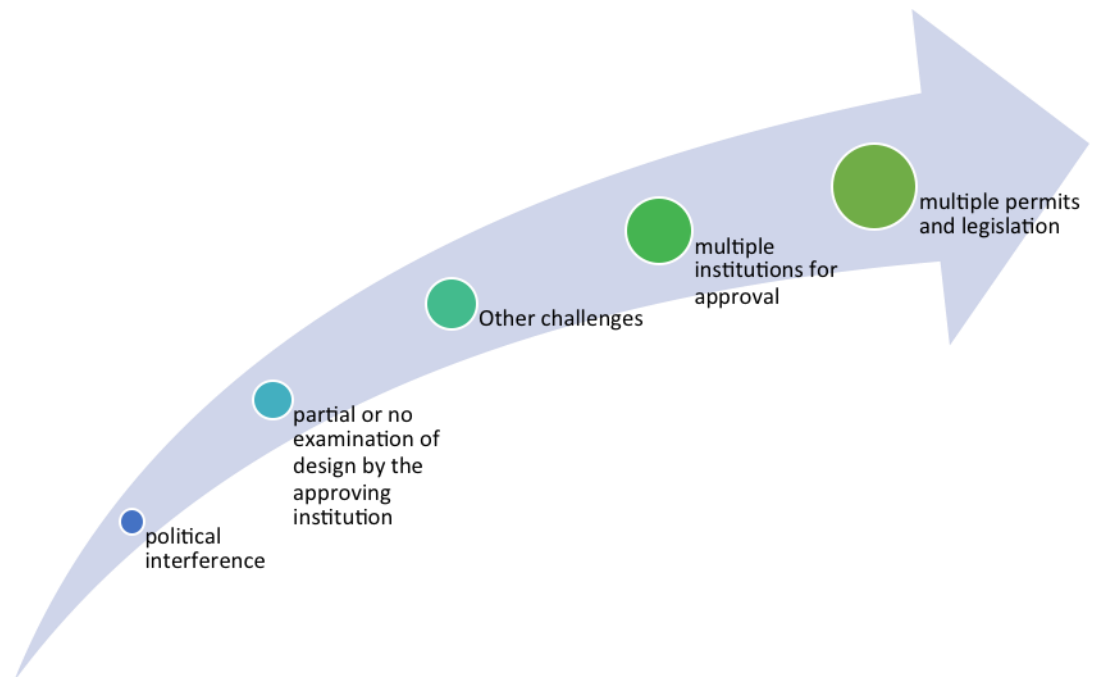


Figure 4.10: Challenges faced while acquiring statutory approvals

Source: Author, 2017

From the above data, the challenges faced in order from the most significant to the least significant is as follows;

- a) Multiple Permits and Legislation.
- b) Multiple Institutions for approval
- c) Delay in acquiring development approval.
- d) Uncertainty in approval time.
- e) Unqualified/lack of commitment from approving personnel and inspectors.
- f) Corruption.
- g) High submission costs.
- h) Improper checks by the approving institution personnel.
- i) Partial or no examination of design by the approving institution.
- j) Political interference.



*Figure 4.11: Trend diagram showing challenges facing developers while acquiring building approvals*

Source: Author, 2017

This means that developers are affected most by delays in acquiring development approvals and the uncertainty in approval time as this would in turn affect the certainty in the project cost.

Political interference is the least significant. This shows that the government of the day has not had direct interference with the building approval process in such a way that it becomes problematic to the developers.

An analysis of the challenges suggests a cause and effect relationship as shown in the Table 4.12.

*Table 4.12: Cause and effect relationship Table*

<b>Causes</b>		<b>Effects</b>	
<b>Universal</b>	<b>Specific</b>	<b>Specific</b>	<b>Universal</b>
Corruption Political interference	Multiple Permits and Legislation.	Delay in Acquiring development approval.	High submission costs
	Multiple Institutions for approval		
	Unqualified/lack of commitment from approving personnel and inspectors	Improper checks by the approving institution personnel.	
		Partial or no examination of design by the approving institution	

Source: Author, 2017

Universal causes, according to the researcher, refer to those that can lead to any of the identified effects in this study. Universal effects, according to the researcher, refer to those that can be caused by any of the above-identified causes.

Specific causes are those that lead to a particular effect which in this study is referred to as special effect as identified above.

For example, unqualified/lack of commitment from approving personnel and inspectors is the cause that can possibly lead to improper checks by the approving institution personnel and/or partial or no examination of design by the approving institution.

#### **4.6 Interventions that can be employed to increase efficiency in provision of statutory approvals**

The purpose of this section was to determine the hurdles faced by developers while acquiring approvals in line with the fourth objective. As evaluated in literature review, the following were possible interventions. The data on the table 4.13 and figure 4.12 summarizes the spread in terms of the 21 respondents' perspective of the interventions. The following parameters were used: **1=** Strongly Disagree, **2=** Disagree, **3=** Neutral, **4=** Agree, **5=** Strongly Agree.

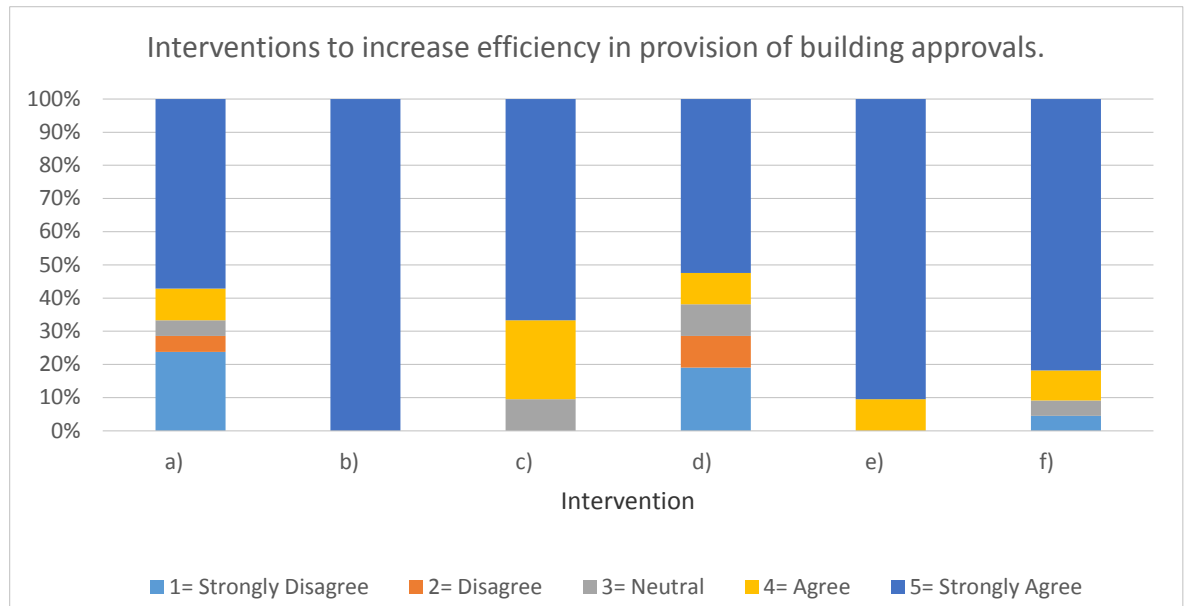
In order to rank the interventions; the interventions that developers disagree with, intervention measures 1-strongly disagree and 2- disagree were added up. To analyze the interventions that developers agree with, measures 4- agree and 5- strongly agree were added up. Parameter 3 - neutral was disqualified in analysis as this was taken as an undecided respondent. The data collected has been presented in Table 4.13.

*Table 4.13: Interventions needed to increase efficiency in provision of statutory approvals*

<b>Interventions</b>	<b>Disagree</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Agree</b>
a) Establishment of a one stop shop for all approvals to reduce the time required for this approvals	29%	5	1	1	2	12	67%
b) Recruitment of more personnel to aid in expediting the approval process	0%	0	0	0	0	21	100%
c) Improving training programmes for members of staff for the various institutions as well as developers on the various legislation and fees payable for approval.	0%	0	0	2	5	14	90%
d) Harmonization of laws in the built environment to avoid multiplicity of functions among the various institutions.	29%	4	2	2	2	11	62%
e) Better oversight of the various institutions in a bid to reduce corruption.	0%	0	0	0	2	19	100%
f) Developing and embracing technology to allow better tracking of the approval process.	5%	1	0	1	2	18	95%

Source: Author, 2017

The information presented in the table above can also be given in a bar graph as shown in figure 4.12.



*Figure 4.12: Interventions needed to increase efficiency in provision of statutory approvals*

Source: Author, 2017

From the above data, the interventions suggested in order from those interventions that developers most strongly agree with to those that they least agree with;

- a) Recruitment of more personnel to aid in expediting the approval process
- b) Better oversight of the various institutions in a bid to reduce corruption.
- c) Developing and embracing technology to allow better tracking of the approval process.
- d) Improving training programmes for members of staff for the various institutions as well as developers on the various legislation and fees payable for approval.
- e) Establishment of a one stop shop for all approvals to reduce the time required for these approvals

- f) Harmonization of laws in the built environment to avoid multiplicity of functions among the various institutions.

This suggests incremental changes that can be implemented geared towards creating an enabling approval process environment.

#### **4.7 Research Proposition**

The research proposition is: There is a significant impact of the current building approval processes on building project time and cost overrun in Nairobi City County. The study examined 22 approvals to establish the impact on building project time and cost. The study was under the assumptions that; all the approvals must be considered and applied for in good time to make sure that the process is completed in good time, no delays or penalties are incurred and that all the approvals are to be acquired if the development is to be occupied and therefore must be complied with and thought out before and during construction.

The study was able to find that it takes 430 days to acquire the approvals against an estimated time of 169 days. The cost study recognized the impact of hidden costs on the total building costs that are not very easy to account for.

The study therefore is in line with the proposition that there is a significant impact of the current building approval processes on building project time and cost overrun in Nairobi City County.



## **CHAPTER FIVE**

### **CONCLUSION AND RECOMMENDATIONS**

#### **5.0 Introduction**

This chapter contains an overview of the research study, insights gained from the research and recommendations for future research. The chapter has three main sections namely: revisiting the objectives of this study, summary of the main findings and exploration of emerging themes. Additionally, the study findings on the proposition is explained and conclusions derived.

#### **5.1 Revisiting the research objectives**

This study aimed at evaluating the impact of building approvals processes on construction project delivery (time and cost). This was achieved by examining the building approvals applicable to construction projects, determining the time and cost variation, analyzing the effect of the cost and time variations to the delivery of construction project and suggest interventions that can be employed to increase efficiency in provision of building approvals.

#### **5.2 Summary of main findings**

The study findings on the building approvals, time and cost variation and its effect as well as possible interventions to increase efficiency in provision of building approvals are presented. In this section, presented interventions can be the catalyst for government, both National and County, to give more thoughts to the building approval process. At the same time, the effect of the time and cost variations gave developers a realistic approach when acquiring their various building approvals.

#### **5.3 Bio-data**

The general information was sought to contextualize the study findings. The developers surveyed had the relevant experience and were at the time of the research engaged in ongoing projects that were of different types; residential, commercial and industrial developments.

## **5.4 Building approvals**

All the developers have acquired one form of development approval or another. Not all approvals were applied for because of different reasons e.g. some approvals do not constitute those that are mandatory for a construction development to take place.

The study also looked at the ease of accessibility of the institutions involved in acquiring building approvals. Though not conclusive, an emerging theme was that private firms like telephone and Internet connection providers were more accessible, followed by parastatals and finally county government offices.

## **5.5 Time and cost variations**

### **5.5.1 Time variation**

The critical path while acquiring building approvals is: Survey plans, Architectural drawings approval, Structural drawings approvals, EIA license, NCA registration, Workplace Registration, certificate of compliance of installed equipment, KEBS Certification and Occupation certificate. The actual building approval time is 430 days. This is 261 days more than the estimated 169 days. This represents one year, two and a half months compared to five and a half months estimated time. This is in line with Gachie (2011), who concluded that approvals have also been cited to take up to more than a year leading to delayed projects.

### **5.5.2 Cost variation**

The study found that standard costs apply in all of the approvals. Hidden costs such as facilitation cost e.g. EIA experts and other informal hidden costs are incurred. Most respondents concur that they have had to pay an additional 5% to 10% on the standard costs in order to facilitate faster acquisition of the approvals.

### **5.5.3 Each building approval effect on project time**

All the approvals take longer than the estimated time. The variation is not uniform and ranges from less than a week e.g. workplace registration to more than two months e.g. temporary water. This suggests that the effect of building approvals on project time can be an approach that recognizes the actual project time and it would aid in targeted interventions design.

### **5.5.4 Each approval effect on project cost**

The study did not identify how each approval cost affects total project cost. Overall, developers do not consider most costs charged to most of the approvals to be of great significance to the overall project cost. This is probably because most developers are concerned with the total project cost and therefore do not pay much attention to individual costs.

## **5.6 Challenges faced while acquiring statutory building approvals and interventions that can be employed**

The challenges ranking from most significant to least significant is as follows:

- a) Multiple permits and legislation.
- b) Multiple institutions for approval
- c) Delay in acquiring development approval.
- d) Uncertainty in approval time.
- e) Unqualified/lack of commitment from approving personnel and inspectors.
- f) Corruption.
- g) High submission costs.
- h) Improper checks by the approving institution personnel.
- i) Partial or no examination of design by the approving institution.
- j) Political interference.

This is in line with literature review where the multiplicity of statutes and institutions is considered the most concerning impediment to an easier building approval process (Kimani, 2010).

### **5.7 Interventions that can be employed to increase efficiency in provision of statutory approvals**

Nairobi is robust with construction of iconic projects. With the GDP contribution that is attributed to construction, it is imperative to get interventions to the challenges faced while acquiring the various building approvals. The interventions most strongly agreed with by developers include:

1. Recruitment of more personnel to aid in expediting the approval process
2. Better oversight of the various institutions in a bid to reduce corruption.
3. Developing and embracing technology to allow better tracking of the approval process.
4. Improving training programmes for members of staff for the various institutions as well as developers on the various legislation and fees payable for approval.
5. Establishment of a one stop shop for all approvals to reduce the time required for this approvals
6. Harmonization of laws in the built environment to avoid multiplicity of functions among the various institutions.

This suggests an incremental implementation plan. The construction process is an interconnected system and therefore enables interventions to be approached in an incremental manner. This is preferable in order to create an enabling environment, as it would ensure that policy makers deal with critical conditions first e.g. reduction of approval time by recruitment of more personnel and the least such as political interference with harmonization of laws in the built environment.

Following this study and literature review, a one stop shop for all approvals would be seen as a prospective solution but one that would work under various

conditions such as harmonization of laws in the built environment and embracing technology.

### 5.8 Challenges and interventions

The data suggests a correlation between the challenges and interventions suggested as shown in Table 5.1.

*Table 5.1: Challenges and Interventions correlation.*

<b>Challenges</b>	<b>Possible Interventions</b>
Multiple permits and legislation	Recruitment of more personnel to aid in expediting the approval process
Multiple Institutions for approval	
Delay in acquiring development approval.	Developing and embracing technology to allow better tracking of the approval process
Uncertainty in approval time	Establishment of a one stop shop for all approvals to reduce the time required for this approvals  Harmonization of laws in the built environment to avoid multiplicity of functions among the various institutions.
Unqualified/lack of commitment from approving personnel and inspectors.	Improving training programmes for members of staff for the various institutions as well as developers on the various legislation and fees payable for approval.

Corruption.	Better oversight of the various institutions in a bid to reduce corruption
High submission costs.	Review of approval costs
Improper checks by the approving institution personnel	Improving training programmes for members of staff for the various institutions as well as developers on the various legislation and fees payable for approval.
Partial or no examination of design by the approving institution	
Political interference	Enforcement of existing legislation

Source: Author, 2017

## 5.9 Recommendations

The recommendations identified in this study include;

1. There is need for the government both National and County to sensitize developers on various approvals applicable to construction projects as well as collaborate to evaluate the approval process. Government and developers need to look at the various approvals as well as the institutions in order to determine the viability in the long run of the number of approvals as well as the number of institutions mandated to issue these approvals.
2. There is need to evaluate the time taken to acquire building approvals as well as reduce loopholes for the additional costs incurred in terms of facilitation fees and bribes. Time and cost certainty is the best indicator to enhancing the business environment. There is also need to comply with the established timelines.

3. There is need to address the various challenges facing the approval process and evaluate the interventions suggested to determine how best they can be adopted to the Kenyan and in particular, Nairobi City County.

### **5.10 Areas of further research**

The areas of further research pointed out in this study include:

1. A research should be done to look at the various factors affecting development approval applications. This will inform why some developers will acquire some approvals and not others.
2. There is need to explore the impact of ease of access of the various institutions against service delivery in development applications.

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## APPENDIX I: QUESTIONNAIRE

### Introduction

The purpose of this study is to evaluate “**Building Approval Processes on Construction Project Delivery (Time and Cost) – A Study of Nairobi City County**”

### Instructions to the respondent

As a developer of repute in Nairobi City County, your firm has been selected to participate in this study. The questionnaire is divided into five sections. Kindly respond to all questions as guided in the questionnaire.

All the information gathered will be treated as confidential and will only be used for academic purposes. A copy of the final report will be availed to your firm upon request.

Your assistance and co-operation is highly appreciated

Yours Sincerely,

.....

Name of the Researcher: IRENE NYOKABI WAMUYU

Reg no. B53/69453/2013

Email: [wamuyuni@gmail.com](mailto:wamuyuni@gmail.com)



**SECTION I: BIO-DATA**

1. How long have you been involved in development?

<b>Working Experience (Tick appropriately)</b>	<b>Building works</b>
1-5 years	
6-10 years	
11-15 years	
16- 20 years	
Over 20 Years	

2. How many projects are you currently undertaking as a developer in Nairobi?

<b>Project type (Tick all applicable)</b>	<b>1 - 5 Projects</b>	<b>5 -10 Projects</b>	<b>11 - 20 Projects</b>	<b>Over 20 Projects</b>
Residential development				
Commercial development				
Industrial development				
Infrastructure development				
Other (Please, specify) .....				

3. What is the firm's average annual expenditure on development?

<b>Turnover (in KSH)</b>	<b>Tick appropriately</b>
Less than 0.1 Billion	
0.1-0.5 Billion	
0.5 - 1.0 Billion	
1.0 – 1.5Billion	
1.5 – 2.0 Billion	
2.0 - 2.5 Billion	
2.5 Billion& above	

**SECTION II: BUILDING APPROVALS**

4. Has your firm acquired any construction approvals while carrying out any of your construction projects?

<b>Response</b>	<b>Tick One</b>
Yes	
No	

5. If No, why have you not found it necessary to acquire any construction approval?

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6. If Yes, which of these approvals have you acquired (Tick where appropriate)?

<b>Approval</b>	Yes	No
Survey plans from Survey of Kenya		
Architectural drawings Approval from Nairobi City County		
Structural Drawings Approval from Nairobi City County		
EIA Report/ EIA License from NEMA		
NCA registration from National Construction Authority		
Workplace Registration from Directorate of Occupational Safety & Health Services (DOSHS)		
Signboard Permit from Nairobi City County		
Excavation Permit from Nairobi City County		

Hoarding Permit from Nairobi City County		
Tree Cutting Permit from Nairobi City County		
Temporary power from Kenya Power Company		
Permanent Power from Kenya Power Company		
Temporary Water from Nairobi Water and Sewerage Company		
Permanent Water from Nairobi Water and Sewerage Company		
Temporary Sewer from Nairobi Water and Sewerage Company		
Permanent Sewer from Nairobi Water and Sewerage Company		
Telephone and Internet Connection		
Borehole Drilling Permit from Water Resource Management Authority (WRMA)		
Borehole Abstraction Permit from Water Resource Management Authority (WRMA)		
Certificate of compliance of installed equipment i.e. lifts, boilers etc. from Directorate of Occupational Safety & Health Services (DOSHS)		
KEBS Certification from Kenya Bureau of Standards (KEBS)		
Occupational Certificate from Nairobi City County		
Other (Please specify) .....		

7. Kindly rate each of these institutions in terms of ease of acquiring the various approvals from them.

**Key:** **1**=Easily Accessible, **2**=Moderately Accessible, **3**=Neutral, **4**=Difficult in accessibility, **5**=Extremely Difficult in accessibility

<b>Approval</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Survey of Kenya					
Nairobi City County					
National Environmental Management Authority (NEMA)					
National Construction Authority					
Directorate of Occupational Safety & Health Services (DOSHS)					
Kenya Power Company					
Nairobi Water and Sewerage Company					
Telephone and Internet Connection Provider					
Water Resource Management Authority (WRMA)					
Kenya Bureau of Standards					
Other; (Please specify) .....					

**SECTION III: TIME AND COST VARIATION**

8. For each of the above approvals kindly indicate how long it took to acquire the approval?

<b>Approval</b>	<b>Time taken (Days)</b>
Survey plans from Survey of Kenya	
Architectural drawings Approval from Nairobi City County	
Structural Drawings Approval from Nairobi City County	
EIA Report/ EIA License from NEMA	
NCA registration from National Construction Authority	
Workplace Registration from Directorate of Occupational Safety & Health Services (DOSHS)	
Signboard Permit from Nairobi City County	
Excavation Permit from Nairobi City County	
Hoarding Permit from Nairobi City County	
Tree Cutting Permit from Nairobi City County	
Temporary power from Kenya Power Company	
Permanent Power from Kenya Power Company	
Temporary Water from Nairobi Water and Sewerage Company	

Permanent Water from Nairobi Water and Sewerage Company	
Temporary Sewer from Nairobi Water and Sewerage Company	
Permanent Sewer from Nairobi Water and Sewerage Company	
Telephone and Internet Connection	
Borehole Drilling Permit from Water Resource Management Authority (WRMA)	
Borehole Abstraction Permit from Water Resource Management Authority (WRMA)	
Certificate of compliance of installed equipment i.e. lifts, boilers etc. from Directorate of Occupational Safety & Health Services (DOSHS)	
KEBS Certification from Kenya Bureau of Standards (KEBS)	
Occupational Certificate from Nairobi City County	
Other; (Please specify) .....	

9. For each of the above approvals kindly indicate how much you had to pay?

<b>Approval</b>	<b>Amount paid to acquire approval</b>
Survey plans from Survey of Kenya	
Architectural drawings Approval from Nairobi City County	
Structural Drawings Approval from Nairobi City County	
EIA Report/ EIA License from NEMA	
NCA registration from National Construction Authority	
Workplace Registration from Directorate of Occupational Safety & Health Services (DOSHS)	
Signboard Permit from Nairobi City County	
Excavation Permit from Nairobi City County	
Hoarding Permit from Nairobi City County	
Tree Cutting Permit from Nairobi City County	
Temporary power from Kenya Power Company	
Permanent Power from Kenya Power Company	



Temporary Water from Nairobi Water and Sewerage Company	
Permanent Water from Nairobi Water and Sewerage Company	
Temporary Sewer from Nairobi Water and Sewerage Company	
Permanent Sewer from Nairobi Water and Sewerage Company	
Telephone and Internet Connection	
Borehole Drilling Permit from Water Resource Management Authority (WRMA)	
Borehole Abstraction Permit from Water Resource Management Authority (WRMA)	
Certificate of compliance of installed equipment i.e. lifts, boilers etc. from Directorate of Occupational Safety & Health Services (DOSHS)	
KEBS Certification from Kenya Bureau of Standards (KEBS)	
Occupational Certificate from Nairobi City County	
Other; (Please specify) .....	

**SECTION IV: EFFECT OF THE COST AND TIME VARIATION TO DELIVERY**

10. How does the acquisition of each following approvals affect project time?

**Key:**1= Not Significant, 2= Little Significant, 3= Neutral, 4=Major Significant, 5= Totally Significant

<b>Permit</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Survey plans from Survey of Kenya					
Architectural drawings Approval from Nairobi City County					
Structural Drawings Approval from Nairobi City County					
EIA Report/ EIA License from NEMA					
NCA registration from National Construction Authority					
Workplace Registration from Directorate of Occupational Safety & Health Services (DOSHS)					
Signboard Permit from Nairobi City County					
Excavation Permit from Nairobi City County					
Hoarding Permit from Nairobi City County					
Tree Cutting Permit from Nairobi City County					
Temporary power from Kenya Power Company					
Permanent Power from Kenya Power Company					
Temporary Water from Nairobi Water and Sewerage Company					
Permanent Water from Nairobi Water and Sewerage Company					
Temporary Sewer from Nairobi Water and Sewerage Company					

Permanent Sewer from Nairobi Water and Sewerage Company					
Telephone and Internet Connection					
Borehole Drilling Permit from Water Resource Management Authority (WRMA)					
Borehole Abstraction Permit from Water Resource Management Authority (WRMA)					
Certificate of compliance of installed equipment i.e. lifts, boilers etc. from Directorate of Occupational Safety & Health Services (DOSHS)					
KEBS Certification from Kenya Bureau of Standards (KEBS)					
Occupational Certificate from Nairobi City County					
Other; (Please specify) .....					

11. How does the acquisition of each following approvals affect total project cost?

**Key** 1= Not Significant, 2= Little Significant, 3= Neutral, 4=Major Significant, 5= Totally Significant

<b>Permit</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Survey plans from Survey of Kenya					
Architectural drawings Approval from Nairobi City County					
Structural Drawings Approval from Nairobi City County					
EIA Report/ EIA License from NEMA					
NCA registration from National Construction Authority					
Workplace Registration from Directorate of Occupational					

Safety & Health Services (DOSHS)					
Signboard Permit from Nairobi City County					
Excavation Permit from Nairobi City County					
Hoarding Permit from Nairobi City County					
Tree Cutting Permit from Nairobi City County					
Temporary power from Kenya Power Company					
Permanent Power from Kenya Power Company					
Temporary Water from Nairobi Water and Sewerage Company					
Permanent Water from Nairobi Water and Sewerage Company					
Temporary Sewer from Nairobi Water and Sewerage Company					
Permanent Sewer from Nairobi Water and Sewerage Company					
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Borehole Drilling Permit from Water Resource Management Authority (WRMA)					
Borehole Abstraction Permit from Water Resource Management Authority (WRMA)					
Certificate of compliance of installed equipment i.e. lifts, boilers etc. from Directorate of Occupational Safety & Health Services (DOSHS)					
KEBS Certification from Kenya Bureau of Standards (KEBS)					
Occupational Certificate from Nairobi City County					
Other; (Please specify) .....					

**SECTION IV: CHALLENGES FACED WHILE ACQUIRING STATUTORY BUILDING APPROVALS**

12. To what extent did you face the following challenges while acquiring the various approvals

**Key:**1=Not at All, 2= Slightly, 3= Neutral, 4= Majorly, 5= Extremely

<b>Challenges while acquiring the various statutory development approvals</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
a) High submission costs					
b) Delay in Acquiring development approval					
c) Uncertainty in approval time					
d) Partial or no examination of design by the approving institution.					
e) Improper checks by the approving institution personnel					
f) Corruption					
g) Multiple Institutions for approval					
h) Multiple Permits and Legislation					
i) Political interference					
j) Unqualified/lack of commitment from approving personnel and inspectors.					

**SECTION V: INTERVENTIONS THAT CAN BE EMPLOYED TO  
INCREASE EFFICIENCY IN PROVISION OF  
STATUTORY APPROVALS.**

13. In your opinion, how can the challenges encountered while acquiring the various statutory development approvals be minimized?

**Key:** 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

a) Interventions to increase efficiency in provision of statutory Approvals	1	2	3	4	5
b) Establishment of a one stop shop for all approvals to reduce the time required for this approvals					
c) Establishment of a one stop shop for all approvals to reduce the time required for this approvals					
d) Recruitment of more personnel to aid in expediting the approval process					
e) Improving training programmes for members of staff for the various institutions as well as developers on the various legislation and fees payable foe approval.					
f) Harmonization of laws in the built environment to avoid multiplicity of functions among the various institutions.					
g) Better oversight of the various institutions in a bid to reduce corruption.					
h) Developing and embracing technology to allow better tracking of the approval process.					
i) Others: Please Specify:.....					

*Thank you for your participation.*

## Appendix II: Research Authorization Letter



UNIVERSITY OF NAIROBI  
DEPARTMENT OF REAL ESTATE AND CONSTRUCTION MANAGEMENT  
P.O. Box 30197, 00100 Nairobi, KENYA, **Tel: No. +254-2-2724529**  
**E-mail:** dept-recm@uonbi.ac.ke

10/04/2017

REF NO: B53/69453/2013

TO WHOM IT MAY CONCERN


Dear Sir/Madam,

**SUBJECT: IRENE NYOKABI WAMUYU**

This is to certify that the above named is a student in the Department of Real Estate and Construction Management, pursuing a Master's degree course leading to the Master of Arts in Construction Management. She is currently in her second year of study.

She is carrying out research on "Evaluation of Building Approval Processes on Construction Project Delivery (Time and Cost) – A study of Nairobi City County" as a partial fulfillment of the requirements of the degree programme.

The purpose of this letter is to request you to allow her access to any kind of material she may require to complete her research. The information will be used for research purposes only.

  
CHAIRMAN  
DEPARTMENT OF REAL ESTATE  
AND CONSTRUCTION MANAGEMENT  
UNIVERSITY OF NAIROBI  
Dr-Ing C. M. Mbatha  
Ag.Chair & Senior Lecturer  
**Dept. of Real Estate and Construction Management**

**APPENDIX III: COUNTY ARCHITECTURAL AND STRUCTURAL  
CHARGES.**

<b>Item Description</b>	<b>Charges</b>
<b>New Domestic Class</b>	
0 - 46 sq.m	All new (Domestic Class) submissions to be charged at 1.5% cost of the proposed construction based on the prevailing Joint Building Council (JBC or equivalent) rates
46 - 93 sq.m	
93 - 140 sq.m	
140 - 186 sq.m	
186 - 240 sq.m	All new (Domestic Class) submissions to be charged at 1.3% cost of the proposed construction based on the prevailing Joint Building Council (JBC or equivalent) rates
240 - 294 sq.m	
294 - 350 sq.m	
350 - 400 sq.m	
400 - 465 sq.m	All new (Domestic Class) submissions to be charged at 1.25% cost of the proposed construction based on the prevailing Joint Building Council (JBC or equivalent) rates
465 - 530 sq.m	
530 - 595 sq.m	
595 - 660 sq.m	
660 -725 sq. m	All new (Domestic Class) submissions to be charged at 1.1% cost of the proposed construction based on the prevailing Joint Building Council (JBC or equivalent) rates
725 - 790 sq.m	
790 - 855 sq.m	
855 - 930 sq.m	
855 - 930 sq.m	All new (Domestic Class) submissions to be charged at 1.1% cost of the proposed construction based on the prevailing Joint Building Council (JBC or equivalent) rates
For every additional 93 sq.m or part thereof of over 930 sq.m	
Renewal Domestic Class	All new (Domestic Class) submissions to be charged at 1.1% cost of the proposed construction based on the prevailing Joint Building Council (JBC or equivalent) rates



0 - 46 sq.m	
46- 93 sq.m	
93 - 140 sq.m	
140 - 186 sq.m	
186 - 240 sq.m	
240 - 294 sq.m	
294 - 350 sq.m	
350 - 400 sq.m	
400 - 465 sq.m	
465 - 530 sq.m	
530 - 595 sq.m	
595 - 660 sq.m	
660 - 725 sq.m	
725 - 790 sq.m	
790 - 855 sq.m	
855 - 930 sq.m	
for every additional 93 sq.m or part there of over 930 sq.m	At expiry of 2years from date of approval renewal of(Domestic Class)Residential dwellings to be charged 10,000 per dwelling, Offices 1,000 per sq mtr, commercial premises, 1,200 per sq mtr