

**DENSIFICATION OF RESIDENTIAL AREAS IN LUSAKA:
THE CASE OF CHILENJE**

**By
Mubiana Mulundano**

**A Dissertation submitted to the University of Zambia in Partial Fulfilment of the
Requirements of the Degree of Master of Spatial Planning**

UNIVERSITY OF ZAMBIA

Lusaka

2023

COPYRIGHT

No part of this dissertation may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission of the copyright owner. All rights reserved.

© 2023 Mubiana Mulundano

DECLARATION

I, **Mubiana Mulundano** (2015130834), do hereby declare that this dissertation is my original work. It has never been submitted at this University or any other University for the award of any academic qualification. All published work or material from other sources incorporated in this dissertation have been acknowledged and adequate reference thereby given.

Signature:

Date.....

CERTIFICATE OF APPROVAL

This dissertation of Mubiana Mulundano has been approved as fulfilling the requirements for the award of Master of Science in Spatial Planning by the University of Zambia.

.....
Name of Examiner

.....
Signature

.....
Name of Examiner

.....
Signature

.....
Name of Examiner

.....
Signature

.....
Chairperson Board of Examiner

.....
Signature

.....
Supervisor

.....
Signature

ABSTRACT

Urbanisation in Zambia has continued at a rapid pace since independence. Lusaka continues to attract new dwellers who need to be accommodated though it has grown and development sprawled beyond its boundary limits. The study on densification of residential areas in Lusaka with a focus on Chilenje, a former public housing area, sought to determine the nature of densification taking place in Chilenje. Establishing the forms of densification taking place, residents' perception of the densification on the neighbourhood and the impact of densification on basic services provided in Chilenje were key to this study. Designed as a descriptive case study, purposive sampling was used to select the respondents and houses for the interview and observation, respectively. A total of 45 questionnaires were administered. Aerial satellite imagery of a part of the study area from 2004, 2010 and 2016 was also analysed to depict new development in each period. It was revealed from the field visits and aerial imagery that many houses have gradually been transformed mainly by constructing extensions or rooms for rental income or to accommodate the growing family. Though over half of the respondents had lived in Chilenje for more than 30 years, most of them perceived their area as the same with a few who mentioned an increase in population, improved services and development of new structures in their neighbourhood. Payments for services such as water, electricity and refuse collection by the households living on a given plot is pooled each month. It can be concluded that transformation of the housing area has taken place mainly through additional development of rooms for rent or to house family members. Increased number of residents entails that when planned well and guided, the established prospect for affordable rentals in a low-cost residential area could cultivate aesthetically pleasing and sustainable residential areas which are well serviced. To this effect, the study recommends that policies and strategies formulated for the area should be cognizant of planning needs that are appealing to residents such as the type of housing units and estimated costs.

ACKNOWLEDGEMENT

I thank Jehovah for His presence in my life. Warm gratitude goes to my husband, Brian Kampamba for the love, encouragement and support, my mother Grace Silumesi, my sister, Etambuyu Mulundano and my sister in-law Queenvor K. Mtonga for the support during the study. To my son and daughter, Nkumbu-Joshua and Briana, thank you for the motivation to complete the work.

In sincerity, I would like to acknowledge the people that contributed to development of this document.

I would like to appreciate Dr. Wilma S. Nchito, my supervisor, for the dedication, input and guidance to my work. Madam, thank you. I thank all the lecturers in the Department of Geography particularly, Dr. Gilbert Siame and Dr. Progress Nyanga for the academic support and encouragement during the period of study.

From Lusaka City Council then, thanks to Mr. Francis N'gomba, Mr. Howard Samboko and Mr. M. Kamuchocho Banda for the input provided. Sincere thanks to the Ministry of Local Government for the financial support. Earnestly, I thank my classmates for the continued encouragement and teamwork cultivated.

Lastly, I would like to thank everyone I have not mentioned for their contribution to this work and in my life.

TABLE OF CONTENTS

DECLARATION	ii
CERTIFICATE OF APPROVAL	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	viii
LIST OF PLATES	viii
CHAPTER 1: INTRODUCTION	1
1.1 Background	1
1.2 Problem Statement	4
1.3 Aim	4
1.4 Objectives	4
1.5 Questions.....	5
1.6 Significance of the Study	5
1.7 Research Outline	5
CHAPTER 2: LITERATURE REVIEW	6
2.1 Introduction.....	6
2.2 Urban Density	7
2.2.1 Perceived Density	7
2.2.2 Building Density and Building Site Coverage	8
2.3 Densification	8
2.3.1 Densification in the Global North.....	10
2.3.2 Densification in the Global South.....	10
2.4 Densification in Zambia.....	13
2.5 Densification in Lusaka	16
2.7 Critique of the Literature	18
2.8 Conceptual Framework	19
CHAPTER 3: THE STUDY AREA	22
3.1 The City of Lusaka.....	22
3.2 Population of Lusaka	22
3.3 Brief Historical Development of Lusaka and Chilenje	23

3.4 Location of Chilenje	24
3.5 Justification for Selecting Chilenje	26
3.6 Demography of Chilenje.....	26
3.7 Housing Units in Lusaka.....	26
CHAPTER 4: METHODOLOGY	27
4.1 Introduction.....	27
4.2 Research Design.....	27
4.3 Data Collection Methods	27
4.3.1 Primary Data	27
4.3.2 Secondary Data	27
4.4 Sampling Method and Sample Size	28
4.5 Data Presentation and Analysis.....	28
4.6 Limitations of the Study and Research Validity	29
CHAPTER 5: FINDINGS AND DISCUSSION	30
5.1 Introduction.....	30
5.2 Sample Attributes.....	30
5.2.1 Sample House Type	30
5.1.2 Respondents	32
5.1.2.3 Reasons for Living in the House by Respondents	33
5.3 Nature of Densification.....	35
5.3.1 Transformations	37
5.3.2 Characteristics of the Transformations	42
5.4 Residents' Perception of the Residential Area.....	45
5.5 Impact of Densification on Services in the Study Area	47
CHAPTER 6: CONCLUSION AND RECOMMENDATIONS	50
6.1 Introduction.....	50
6.2 Conclusion	50
6.3 Recommendations.....	50
REFERENCES.....	52
APPENDICES	60

LIST OF TABLES

Table 2. 1 Estate Layout Regulations	15
Table 5. 1 How house-owner acquired the house	34

LIST OF FIGURES

Figure 2.1 Comparative Plot Sizes in Lusaka	14
Figure 3. 1 Location of the City of Lusaka in Zambia.....	22
Figure 3. 2 Location and Boundary of Chilenje in Lusaka	25
Figure 5. 1 Typical House Type For African Housing Areas	30
Figure 5. 2 Age Distribution of Respondents by Sex.....	32
Figure 5. 3 Respondents and their Relationship to House-owner.....	33
Figure 5. 4 Respondents Reasons for Living in the House	35
Figure 5. 5 Respondents reasons for constructing additional units.....	39
Figure 5. 12 Perception of changes to the house by Respondent.....	46
Figure 5.13 Responses on Basic Services	47

LIST OF PLATES

Plate 5. 1 Front and back view of a house in Chilenje.....	31
Plate 5. 2 Residential development in part of the study area	36
Plate 5. 3 Extension to transform detached house to semi-detached house	38
Plate 5. 4 Mud-bricked additional units	39
Plate 5. 5 Additional unit of three rental rooms	40
Plate 5. 6 Shop and extension to original house	40

CHAPTER 1: INTRODUCTION

1.1 Background

Globally, the population has been increasing. According to El-hadj et al. (2018), Africa's population has grown by an average of 2.53 percent annually between 1950 and 2015 with an urbanisation rate of 3.3 percent between 2000 and 2015. Globally, in 2010, 51.1 percent of the growing world population lived in urban areas compared to 55.7 percent in 2019 (UNCTAD, 2020). It is estimated that 68 percent of the global population will live in cities by 2050 (UN DESA, 2018). Such an increase in urbanisation increased the pressure for resources and infrastructure in urban areas. Today, many countries still have a challenge of meeting the needs of the population in urban areas in areas such as housing, transportation, energy and other infrastructure.

Urban planning is undertaken to prevent, manage and mitigate urban challenges. One may argue that as in ages past, cities of today continue to grow and as development actors, we all must question our approach towards the future urban planning and the shape of our cities (Fomyn, 2012). This is necessary because as cities grow, they also must accommodate the needs of people and the changes of the places where people live. The growth could be inwards or outwards the city centre. Taking note that planning involves facilitating human processes that are not well understood, resulting in much uncertainty (Hao, 2012), planning for a residential area is done taking a number of factors into consideration apart from the compatibility of uses, the plot sizes, limits on levels of development among others. These factors are there to make a place liveable and environmentally friendly among other things.

Contemporary urban planning is conducted in a setting where multiple and diverse interests need to be accounted for and where interests do not necessarily comply with sustainable urban planning objectives (Bergsteinsson, 2014). One of the ways used to meet urban planning objectives is through the measurement of density. According to Brewer and Grant (2015) some planners and policymakers argue that density and mix could improve land use efficiencies, urban qualities, and opportunities for social interaction. It has also been mentioned that achieving higher densities in existing cities can only be a process of intensification (or densification) which may be driven by

policies through the formal sector, or happen through the efforts of the informal sector (Jenks, 2000a).

The process of urban densification is complex, and its outcomes are dependent on the local environment. The variation in local conditions produces varied physical changes and characters of the environments. The uniqueness of the outcomes necessitates formulation of locally tailored policies that meet the needs of a given area. Therefore, density is important and through the various forms it may take, density reveals power relations (Bibby, 2018). This is evident when the informal sector's efforts at housing supply are on the rise, thereby showing that there is a relation with housing demand which the sector is meeting (Jenks, 2000a).

The history of densification in Zambia can be observed in colonial era. According to Mukozomba (2005) and Zulu and Oyama (2017), the opening of mining towns in the then Northern Rhodesia by the British South African Company (BSA) represented the beginning of urbanisation in Zambia. It also led to the expansion of the mining sector, increase in commercial activities and industrial services in the mining towns along the line of rail (Ogura, 1991). The imposing of taxes on local people that depended on traditional agricultural systems led to their influx to urban centres for wage-employment. As the mining industry grew, the number of Africans residing in urban areas grew (Mukozomba, 2005). Mukozomba further states that the British Administrators introduced a system of company towns where large employers with more than 300 employees were to provide them with what was perceived as adequate accommodation to meet to the growing demand for African Housing. Housing became a function of employment, therefore, dismissal or completion of work contract meant eviction from the house (Mukozomba, 2005).

Other than mine houses, other forms of housing areas were introduced in urban centres. Larger employers either constructed their own staff (institutional) houses or leased from the local authorities. The houses for locals were initially one-bedroomed with little ventilation, minimum services and inadequate facilities. The houses were round shaped and usually located far from the low-density areas (Mukozomba, 2005).

When in the 1940s it was observed that the earnings of many Africans had improved, the Colonial Government issued an order that family houses for those Africans working in sectors other than the mines, be provided. The minimum wages introduced were expected to afford these families a minimum Council family rental house. This change in policy led to an increase in the number of Council townships established especially during the period of the late 1940s to the 1950s. According to Mukozomba (2005), some of the townships established are Matero, Kamwala and Chilenje in Lusaka; Masala, Kabushi and Chifubu in Ndola.

The core urban pattern, however, reflected a unique reference for building detached houses on spacious suburban plots. The urban pattern was informed by the garden city plan which was popular in many European cities at the time. The pattern led to the spatial organisation of Lusaka then and in subsequent decades. The resultant low-density sprawl was supported by the widespread use of automobiles by the European communities. The African housing areas as described above were planned at a much higher density with much smaller plots and very few services provided. This highly dispersed pattern aggravated the deliberate racial segregation of residential areas. Likewise, industrial and commercial areas were also spatially segregated from residential areas, which made it difficult for Africans to commute to work-places.

Urbanisation in Zambia before 1964 was low because of the rural urban migration restrictions imposed by the colonial government. After independence, the lifting of restrictions on permanent urban settlements by African migrants resulted in a rapid increase in the demand for housing in urban areas. Chilenje is one of the early planned housing areas developed for Africans (Williams, 1983). These public houses were constructed in phases with each phase having a similar house type, which differed from phase to phase. Each house was constructed on a spacious plot. After the privatisation of housing units, development of additional housing units on a single dwelling unit plot to accommodate extended families which was not common when the houses were public property (Makasa, 2010) became possible. With most people owning houses, some houses changed hands, other houses got modifications such as renovations or extensions (Mwaba, 2017). Most of these developments have led to an increase on the built-up area

on a single plot. Over time, such developments change the density of residential areas. Hence the need for urban planning regulations to guide residential development. When preparing a Local Area Plan as provided in section 21 of the Urban and Regional Planning Act No. 3 of 2015, the physical and non-physical changes in residential areas will need to be taken into consideration so that there is informed guidance on the appropriate density for a given area.

1.2 Problem Statement

Lusaka is one of the urbanised cities in Zambia. Makasa (2010) and Schlyter and Tran (2005) observed that densification through the development of additional units on single dwelling units to satisfy housing related needs of residents has continued. Though densification affects access and provision of urban services such as water, refuse collection and electricity (Cheshmezhangi and Butter, 2015), these services are barely regarded or recognised by citizens until there is a disruption through for instance, disaster or energy failure (Cook et al., 2018). Over time, density is anticipated and eventually becomes known to residents through the frustration of waiting for public services and infrastructure (Cook et al., 2018).

From literature reviewed, there is limited knowledge on residents' view on densification in old housing areas. With the call to prepare Local Areas Plans in-line with the Urban and Regional Planning Act No. 3 of 2015, there is a strong need for planning strategies and actions to take into consideration area specific housing needs of citizens related to the developments. The information key to effectively guide the developers to improve land use efficiencies, urban qualities, and opportunities for social interaction. Therefore, it is important to understand what drives such developments and how the people living in Chilenje perceive their neighbourhood.

1.3 Aim

To determine the nature of densification in built up residential areas.

1.4 Objectives

1. To explain the forms of densification in Chilenje.

2. To ascertain residents' perception of the density in the study area.
3. To determine the impact of densification on services provided to residents in Chilenje

1.5 Questions

1. What are the forms of densification taking place in the study area?
2. How do the residents perceive the current density in the study area?
3. What is the impact of densification on basic services provided in Chilenje?

1.6 Significance of the Study

This study was undertaken to provide an understanding of the nature of densification taking place in Chilenje planned low-cost residential housing area. It will help contribute towards formulation of standards to be used when preparing local area plans. Further, the findings will be important to guide development control and create an opportunity for further research. The study will also provide a local context on what has happened to homeowners and how residents perceive their neighbourhoods. The findings will enlighten providers of basic services on what to expect when planning for changing residential areas. It will also provide findings on what happens after home ownership.

1.7 Research Outline

The document is structured into six chapters. Chapter one is the background to the study. It focuses on the research problem, research questions and objectives, significance of the study. Chapter two is the literature review on densification in the global North and global South while Chapter three gives an overview of the study area. The research design, data collection methods, sampling method and sample size, data presentation and analysis, limitation of the study and research validity are presented in Chapter four. The research findings and discussions are in Chapter five with the conclusion and recommendation to the study in Chapter six.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

According to Cuff et al. (2010), zoning was in the early 20th Century viewed as a panacea to rampant development and speculation as well as to public health crisis. Almost immediately, it became a tool for exclusion, for social segregation, and for enforcing homogeneity, especially in the residential zones, turning a heterogeneous urban pattern into one composed of rigid enclaves (Cuff et al., 2010). This is evident in most countries developed and still developing. There is debate on the contemporary advantages and disadvantages of zoning. For some, zoning as ideology and practice, stands in the way of sustainable urban development (Cuff et. al., 2010). While for others, it is still the maintainer of healthy urban living (Hall, 2014). Regardless of which side one may be on, the development process of urban areas follows a general trajectory characterized by three distinct but overlapping phases; expansion, densification and intensification (Hao, 2012).

Based on the three characteristics of the development process of urban areas by Hao (2012), Lusaka has developed from the expansion phase to the densification phase. The expansion of Lusaka is apparent as it has sprawled to its boundary limits. Urbanisation of the city has heightened the demand for land for housing within Lusaka and its peripheral. Densification is slowly manifest as homeowners of single dwelling units participate in housing development on their unit through subdivisions and infill development as a source of income or to meet their housing needs. For residents of former municipal houses have connection with their environment

This chapter reviews literature on residential densification. The first section provides highlights on density, in general, as a basis on which to define densification. The sections that follow highlights densification experiences as evident in the global North and in the global South. Coupled with a brief background to densification experiences in Zambia, a critique on the earlier sections presents a setting for the conceptual framework for this study.

2.2 Urban Density

The term ‘density’ has scientific and social meanings (Roberts, 2007) At its simplest, density is the number of units in a given area (Forsyth, 2003). In the spatial sciences, density is a measure of the concentration, grain, tightness of pattern, cluster or intensity of beings or substance within a defined space or territory (Roberts, 2007). Density is used as a measure of the number of people living in a given area, it is not just a physical tangible element (Dempsey et al., 2010). According to Roberts (2007), urban density has attributes of behaviour or flow; for example, density can be a measure of perception related to overcrowding or congestion. Therefore, density is also intricately linked with the configuration of social environment and interaction within residential neighbourhoods: apartments are examples of high-density housing whereas detached and semi-detached properties tend to be of lower densities (Dempsey et al., 2010).

2.2.1 Perceived Density

Forsyth (2003) states that perceived density is not highly related to actual density but is profoundly affected by landscaping, aesthetics, noise, and building type. She further states that when people say an area is dense, they base this assessment on the perception that a development is ugly, has little vegetation, and has caused parking problems for neighbours, rather than a count of the actual number of units per acre. Roberts (2007) defines perceived urban density as a behavioural or perceptual measure of density. He further explains that perceived density relates to ‘measuring crowding, complexity, aural and visual privacy and sense of spaciousness’. According to Pourdeihimi et al. (2017) the perceptions of density in residents can be different from its nominal value and are rather based on their subjective judgment of place. Such perceptions and judgments depend on various cues and elements, physical factors being among the most important. Knowing about these cues and their prioritization in planning can reduce the negative impacts of high-density residential environments. Exploratory factor analysis displayed eight major factors, i.e., height of buildings, distance between buildings, view from dwelling units, and visual exposure, which are the most important factors influencing the perception of density. This means that the perceived density depends on spatial configuration, housing types, and the arrangement of residential elements and communal open spaces.

2.2.2 Building Density and Building Site Coverage

Zhao et al. (2008) state that building density is not only an important issue in urban planning and land management, but also an indicator of a city's evolution, because the buildings constructed in different periods have different styles and vary greatly in how the land is used. In their paper, Zhao et al. (2008), use both Building Coverage Ratio (BCR) and Floor Area Ratio (FAR) to estimate the building density of a city from two aspects, the buildings stretching on the surface and growing along the third dimension. They describe BCR as the ratio of the total standing area of all buildings to the total area of the interest area, while a FAR is defined as the ratio of the gross floor area of all buildings to the total area of the interest area.

Building Site Coverage is area of ground floor or footprint of building divided by the parcel area. This measure indicates the amount of open space left on the site (Forsyth, 2003). Site coverage is the proportion of a site that is covered by buildings and structures. Managing the total site coverage of dwelling houses and ancillary development stops residential sites from becoming too overdeveloped. It also ensures adequate space is provided for deep soil landscaping and private open space.

2.3 Densification

There is no agreed definition of densification. However, if a residential area is perceived as dense, it implies that there an increased density in the building in that particular area. Bersteinsson (2014) mentions that densification relates to creating a denser urban form (that is higher building density, referred to as people per hectare) between existing urban spaces of the city. He further states that urban densification can also refer to aims of increasing the mix use of functions such as primary and secondary services as well as businesses.

Urban growth is directed at areas within existing limits of the city and urban densification can take many forms. Most forms of densification involve physical works (Bibby et al., 2018). Some do not add to urban built form. For example, sub-divisions and conversions of existing buildings, and the re-use of vacant buildings. Those that add to urban form include extensions to existing properties, the development of vacant or

derelict open land, infill on backyard or gardens involving plot sub-division, and re-development or new development at higher densities, using more intensive building types (Bibby et al., 2018).

Generally, scarcity of land, containment of the urban areas from sprawling into natural and agriculture land, urbanization, and economies of scale for infrastructure such as services and public transportation are usually cited as some of the drivers of densification (Bibby et al., 2018; van Kooij et al., 2017; Tapias Pedraza et al., 2013). According to Tapias Pedraza et al. (2013), densification is also linked to the fact that the world population is increasing, therefore smart strategies for future densification of cities are crucial for the construction of sustainable built environments. A failure to address this issue can lead to ever-expanding cities, which consume more natural areas and grow until urban systems, like public transport, become unsustainable. Reducing urban spaces inside the city is one direction to prevent the deterioration of urban areas and the consumption of natural environments. Apart from reducing the urban spaces, these spaces should be used effectively to accommodate the influx of people. The approach to using space for optimal or maximal potential is known as densification strategies (Carlow, 2014).

For a municipality, higher densities promote a more sustainable way of moving around the city, and efficient provision of public services. Density also can be a factor in economic attractiveness as it could promote mixed development and provide opportunities to increase the tax base of a jurisdiction by creating or renewing a property's value (Perrault, 2012). The link between sustainability and density lies in the notion of space as a resource (Carlow, 2014).

Citing Dawkins and Matan (2008), Sivam et al. (2012) state that in contemporary urban development, density should be seen as an integral tool in planning policy to guide future development and provide direction about how areas will look and feel in the future. They continue that high density should be viewed as more than ratio of units to a given area. To create lively places there is need to consider both technical and human dimension (perception and human behaviour) of the density.

2.3.1 Densification in the Global North

In the United States, Cuff et al. (2010) expressed that limiting the intensity of residential development in the city of California, single family residential zoning constrains the supply of housing in Los Angeles. They give examples of how some homeowners have developed their own solutions to the housing shortage by converting garages to second units or by subdividing or adding apartments to detached, single family dwelling units. They further state that legally permitted second units are rare in Los Angeles, and that since 1982 the State of California has proactively passed laws to encourage second unit, or Accessory Dwelling Units (ADUs), in single-family neighbourhoods. Since the City Council tabled further consideration of the issue in 2009, State law rather than local regulations is assumed to apply, making backyard homes possible across the City of Los Angeles. In June 2010, the single-family residential zones consisted of 457,610 lots scattered across the city leaving major areas of land unbuilt (Cuff et al., 2010).

Bibby et al. (2018) in studying densification in England, acknowledged that there was no empirical evidence on the processes and outcomes of urban densification. In contrast, densification may occur incrementally through the actions of local contractors and, to a lesser extent, of the owners of small sites and buildings. Such gradual change is more difficult for planners to control and usually prompts limited local resistance but, cumulatively, may result in substantial neighbourhood change (Pinnegar et al., 2015 cited in Bibby et al., 2018)

2.3.2 Densification in the Global South

In the global South, one of the emerging and mostly unplanned forms of densification in planned residential areas is the development of one or more dwellings on a plot meant for a single dwelling house, transformation of existing houses (Tipple, 2000) and the use of limited space in multi-habitation (Okeyinka, 2014).

Housing transformations are defined by Tipple (1991) as an alteration or extension involving construction activity and using materials and technology in use in the locality. Multi-habitation is a concept describing a social situation within a space (Schlyter, 2003a). In the words of Schlyter (2003a) 'multi-habitation takes the form of petty landlordism and there is generally a commercial relationship between resident owners

and lodgers in a Zimbabwean situation. This is because the multi-habited house form allows inexpensive accommodation and many of the advantages of collectivist life for the residents. According to Okeyinka (2014) multi-habitation thrives in the traditional African environments and is still prevalent in the urban African environments due to the preponderance of the house-forms in both the courtyard compounds and rooming houses. Urbanisation is also known to somewhat propel multi-habitation due to low incomes and slow public housing supply. This implies that room renting accommodates more people, which in turn motivates house owners to provide this kind of housing through transformation where existing houses are extended (Kiai, 2003; Okeyinka, 2014).

Schlyter (2003b) and Tipple (2000) agree that there has been transformation of government-built low-cost housing in Africa. Although the existing studies help to provide insight into the general forms housing transformations take, the motivating factors and their implications; the differences among countries in terms of household composition, cultural values and norms, housing design standards, housing quality and needs as well as home ownership structure, suggest that the process and pattern of housing transformations, motivations and their implications will most likely differ from one country to another (Aduwo et al., 2013).

In his description of densification of Hanna Nassif settlement in Kinondoni District of Dar es Salaam, Tanzania, Nguluma (2003) mentions that the notable changes were building extensions on plots, the densification of the compounds (several buildings within a single plot), completed new buildings and replacement of the originally temporary residential structures with commercial ones and other uses. Though the area that Nguluma studied is an informal settlement, the scenario of housing transformation can be seen even in planned residential areas as seen in studies by Tipple (2000), Schlyter (2002) and Okeyinka (2014) particularly in public housing schemes.

The use of residential rooms for rentals was also evident in Kathmandu. According to Bajracharya et al. (2015) housing for the poor is rented rooms in other peoples' homes and much of this rental accommodation is not planned as rentals and as such is haphazard, congested and poorly serviced. They further state that, building, especially

for rentals, is not an economically viable option as the cost of land and construction in Kathmandu is so high that it cannot be recovered in fewer than 20 years from the rents. Therefore, people building homes for themselves and rent out rooms that they construct as part of their house. This also guarantees the homeowners extra income.

Between 1990 and 1993, densification in South Africa was seen as a more effective use of both vertical and horizontal space in a city, with the aim of improving urban sustainability and integration after apartheid (Fataar, 2016). Lategan and Cilliers (2015) in their study observed that there was growth in the informal backyard residential rental sector. They defined the informal backyard rental sector by informal one or two-roomed dwellings constructed from salvaged wood, corrugated iron and cardboard that share surplus space with formally developed dwellings within serviced suburbs. Citing Lemanski (2009), Lategan and Cilliers (2015) noticed that the rooms were shared by both sexes and all ages of one or more families, for all daily living activities. Therefore, the informal backyard rental sector not only supports urban sustainability, but also urban resilience against internal urbanisation pressures, specifically related to an ever-increasing low-cost housing demand.

In their paper investigating the state-sponsored low-cost housing provided to previously disadvantaged communities in the City of Cape Town, Govender et al (2011) state that there was a strain imposed on municipal services by informal densification of unofficial backyard shacks and this was found to create unintended public health risks. In their study, they found illegal electrical connections to backyard shacks that are made of flimsy materials posed increased fire risks and a high proportion of main house owners did not pay for water but sold water to backyard dwellers. Additionally, all of the main houses were equipped with a flush toilet, either inside or outside the house. In all cases, backyard dwellers could use the toilet on the property. If, however the toilet inside the home was not available, then the neighbour's toilet may be used or any receptacle that could act as a chamber pot was used. Further, all the main houses had an operational prepaid electricity connection. Backyard dwellings created illegal connections from the main house and paid between R50 to R200 per month for electricity usage. Of the main houses interviewed in the survey, only seven percent of the 173 houses timeously paid

the local municipality for water usage (approximately R500 paid in total by the seven houses for a month). A total of 66 percent of backyard dwellers pay the landlord between R20 and R100 per month for water, in spite of the city providing the first 6000 litres of water for free each month to all households. The 97 backyard shack dwellers paid R6080 (about US\$811) in total per month to landlords who themselves did not pay for this water. Backyard inhabitants fetched water from the main house and stored the water in a bucket in the shack.

In a study by Lategan and Cilliers (2015) on the informal backyard rental sector, it was observed that by 2009 the proportion of households residing in backyard rentals was growing faster than the proportion of households in informal settlements. They allege the popularity of the sector to various socio-economic benefits enjoyed by tenants. The most notable perhaps being access to services. They however make mention that informal backyard dwellings may resemble the structures found in South Africa's informal townships, however backyarders may enjoy partial or complete access to the services provided to their landlords in formal dwellings. In general, backyard tenants enjoy improved access to services when compared to settlers in shanty towns. The informal backyard rental sector reflects the intricate relationship between service delivery and self-build initiatives which follow.

Nonetheless, informal backyard rentals may increase residential densities and through suitably matched infrastructure capacity, provide a more sustainable number of users for services and amenities such as public transport (Shapurjee and Charlton cited in Lategan and Cilliers, 2015). Conversely, a drastic increase in densities may place pressure on existing infrastructure networks. As an example of proactive action to address infrastructure pressures and improve living conditions, the City of Cape Town launched a pilot programme aimed at extending services to backyarders. These upgrades would allow improved access to services whilst preserving flexibility and affordability.

2.4 Densification in Zambia

Over fifty years after independence, the legacy of colonial town planning practices has continued in urban form and land uses, housing, land alienation, development control and the local government systems (Mwimba, 2002). Whereas one could identify the

town planning philosophy and urban policy in the colonial times, these were not distinct in post independent Zambia. According to Mwimba (2002), it seemed planning was lagging behind while society evolved. The zoning regulations and planning standards are still stuck in the past. Mwimba (2002) further observed that planning standards applied for plot coverage, building set-backs and parking requirements had not been revised or guidelines clearly provided. This is evident in similarities of plot sizes in Figure 2.1 and Table 2.1. Using the words of Fekade (2000:130) "existing land use control and regulations are becoming parts of the problem, and not of the solution, to find more rational and equitable alternatives." According to Makasa (2010), Lusaka and towns which were developed as administrative centres were guided by the modernism ideology, they were strictly zoned; mixed land use and housing (flats or tenements) developments were not allowed in the Central Business District (CBD). The residential classes were adopting the 1903 design by Ebenezer Howard (Collins, 1969) as shown in Figure 2.1.

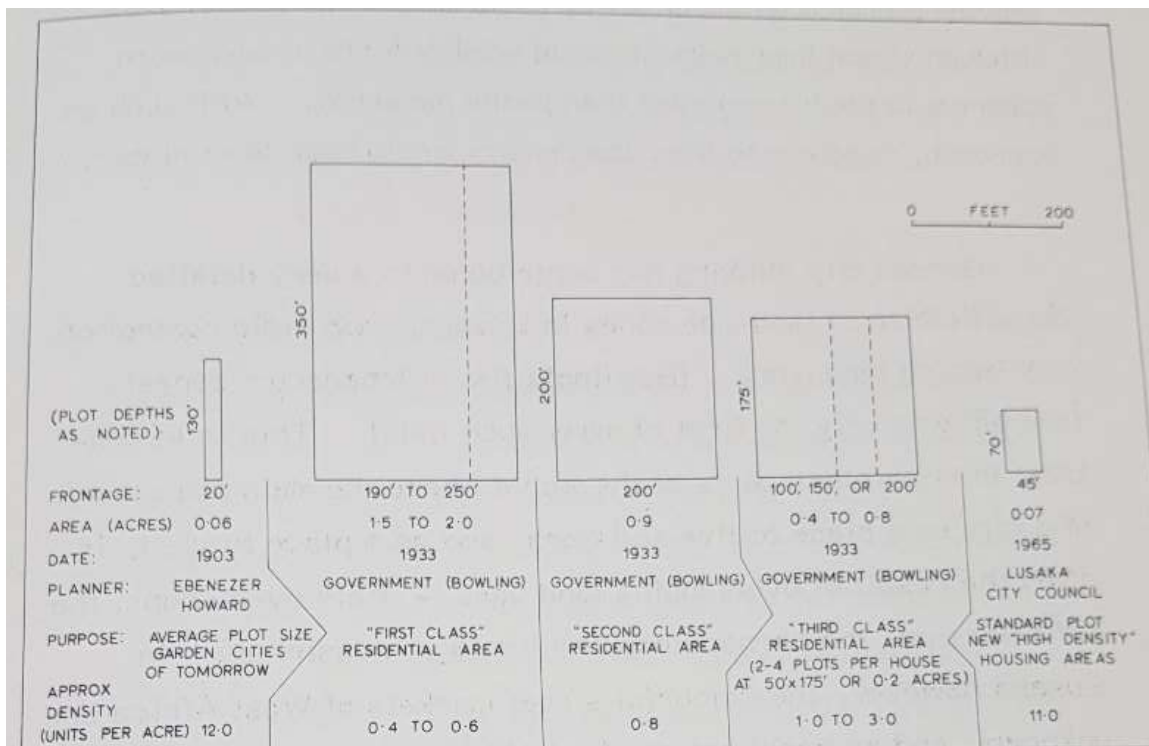


Figure 2.1 Comparative Plot Sizes in Lusaka

Source: Collins, 1969

Conveniently, the formerly European housing areas like Woodlands and Prospect Hill were located on higher altitudes and sparsely populated unlike the African housing areas

in Kamwala and Kabwata. The same segregation was evident in the type of housing. For instance, the European Housing areas had all the necessary community facilities while the small proportion of Africans who were provided with housing were given low-cost houses with almost no facilities (Knauder, 1982). After the independence of Zambia in 1964, priority was given to meet the quantity and quality of housing needs of the masses and to balance racial segregation in the physical composition of housing (Makasa, 2010).

Table 2. 1 Estate Layout Regulations

Type of Building	Minimum Plot Size (Square Metres)	Maximum Site Coverage (Percentage)	Building Line (Metres)	Minimum Distance from Side / Rear Boundaries (Metres)
Dwelling Houses:				
<i>Low Cost</i>	288	33.5	3	3
<i>Medium Cost</i>	540	33.5	6	3
<i>High Cost</i>	1,350	25	7.5	3
Blocks of Flats	To be determined by the Authority			
Any other Building	To be determined by the Authority			

Source Doxiadis, 1975

According to Knauder (1982), the Commissioner of Town and Country Planning in 1967 considered the abolition of segregated housing of low, medium and high-density housing for more integration in housing residential zoning. Consequently, the “envious” residential areas were taken over by those who had been restricted to low-income areas when most Europeans who occupied the high and medium cost areas moved out of the country (Makasa, 2010). In the year 1968, the Minister of Local Government and Housing issued a statement on Integrated Housing which called for more purposeful planning that should not condone the mushrooming of mixed buildings of various sizes, shapes and standards (Knauder, 1982). After 1969, the only spatial plan institutionalized to the zoning level was the City of Lusaka Development Plan of 1975 prepared by Doxiadis Associates.

In the 1975 Lusaka Development Plan, it was ascertained that since development has been progressing in the peripheries, it was vital to extend the coverage of the zoning classification. This was done by providing estate layout regulations as shown in Table 2.1. The integrated neighbourhoods such as Chakunkula in Chelstone, Old Kabwata re-development scheme in Kabwata, and Nyumba Yanga in Woodlands were created so that all people without distinction would enjoy similar amenities and services. However, segregated housing areas remained untouched. The houses built of various types and sizes on different plots and providing services for a certain type of people possessing special skills, differing from the general residential areas which a man was able to pay for, made it exclusionary (Knauder, 1982). According to Makasa (2010), many poor people could never afford to pay for these services and full integration could have been excluded.

2.5 Densification in Lusaka

In some countries, densification through mixed use development was planned along some major transport routes. According to the Comprehensive Development Plan for the City of Lusaka (JICA, 2007), densification will be gradual from the centre to the other areas. However, it seems most of the city's foot-print is reducing in residential areas meant for single dwelling housing units. This scenario has been attributed to the increasing demand for affordable housing.

In a survey done in 2006 by UNDP, almost half of urban households in Zambia lived in detached houses, even in low-cost areas. They further state that the public sector housing stock numbered approximately 180,000 dwellings across urban Zambia. Slightly over half of these dwellings were owned by the local authorities and 85 per cent were low cost. According to Butcher and Oldfield, (2009), one of the drives to create homeowners in Zambia was by privatisation of colonial state housing stock by presidential decree in 1996. This decree placed all council housing in Zambia for sale. Ownership was assumed as a priori positive development for all, and no alternatives were offered to tenants (Butcher and Oldfield, 2009).

The sale of council and other institutional houses to sitting tenants was supposed to empower them with housing. According to Basila (2005) officials assumed

empowerment in this case meant giving the people rights and authority to make their own decisions on their houses. It implied that house owners were free to improve the house, to extend their house, put it on rent, or resell it because it is their property. She further states that the aim for empowering the people with housing was that they must improve their poverty situation, in this way they will be participating in development. It was assumed that the money people were supposed to be spending on renting can be used to maintain and improve their houses. The monies from the sale were to be in a housing development fund for each local authority. Some of those that bought the houses sold them to cover their rental arrears and leave with something. Others put them up for rent. For some, it was an opportunity to make improvements that would generate financial gain. Schlyter (2002) however noted that men, the better off (financially) and the elderly disproportionately benefited from the home ownership unlike the women.

An example of the disproportion towards home-ownership was presented in the work of Butcher and Oldfield, (2009) when they interviewed two widowed women who were both long-term residents of Matero (also a former council low-cost housing area). The two women had accessed their houses through their husbands' tenancy and employment in the city in the 1960s and 1970s and the households of both women had bought the house during the sale of 1996. One of the women recounted that the house used to be for her late husband. She further explained that her husbands' relatives asked and approved her intention to stay in the house and raise her children there. The notion of the 'family house' was used by women to protect theirs and their children's claim to the house to prevent relatives from taking over the house (Butcher and Oldfield, 2009). However, young people in Matero that depend heavily on the 'family house' for shelter, and reliant on older relatives' goodwill in sharing housing have a concern in negotiating inheritance to the house since according to Butcher and Oldfield (2009), they occupy lower positions in the family status chain.

Using Matero area as a part of their case study Butcher and Oldfield (2009) observed evidence of home investments which were not so contingent on official approval but on the available financial means. These investments were illegal extensions but they also noted that there were a few residents who had not illegally extended for fear of state reprisal. Even though legally the Council could discipline illegal building, in practice

some of those that built illegally did so at will and claimed that the Council had few powers of surveillance or reprisal (Butcher and Oldfield, 2009).

In the Lusaka City State of the Environment Outlook Report, (2008) it was stated that ‘to improve provision of housing in the city, densification policy should be adopted which could result in construction of high-rise flats. Since the city has developed to the boundaries, densification through the subdivision of existing plots could provide more land in existing serviced areas and share costs, likely to be welcome by the relatively lowly-paid Zambians now living in the once affluent European high-cost areas (Mutale, 2004). This was one of the recommendations on improving access to land and housing having taken the phrase ‘multiplication by division’ from Bull (1992) who was proposing the subdivision of existing low-density plots in Lusaka. This situation is happening where once plots for single dwelling houses are subdivided after the owner develops semi-detached dwelling for rental income. From observation, the recommendation for the construction of high-rise flats from the Lusaka City State of the Environment Outlook Report has not been adopted though a few new re-developments have only increased to two storey residential buildings.

2.7 Critique of the Literature

There may not be an academically agreed definition of urban densification. However, densification relates to increasing use of land (Bersteinsson, 2014). This increase could be measured scientifically or socially. The scientific measures could be related to physical works such as extensions to buildings, re-developments, infill development and intensive building type (Bibby et al., 2018). The social measures are affected by aesthetics, the landscape, noise and building type (Forsyth, 2003; Roberts 2007; Dempsey et al., 2010) and do not alter the built form are sub-divisions, conversion of existing buildings, and re-use of vacant buildings (Bibby et al., 2018). The social measures are perceptions of density which can be based on residents’ subjective judgement of place (Pourdeihim et al., 2007).

The literature reviewed has shown how most of the densification is driven incrementally by owners of plots or through tradesmen they engage. In the Zambian cases, decisions

on densification and how to guide developers have been based on the views of professions without the residents' view.

2.8 Conceptual Framework

Galster (1985 cited in Mohit and Raja, 2014) recognised that residential satisfaction has been used as an indicator of emerging residential mobility, and hence, altered housing demands and neighbourhood change. He further stated that residential satisfaction has been used to assess residents' perceptions of inadequacies in their current housing environment. It was observed that development of additional units is a response to housing satisfaction status of residents (Amerigo and Aragonés, 1997; Aryani and Wahyuningsih, 2015). Since development of additional units is observed as an expression of resident's satisfaction with their housing environment, the study on the nature of densification in Chilenje incorporated observations on residential satisfaction.

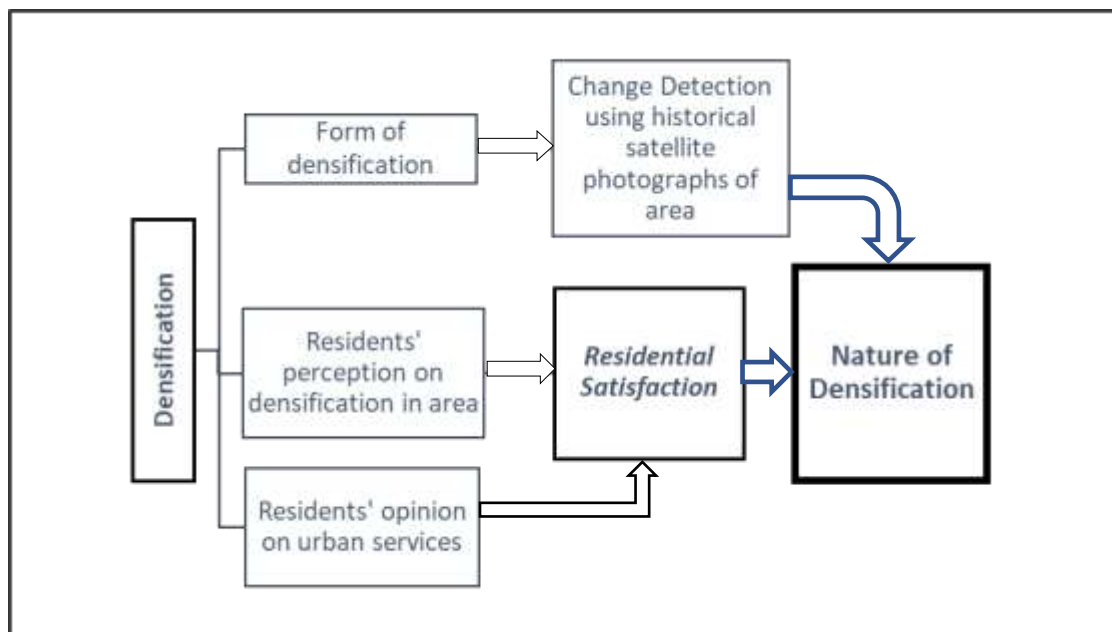


Figure 2.2 Conceptual Framework of the Study

Source: Author, (2022)

Deriving from studies by Pourdehimi et al. (2017), Bibby et al. (2018), Lategan and Cilliers (2015), Aryani and Wahyuningsih, (2015) and Govender et al (2011), Figure 2.2 shows that densification is understood by determining the physical form of densification in the area, and from the residents' views on the densification in the area. The residents' view on densification and their views on basic services provided in their area in depicts

the residential satisfaction of the residents. The residential satisfaction through residents' view of densification in their area and on the urban services in their area, and the evident depiction of historical developments in the area shows the nature of densification.

Mohit and Raja (2014) and Abidin et al. (2019) defined residential satisfaction as the feeling of contentment when one has or achieves what one needs or desires in a house. Krūmiņš et al. (2018) defined it as the match between an individuals' ideal environment and the objective and subjective characteristics of her/his actual environment. The concept of residential satisfaction rests on one or a combination of three theories; housing needs theories, housing deficit theories and psychological construct theory. Housing needs theory by Rossi (1955) mentions that households undergo different life cycles where the needs and aspirations change to conform to the housing and neighbourhood situation. This evolution may be uncomfortable for a household if their house and neighbourhood does not meet their needs and aspirations such that some households migrate to other places (Abidin et al., 2019; Mohit and Raja, 2014).

Housing deficit theory by Morris and Winter (1978) theorise that it is a lack of house condition itself and that individuals judge their housing conditions according to normatively defined norms (Mohit and Raja, 2014) which amount to households' own standards of housing. Households that are dissatisfied attempt to make in-situ adjustments by revising their needs and aspiration, improve their housing conditions through remodelling, or move to another place.

The psychological theory of residential satisfaction by Galster (1985) notes that individuals cognitively set a reference condition of their housing situation. Individuals get satisfied when their housing is close to this reference condition and the opposite will lead them to either adaption or modification (Mohit and Raja, 2014).

Mohit et al. (2014) observed that empirical studies on residential satisfaction examine characteristics of the user or resident (either the cognitive or behavioural) or characteristics of the environment, both physical and social. Characteristics of the user are socio-demographic and behavioural characteristics of the residents while characteristics of the environment are housing characteristics, and neighbourhood characteristic (Abidin et al., 2019).

Socio-demographic characteristics are determined by demographic of residents, socioeconomic of residents and includes elements such as age, gender, marital status income, duration of residence, tenure status, race, education, household size, job status etc. Behavioural characteristics are determined by residents' behaviour towards residential with elements such as mobility, modification, adjustment, adaptation, and maintenance culture. Elements such as number of rooms and sockets, size of rooms, dining, kitchen, and living, dry area, quality of house, toilet/bathroom, ventilation, parking, corridor, staircase etc are as housing and ancillary characteristics determined by the physical characteristics, support services, management factors and building quality features. Neighbourhood characteristics are determined by neighbourhood facilities, social environment, and public facilities present elements such as accessibility, safety and security, infrastructure, privacy, urban activity and noise, neighbours' relationship etc

The need to examine the resident or user is emphasised by Lupton and Power (2004) citing (Keller, 1968), in explaining that neighbourhoods are more commonly understood as being both physical and social characteristics such that analysis of neighbourhood change must include the changing characteristics, attributes or outcomes of residents (in aggregate) and also the interactions between residents, the systems of norms and rules and expectations that shape social life. Schwirian (1983) argues that it is the social characteristics that defines neighbourhood, making it distinct from a 'residential area', which has no or few patterned relations between residents (Lupton and Power, 2004). They state that residential areas may become neighbourhoods and vice versa depending on the extent and viability of the social relationships among residents.

CHAPTER 3: THE STUDY AREA

3.1 The City of Lusaka

Lusaka is in the central part of Zambia as shown in Figure 3.1. It is the administrative and commercial capital of Zambia. Lusaka started as a railway siding in 1905 (Mulenga, 2003) with crown land on either side of the rail (Schlyter, 2003b). Lusaka became the capital city because of its central location and good communication (Williams, 1983).



Figure 3. 1 Location of the City of Lusaka in Zambia

Source: Africa Guide, (2016)

3.2 Population of Lusaka

According to Williams, (1983) Lusaka in 1951 had a non-African population of 5,104 whilst a total of 13,238 Africans were recorded in employment. He further states that the overall population figures were difficult to estimate as early census were confined to the European, Asians and ‘Coloured’ populations. However, the population in 1969 was 83,625 and it continued to increase to 535,830 in 1980, 761,064 in 1990 and 1,084,703 in 2000 (CSO, 2004). The post-independence population increase recorded a growth rate of 18.4 percent between 1969 and 1980 (CSO, 2004). The population of Lusaka started increasing after independence when the use of travel passes was abolished and has been increasing since. The growth rate has been steady at 3.7 percent between 1980

and 1990, 3.6 percent between 1990 and 2000. Between 2000 and 2010, the population growth rate of Lusaka rose to 4.9 (CSO, 2012) though it projected to reduce to 3.8 between 2010 and 2020 (CSO, 2013c).

3.3 Brief Historical Development of Lusaka and Chilenje

Lusaka was founded on the Garden City Concept as augmented by Ebenezer Howard. The concept had contributed to a detailed classification of land-use zones in Lusaka, with rigid control of overlapping land uses (Collins, 1969). However, the form which the growing urban centre of Lusaka took was influenced by the land ownership, topography and geology (Rakodi, 1986). Since a broad zone of either side of the railway line was under the British Crown and particularly the sandstone ridge east of the railway line was most suitable for building.

Rakodi (1986: 202) states “along this ridge, Adshead, a Town Planning Professor who was commissioned by the colonial administration, suggested a location for government centre, and civil servants’ housing. The ridge was above flood level, while the slope of the land made natural drainage possible, the low density adopted made septic tank sanitation feasible and the wooded nature of the area made it relatively attractive for development. Adshead allocated land between the station and the government area for factories and stores, and for African housing at the foot of the ridge to the south-east of the Old Town, on the lower dolomites with surface rock outcrops and a liability to flooding”. In the absence of government capital funds, the project by Adshead was scaled down (Mutale, 2006). Bowling carried out the detailed planning and his plan formed the main working document for the construction of the new capital. In 1935, the half built new capital was declared open, the colonial administration saw it necessary to re-acquire from farmers land it had alienated. By then, some owners were subdividing their land for sale as residential plots, providing an opportunity for a semi-rural way of life preferred by some Europeans (Mutale, 2006). Gradually the spaces between the inconveniently scattered groups of buildings began to be at least partly developed.

The first housing for Africans was built in 1935, namely rondavels for single men in Old Kabwata followed in 1936 by Kamwala Government Village (rental housing) and

Mapoloto African Township (a small self-help housing scheme of serviced plots) (Rakodi, 2003). These areas were designated for men without their families, but the stabilisation debate of the 1940s gave rise to the first development of married quarters for Africans in Old Chilenje, the houses being mainly two-roomed and built of sun-dried brick with thatched roofs. These early houses were supplied with water, but had no electricity, and used pit latrines sanitation. According to Williams (1983), the early development in Chilenje started in 1945 with 3,109 houses spaciouly laid out around three communal facilities: a football field, market and shopping centre, and a tavern. These houses were rectangular two-roomed Kimberly brick houses under thatch which were later replaced by corrugated iron. The houses were provided with shuttered window openings. As early as 1983, Williams described these houses as having outlived their expected life, and that many were in a state of near collapse. One may be surprised to know that most of those houses still stand today.

In 1950 the settlement was extended eastwards with the construction of 1,067 houses in New Chilenje and occupied by civil servants. A further extension, Chilenje South, occurred about the time of independence, mainly of four-roomed houses with internal sanitation (Williams, 1983). The phases of development in Chilenje can quite clearly be seen by noting the distinction of these various house types. In 1950-52, 440 houses were developed in New Chilenje and Matero. New Chilenje was built on the site of Old Chilenje. When services such as water provision was moved from the local authority, individual households were expected to apply for internal water connection particularly those that once used communal water points.

3.4 Location of Chilenje

Chilenje Township is in the South-Eastern side of Lusaka bordered by Mosi-o-tunya Road in the East, Burma Road in the North, Sandulula Road in the West, and Chilimbulu Road in the South. This is shown in Figure 3.2. It is predominantly residential with two public primary schools, open play area and a commercial trading area. Some of the open spaces which bordered the north of the area along Burma Road has over time been designated for commercial use.

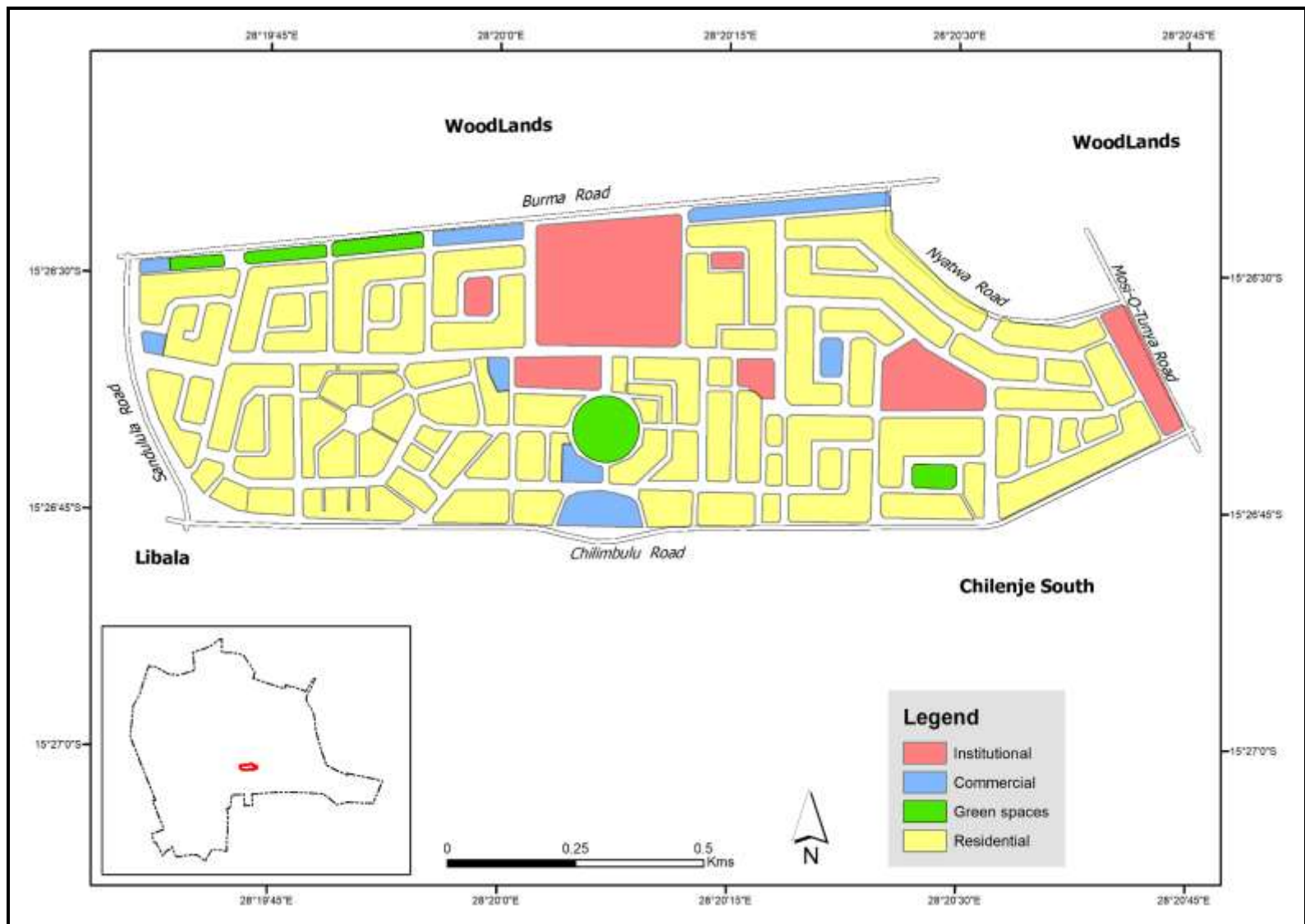


Figure 3. 2 Location and Boundary of Chilenje in Lusaka

Source: Author, 2018

3.5 Justification for Selecting Chilenje

Chilenje is a township that was built pre-independence to meet the increasing housing demand for African workers. According to Williams (1983) it was one of the early housing areas built to house an African with improved earnings. Old Chilenje was built in 1945 and the new Chilenje was built in 1950 at the site of the old Chilenje. After Independence in 1964, more housing units were built by the state in phases. At each stage or phase of development and housing construction, the design and size of the units and the plot coverage were similar. Most of the current houses in Chilenje are still the same houses built in 1950. The similarity of the units on a large scale makes it appropriate for the study in clearly identifying, defining and distinguishing any changes in the size of houses from the original house type and size. Some of the current residents have occupied the houses prior to the sale of houses to sitting tenants. These residents may provide better insight into the changes that could have occurred in the area over time.

3.6 Demography of Chilenje

The population of Chilenje ward, as at the 2010 Census of Population and Housing (2013a), was 52,220. This made 2.99 percent of the total population of the City of Lusaka which was recorded as 1,747,152 in the same year. Of the total population in Chilenje, females account for slightly over half the population at 27,853, which is 54.34 percent of the population in the area, while male were recorded as 24,367 (CSO, 2013a).

There are 358,871 households in Lusaka and 74,027 (20.6 percent) are female headed households, while 284,844 households are headed by males (CSO, 2013b).

3.7 Housing Units in Lusaka

Based on the 2010 Census (CSO, 2013b) Lusaka has 391,903 housing units. Of the total housing, 82.3 percent are occupied by single family households, 7.8 percent of the units have one household living in several housing units, 0.5 percent are shared housing units, 5.2 percent are housed in non-residential units, 3.2 percent of the housing units are vacant, and one percent were not contacted during the census (CSO, 2013b). The houses built by the Council had piped indoor water supply. The houses built earlier got their water from communal taps dotted in the residential area.

CHAPTER 4: METHODOLOGY

4.1 Introduction

This section outlines the research methodology used for the study. It looks at the research design, the data collection method, sampling method and sample size, data presentation and analysis, and limitations of the study.

4.2 Research Design

Case Study method allows investigators to retain the holistic and meaningful characteristics of real-life events – such as individual life cycles, organisational and managerial processes, neighbourhood change, international relations, and maturation of industries (Yin, 2003). The research design that was used in this study was a descriptive case study. A case study design was used to better contextualise the phenomena of study.

According to Baxter and Jack (2008), when the approach is applied correctly, it becomes a valuable method for research to develop theory, evaluate programs, and develop interventions. This study used the descriptive case study because it allows the retaining of meaningful events as narrated by some interviewees and the results are useful in determining interventions to issues observed.

4.3 Data Collection Methods

Both primary and secondary data sources were used for this study. Both qualitative and quantitative data were collected from relevant documents and articles, interviews and aerial imagery of the study area over time.

4.3.1 Primary Data

Primary data was obtained with the aid an interview schedule where house owners were interviewed. The houses occupied/and owned by the interviewees were observed as subjects of the research. In cases where the house owner had died, the widow or child was interviewed, and where the male owners were too old and ailing to talk and remember events, the wife was interviewed. In a few instances, where the owner was not available, it was the grandchild.

4.3.2 Secondary Data

Secondary data was acquired through various articles and books, and Google Earth historical imagery. Data from articles and books was reviewed to highlight the global and local interventions

regarding densification. The Google Earth historical imagery was used in ascertaining physical change in plot site coverage in a selected small part of the study area.

4.4 Sampling Method and Sample Size

Purposive sampling was employed in selecting respondents and houses for the interviews and observation respectively. This sampling method was chosen to meet respondents available for the interview and that met the required criteria. The major criteria for the sample element in the study was a house that has been transformed from the original design, and a plot where additional units were erected even when the original house size and design was not altered. According to Bernard (2002 in Tongco, 2007) there is no cap on how many informants should make up a purposive sample, as long as the needed information is obtained. A total of 45 houses made the sample for the study and observation, and one person from each of the houses made the sample.

At each of the houses that met the criteria, the location of the additional unit or alterations to the original house were noted. Then an interview with the owner was requested. Where the owner was not available, a resident of the house with background on when the family first moved into the house was interviewed. Where the owner or representative was not available, the house was removed from the sample.

4.5 Data Presentation and Analysis

Primary data was cleaned and entered in Microsoft Excel spreadsheet with a sheet of responses to each of the questions in the interview schedule. Based on the frequency of responses to each question, the themes were generated, and were in turn used to produce counts and percentages.

Visual analysis of historical satellite imagery from Google Earth imagery of the study area was done. The visual analysis was done by identifying the physical structures in the study area in three different years 2004, 2009 and 2016, and cumulatively comparing the structures from the base year. The year 2004 was the base year because that is the oldest image of the study area available on the open-source version of Google Earth. The satellite image for the year 2010 was supposed to be the second image for the study, as the median year between 2004 and 2016. The use of aerial photographs or satellite photographs in the study was important as they provide a unique resource to describe changes in vegetation and land cover over extended periods (Pinto et al, 2019). Additionally, sketches of the layout of structures on a plot were drawn to show which

parts of the plot were prone to new developments. Pictures of the houses were taken where permission was given.

4.6 Limitations of the Study and Research Validity

Data collection from the study area was undertaken between 09:00hrs and 16:30hrs during the working days of the week. The time of the day and days when interviews were conducted could also have some bias to the type of the data produced. This is so because very few young landlords were found at home during the week. This is evident in the age of the interviewees that formed the sample. The interviewee bias was countered by the fact that their houses, which were the major determinant of the sample type, met the criteria for the sample type required for the study.

CHAPTER 5: FINDINGS AND DISCUSSION

5.1 Introduction

This chapter highlights the findings of the research in relation to the nature of densification in a residential area, residents' perception of their area and impact of densification on services in an old Municipal residential area. With five sections in the chapter, the first and second segment presents the introduction and the samples' attributes. The third section outlines residents' perception of their area while the impact of densification on services is explained in the fourth section.

5.2 Sample Attributes

5.2.1 Sample House Type

There are different house types in Chilenje. One of the first house types in the study area have one entrance through the sitting room which is connected to a bedroom. Access to the kitchen is at the veranda shown in Figure 5.1.

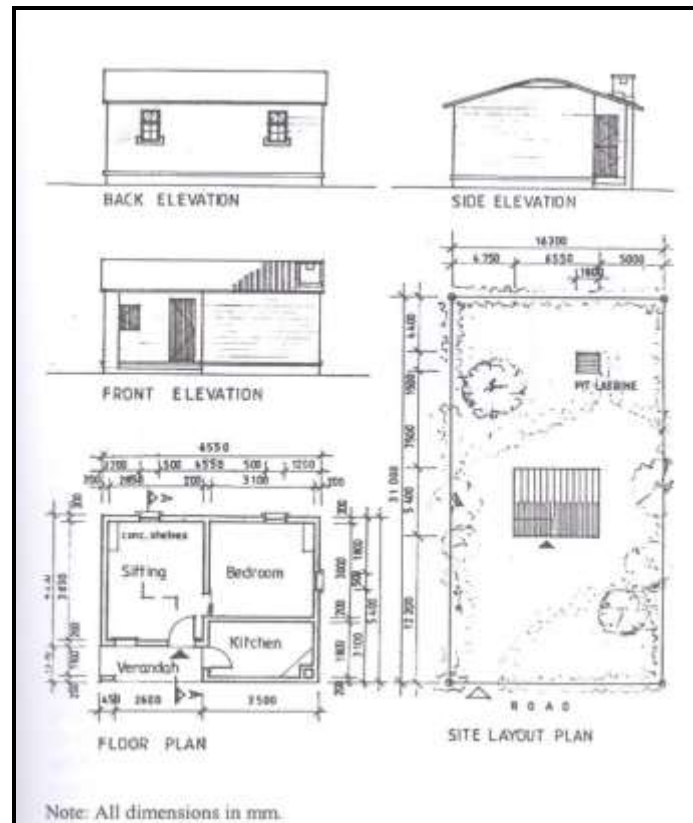


Figure 5. 1 Typical House Type For African Housing Areas

Source: Mutale, 2006

The dimensions of the house type shown in Figure 5.1 approximately 6.55 metres by 5.4 metres. (35.37 square metres). The plot size is 16.3 x 31 metres (505.3 square metres) as indicated on the site layout plan in Figure 5.1.



Plate 5. 1 Front and back view of a house in Chilenje

Source: Author, 2017

The house alone covered less than seven percent of the plot size which was a common occurrence in those days when the site coverage allowable in the size was less than 35 percent. This design of houses is common in most parts of the country and in Southern Africa as it was constructed to house the African labourers during the colonial period. A slightly different design from that in Figure 5.1 is the modified design shown in Plate 5.1.

The difference between the two house-types is the location of the convenience room. The house in Plate 5.1 has a toilet and bathroom attached to the house while the house in Figure 5.1 has a pit latrine located far from the house in the backyard. The ablution in Plate 5.1 were attached to the house by the first purchaser of the house to make it easily accessible from the house. The original houses had pit latrines as shown in Figure 5.1. The ablution in Plate 5.1 has a flush toilet which is connected to the municipal sewer line. This is evident of the observations by Basila (2005) that homeowners were free to improve the house.

5.2.2 Respondents

The study had a sample of 45 of which 29 were females 29 and 16 were males. Based on the responses provided, it was found that 33 percent of the respondents were at least 65 years old, while 20 percent were aged between 45-49 years, and 13 percent of the respondents were in the 35-39 years and 55-59 cohort. This is provided in Figure 5.2.

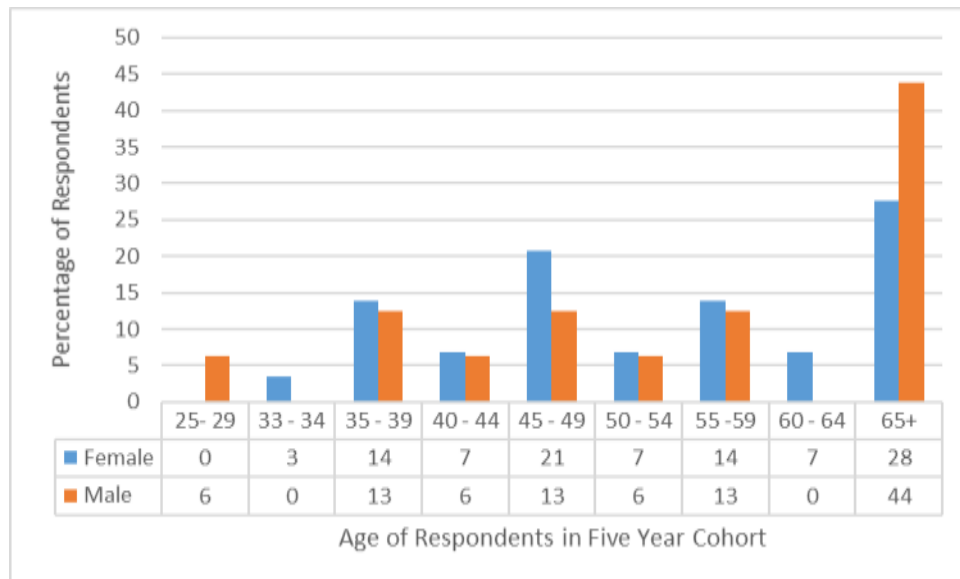


Figure 5. 2 Age Distribution of Respondents by Sex

Source: Field Data, 2017

The houses were sold in 1996, so those below the age of 35 were minors at the time of the sale of houses and possibly not the original purchasers of the house they occupy. Those between the age of 35 and 39 were teenagers at the time of the sale of houses. The age of the respondents who were minors at the time of purchase does affect the quality of responses obtained on knowledge of the residential area prior to the purchase of the houses. However, it was observed that most of the respondent are above the age of 40 and they have a better comparison of the neighbourhood.

The key persons targeted to be interviewed were house-owners. However, among the respondents were house-owners, children of the owner, wife of the owner and grand-child of the owner as shown in Figure 5.3.

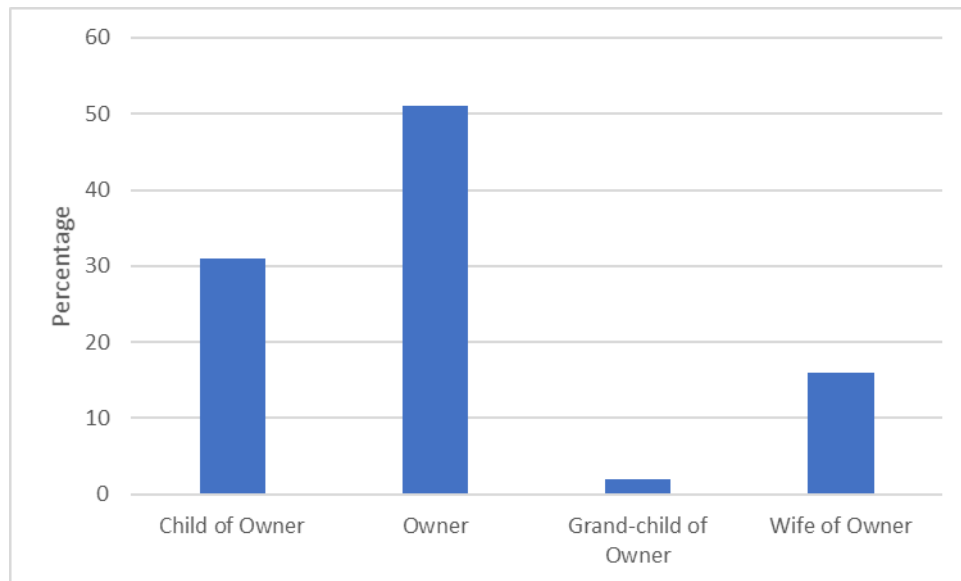


Figure 5. 3 Respondents and their Relationship to House-owner

Source: Field Data, 2017

Where the children were interviewed, the owner is deceased, and ownership had not yet been transferred. In such cases, the families agreed to not transfer ownership to a single family member/sibling for fear of not having access to the house. The fears of family members in Chilenje are like the concerns presented in a study by Butcher and Oldfield (2009) when they interviewed some women in Matero area of Lusaka. Such houses end-up being family-houses and are used as such. Unlike the findings in Matero where mainly extensions to existing houses were done and young people were living in the same house with the elderly house owners (Butcher and Oldfield, 2009), some older children in Chilenje have built structures on the plot near the family-house to help generate personal income or for themselves to occupy. A similar

case was evident where a grandchild was interviewed. This shows that since the sale of the houses, at least two generations of a family have been living on the same plot of land. There may be possibilities of over-crowding since the grandchildren stay on the same plot with the older family members.

Among the respondents, the widow was interviewed where the owner had died, and in two cases, the owners were too old and ailing to talk and remember events. The respondents were categorised as ‘wife of owner’ because the house ownership documents were still in the name of the husband.

The respondents were asked how the house they occupy was acquired. From Table 5.1, the study showed that 84 percent of the respondents bought the house from the Council, eight percent bought from individuals while seven percent were not sure. It can be observed that most respondents bought the houses from the Council and are still occupants of the houses.

Table 5. 1 How house-owner acquired the house

Seller	Year	Sale Price (ZMW)	Frequency	Percentage
Council	1996	0.0105	38	84
Individual	1998	8.00	1	2
Individual	2000	11,500.00	1	2
Family Member	2017	280.00	1	2
Individual	Not Sure	Cannot Remember	1	2
Not Sure	Not Sure	Cannot Remember	3	7

Source: Field Data, 2017

This could mean the area is convenient for the family to meet their residential needs, it could confirm what Mohit and Raja (2014) found that home-owners are more satisfied with their housing situation. Alternatively, it could mean that they have not had enough income to relocate to another neighbourhood or maybe even a bigger house. It could imply that even the little income they earn from tenants, for those that have leased their houses or built small units only, meets their basic needs.

The houses in Chilenje were Municipal houses. Municipal houses were regarded as better housing after independence as there was slow housing development in the country prior to 1991 when the economy became liberalised. The family houses built prior to independence were an improvement from the round-shaped houses for single African employees (Mukozomba, 2005). Figure 5.4 shows occupation of the house by the respondents in the study area was mainly

because it was a better house. While for some the house was provided by the employer prior to the termination of the employer-tie housing system, for others, it belonged to their parents.

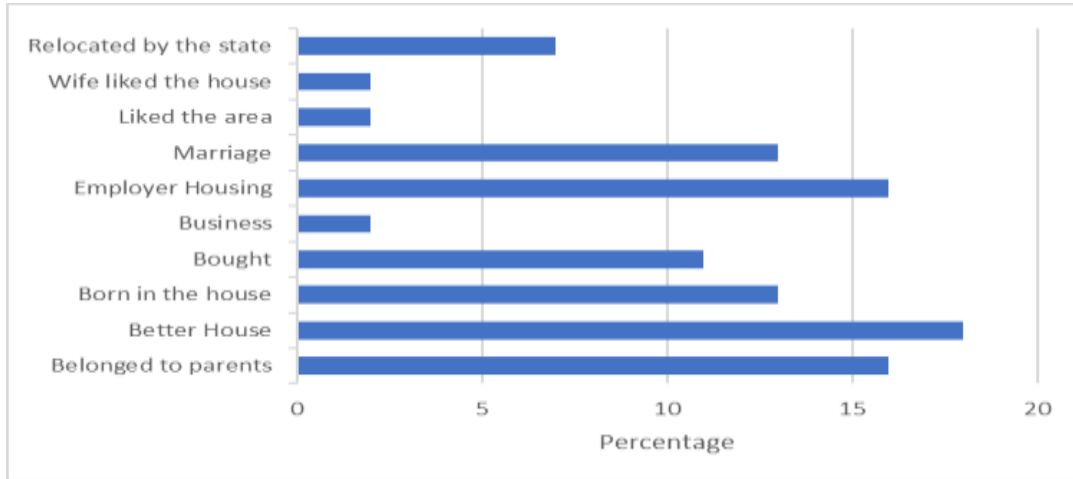


Figure 5. 4 Respondents Reasons for Living in the House

Source: Field Data, 2017

The 18 percent shown in Figure 5.4 demonstrated that a better house was a factor in the choice of house when they moved to Chilenje. From the findings as presented in Figure 5.4, it was observed that occupants of the houses in Chilenje were either born in the house, sitting tenants at the time of purchase, or relocated to the area by the state after the demolition of the round-shaped houses in areas such as Kabwata to make way for the construction of new housing units.

5.3 Nature of Densification

Most of the developments in the study area are residential in nature with a few retail shops in front-yard of the house along the boundary of the residential plot. The developments are all single storey. With reference to Plate 5.2, original houses are in yellow while the new developments from the original house sizes in the selected part of the study area in the year 2004 are shown in leaf-green colour. Developments between 2004 and 2010 are presented in blue while developments between 2010 and 2016 were coloured red. It can be observed that after six years, there was an increase in the number of structures which are coloured blue in the aerial image of the site in the year 2010.

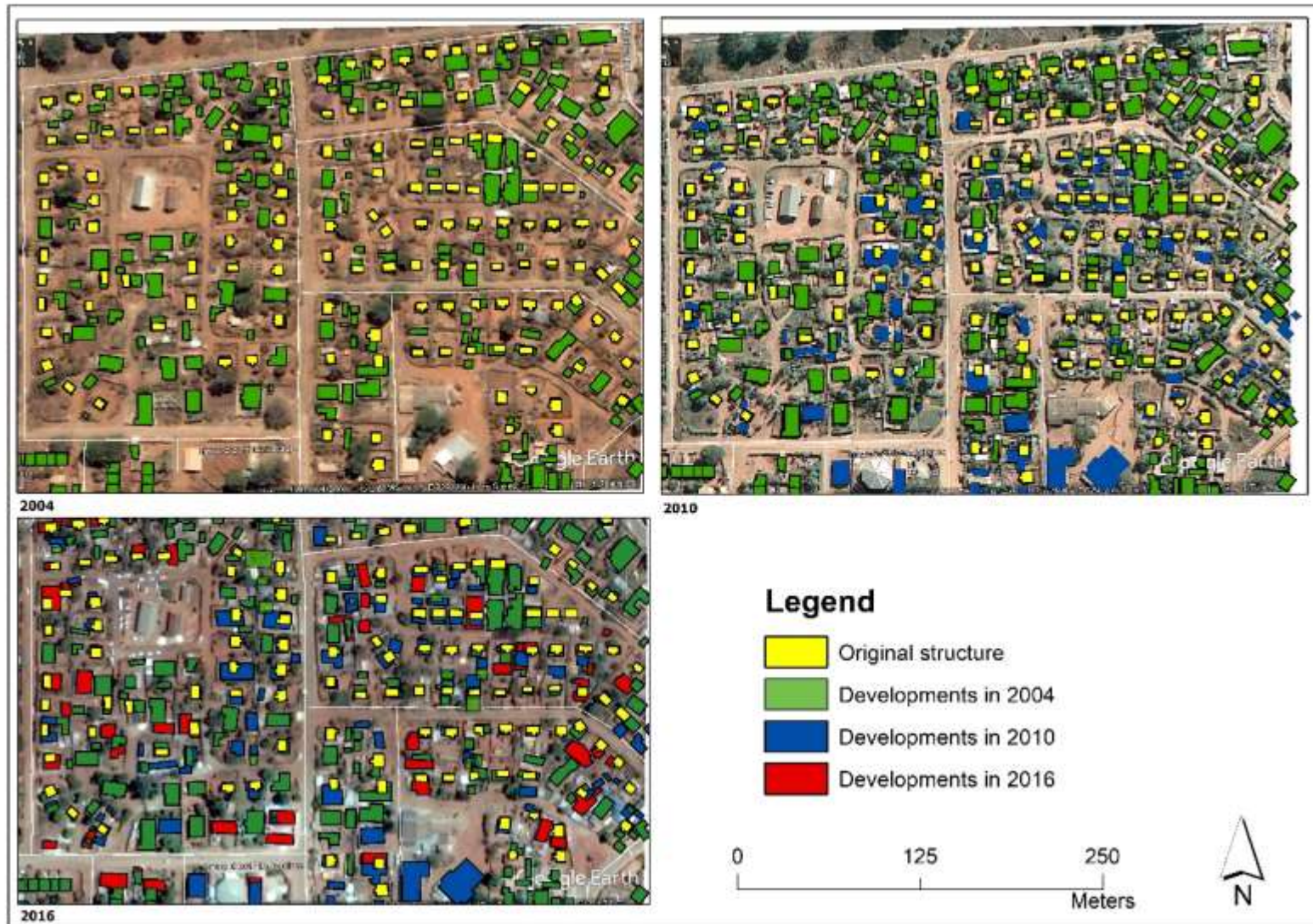


Plate 5. 2 Residential development in part of the study area
Source: Google Earth Historical Imagery (2016)

A further increase in the number of structures is shown in a red in the image taken in 2016. In 2010, it could be seen that a few developments indicated by the colour blue took place in relation to those in 2004, though they were more than the developments in 2016. The developments in 2016 are fewer than in previous years under observation possibly because most developments had already taken place. However, during the study 10 respondents from the residents had some incomplete structures and seven of them cited lack of financial resources as the reason for the stalled works. One of them started the construction works in 2012, two started in 2015, five in 2016 and two in 2017.

Generally, it can be observed that the new structures coloured green, blue and red in all the three years presented in Plate 5.2 are larger than the original structures. This implies a reduction in yard space for air circulation and recreation, and possibly unauthorised development on top of service infrastructure such as water and sewer lines. Yard space around a residential house in Zambia is important as most houses depend on natural ventilation and lighting. Since the images present an aerial view of part of the study area, where the original house is not visible on a particular plot, it could be so because the development is either a redevelopment or an extension that engulfed the existing walls of the original house.

5.3.1 Transformations

The transformations in the study area were extensions, redevelopments, and additional units/structures. There were some plots where additional structures were under construction during the field visit and a few that had stalled. The halted construction of the additional structures was attributed to a lack of funds to continue the works.

5.3.1.1 Extensions Observation

Extensions were made adjacent to the main house and usually positioned at the sides. Plate 5.3 shows an extension to the main house, turning it into a semi-detached house for additional income. The difference in roofing materials also shows that they were built at different periods of time. The extension's entrance is oriented different from the entrance to the main house.



Plate 5. 3 Extension to transform detached house to semi-detached house

Source: Field Data, 2017

Within the study area, some families occupy the whole house and extend it for more room. Extensions meant that the site coverage of the development has increased and there was a corresponding increase in the demand and use of utilities such as water and electricity since the number of users has increased. The extensions were mainly built with concrete blocks and roofed with corrugated iron sheets like the house in Figure 5.3.

5.3.1.2 Additional Units

The additional units in the study area as shown in Plate 5.4, Plate 5.5 and Plate 5.6 were built for different reasons as presented in Figure 5.5. From the study, 44 percent of the respondents built the units to provide income and 23 percent of them were for family housing.

Additional units at the transformed houses were built of either mud bricks or concrete blocks. This is somewhat better than the salvaged wood, corrugated iron and cardboard used in the study by Lategan and Cilliers (2015). The stand-alone additional units shown in Plate 5.4 on the left side of the main house are made of mud-bricks and occupied by relatives of the owner of the main house, while the units on the right side of the green house in Plate 5.5 are attached one room rental residential units built from concrete blocks.

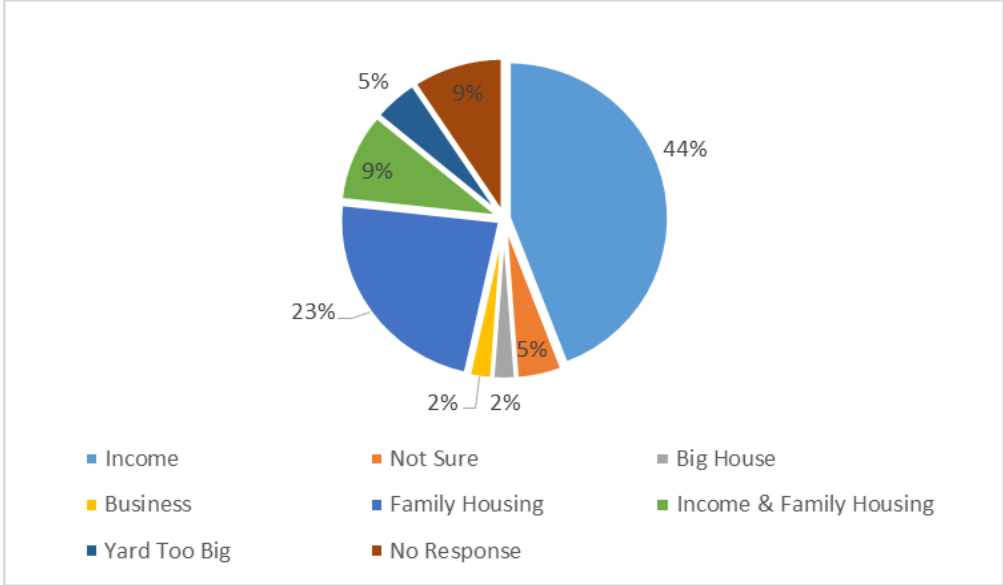


Figure 5. 5 Respondents reasons for constructing additional units

Source: Field Data, 2017

It could also be seen that even the opening on the wall of additional unit in Plate 5.4 used as a window is smaller than the approved minimum Building Regulations which should be not less than a third of the total internal floor area of a room.



Plate 5. 4 Mud-bricked additional units

Source: Field Data, 2017



Plate 5. 5 Additional unit of three rental rooms

Source: Field Data, 2017



Plate 5. 6 Shop and extension to original house

Source: Field Data, 2017

Plate 5.5 shows three one roomed attached units used to raise income. Some additional units were for commercial purposes and were mostly placed at the front portion of the yard as shown in Plate 5.6. The building materials ranged from thatch, metal fabricated sheets to the use of concrete blocks. These commercial units were used as small kiosks or shops by a resident of the house and in some cases, leased out at a monthly fee.

Though some homeowners used mud bricks in constructing the additional units, these self-built mud-brick structures do not meet the required minimum building standards as can be seen from the short height of the structure in Plate 5.4 in relation to the height of the main house.

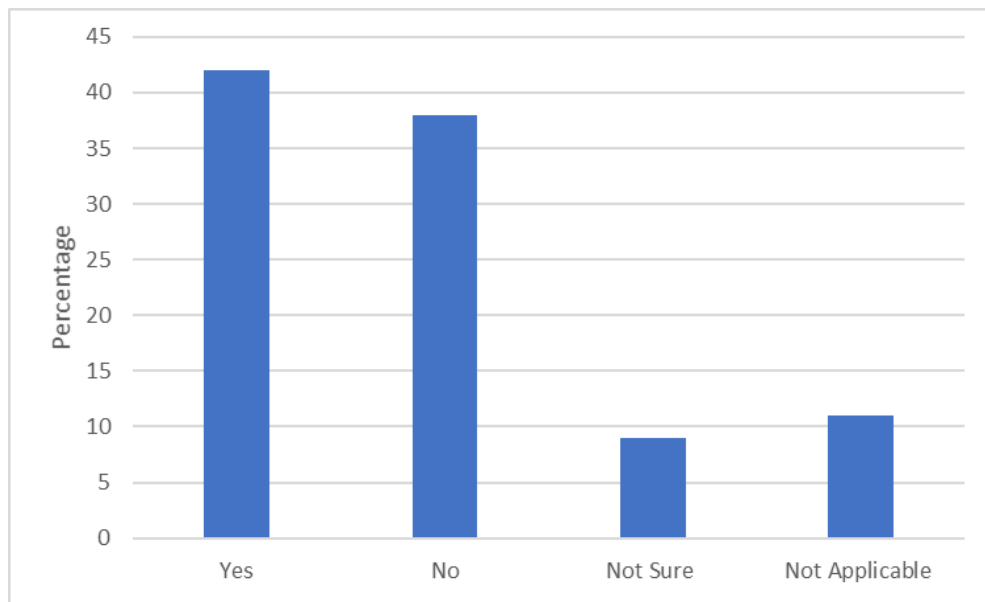


Figure 5. 6 Percentage of Respondents stated position on Planning Permission (Council Approval)

Source: Field Data, 2017

The use of concrete blocks, an approved material for construction, was used in the construction of some additional units. It was found that 42 percent of the respondents claimed to have obtained planning permission for the transformations on their residential plots as shown in the Figure 5.6. It can also be observed that 38 percent of the respondents had not obtained planning permission for the developments. According to the key informant, there are a few applications for planning permission compared to the count of new structures observed during random inspections. Proof of planning permission was not requested from the respondents so that the respondents are free to respond. Even though the consent for planning permission was not verified by asking them to produce proof but based on the responses, the findings are slightly

different from those in a study of Matero township of Lusaka by Butcher and Oldfield, (2009) where fewer residents claimed to have obtained consent for the building. The type of building materials used in construction used by most house owners and the distance between the buildings demonstrates that permission could not have been granted as they fell short of the minimum requirements for a development permit. This was verified by the key informant.

The low response to obtaining planning permission is evident in the area as most of the rental units in the study area use communal ablution with either a pit latrine, or a flush toilet. Most of them do not even have running water in their units for domestic use. The occupants of the rental units draw water from a tap within the yard for domestic use. Due to the increased size and number of buildings or housing units on a plot, some houses have reduced open space around their houses as play areas for children and for small backyard vegetable or fruit gardens. Such situations are typical of developments which Makachia (2005) considers contribute to environmental deterioration.

5.3.1.3 Re-development

Among the respondents, some had re-developed the house by demolishing the old houses and building new ones. There are different reasons given for demolishing the houses. Based on the responses, one house was re-built because the old one got burnt, while other were rebuilt because the owners wanted bigger houses and more room for their family. In both cases, the original owners of the houses redeveloped the houses on the same plots where the small ones stood. The family that demolished and built another could be considered affluent when compared to the other respondent that could only build rooms to house other family members.

5.3.2 Characteristics of the Transformations

From observations during the survey, the transformations on plots are located on all the sides of an existing house for extensions and additional units.

Type of Residential Units

The type of residential units that were added on a single plot with the initial house in the study area were either rooms or houses. The numbers of the residential units by type from the survey are presented in Figure 5.7. In Figure 5.7 “R” stands for the number of rooms in a housing unit, while “B” stands for the number of bedrooms in the additional house. In Figure 5.6, most of the units are one block with a two roomed housing unit (1x2R) and one block with a one roomed

housing unit (1x1R). The study also revealed that the one by two roomed (1x2B) housing units were common in the area. The dominance of roomed dwelling units is similar to the situation presented of Kathmandu by Bajracharya et al. (2015) and it seems not to be foreign in countries in the global South (Tipple, 2000; Schlyter, 2003b; Okeyinka, 2014; Kiai, 2003). The low number of dwelling units built in the Chilenje could reflect a cultural preference to live in multi-habitation, unavailability of space for a slightly large dwelling, or limited finances.

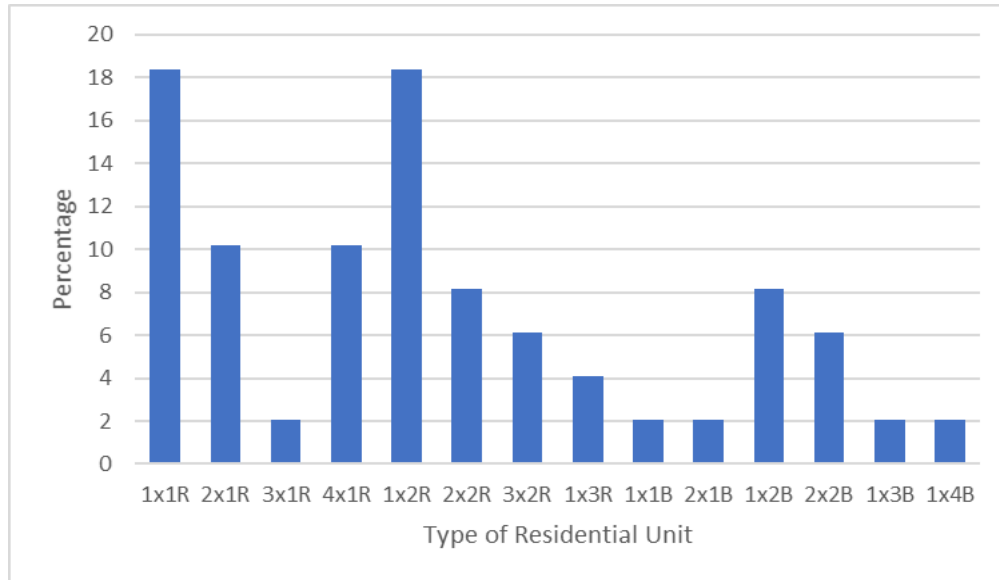


Figure 5. 7 Type of Additional Residential Units
Source: Field Data, 2017

Cost of Renting a Housing Unit

From the data collected and presented in Figure 5.8, it was observed that the respondents' highest income from the properties at each plot was from leasing the main house at K700.00 and K1, 000.00 per month. The monthly rental charged by most of the respondents for an additional residential unit is K500.00 followed by K300.00 and K800.00 per month. This situation in Figure 5.7 could be classified as multi-habitation and as Figure 5.8 does confirm that the form of transformation allows inexpensive accommodation.

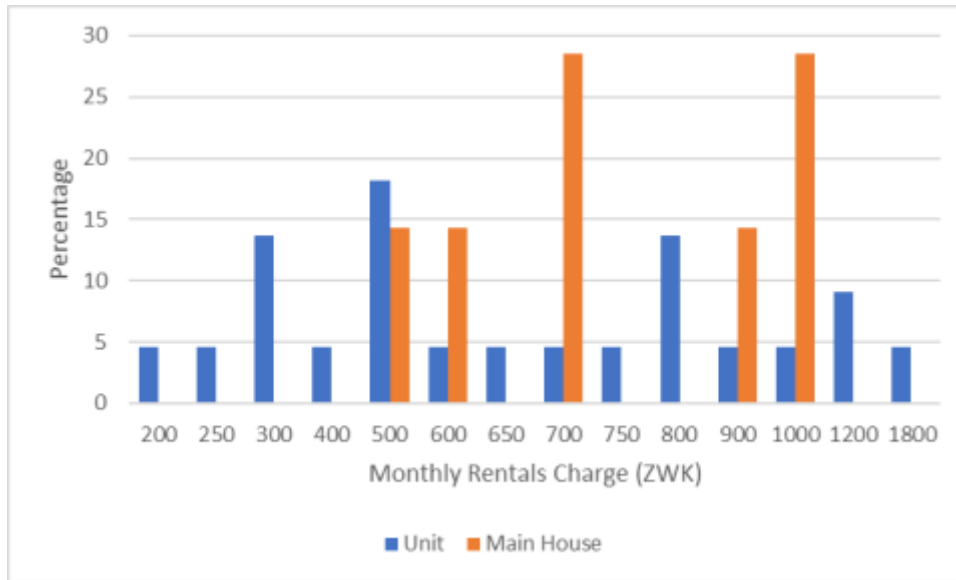


Figure 5. 8 Monthly Rentals Charges for Residential Units in Percentages

Source: Field Data, 2017

The low cost of construction and good income should be motivating house owners to provide this kind of housing. This is different from the situation in Kathmandnu where the cost of construction was unaffordable for families (Bajracharya et al., 2015). In some cases, some family members that had built rooms for personal occupation lease them out when they find alternative accommodation. There are also cases where some family members have built a unit as a way of having something of their own at a place they call their home.

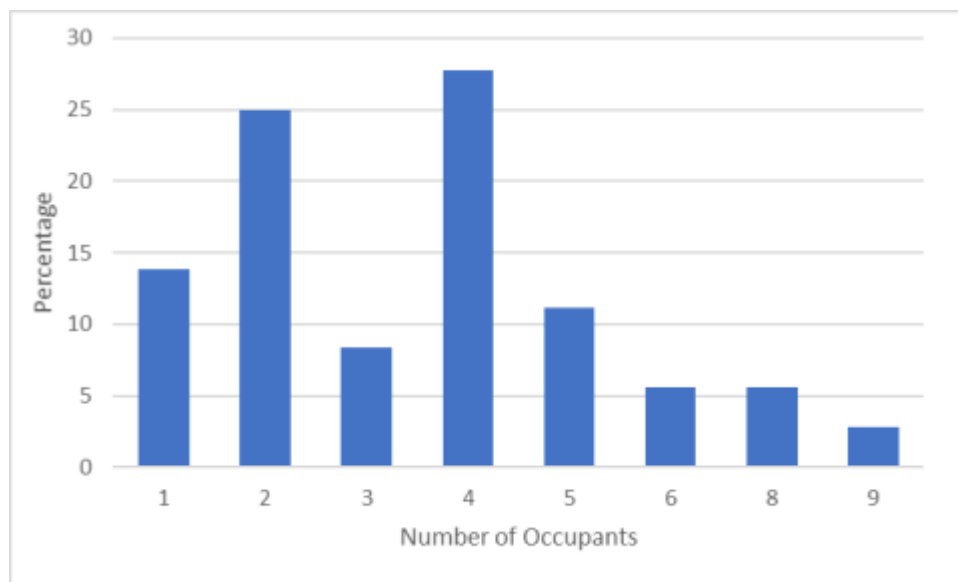


Figure 5. 9 Number and Percentage of Occupants in Additional Units from the Responses

Source: Field Data, 2017

The mix of having more than one household on a plot implies that there is an increase in the number of people occupying the premises. From the responses, the largest number of occupants in additional units is nine (09). The nine people are occupants in a bigger house that has been built on the same plot with the original small house. During the survey, it was observed that the bigger house housed three generations; initial owner who bought from the council, children of the initial buyer of the original house and some of the grandchildren. The most frequent number of occupants is four (04) as shown in Figure 5.9. Four is the average number of occupants in the additional rooms leased out for income on plots.

5.4 Residents' Perception of the Residential Area

The longest occupation of a house from the study is 57 years as shown in cohort 51-60 years of Figure 5.10. The largest fraction of the sample at nine percent was those that have occupied the house for 47 years. Figure 5.10 shows that two percent were not sure of how long they have stayed in the house while about four percent could not remember. Though many respondents had lived in the area for a longer period of time, they perceived their residential area as the same or unchanged which could be contrary to the expectation of a household that had undergone different housing needs life cycles as propagated by Mohit and Raja (2014).

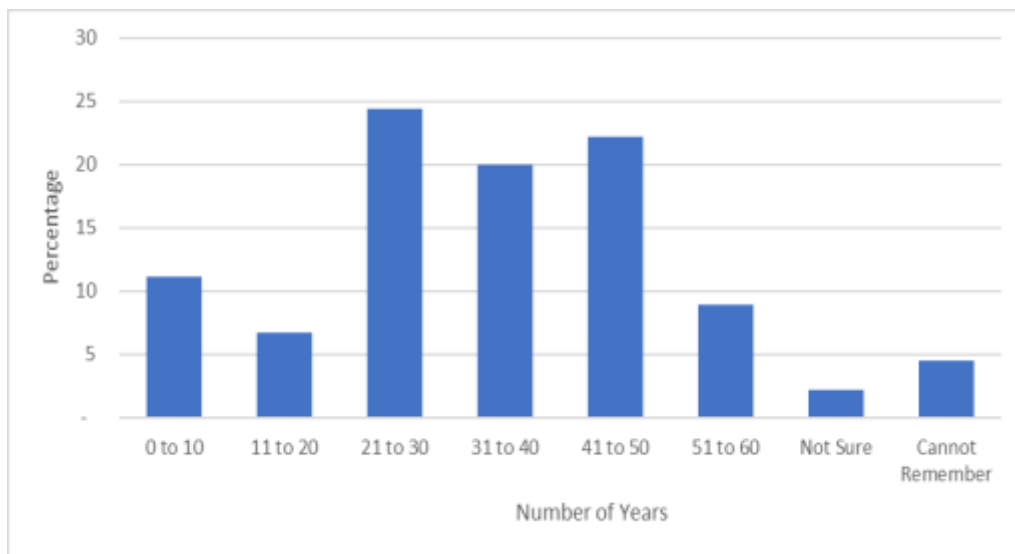


Figure 5.10 Number of Years Spent in House by Respondent

Source: Field Data, 2017

On how the respondents perceived the residential area, one of the respondents mentioned that the economy has not changed much because things have become a little more expensive. The

respondent further mentioned that the lots where they practiced farming in the past have turned into residential developments. This has led to people making changes within their available spaces

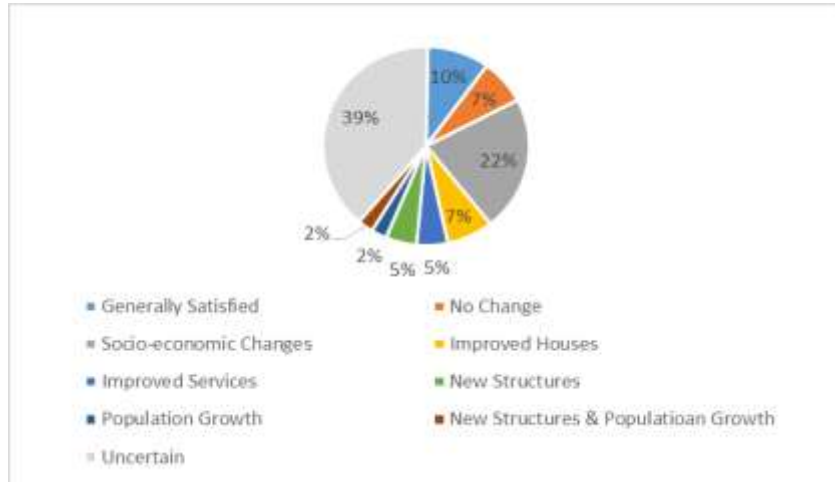


Figure 5. 11 Perception of changes in the residential area by Respondent

Source: Field Data, 2017

Generally, as shown in Figure 5.11, residents’ perception ranged from responses like satisfaction, socio-economic challenges, improved services, improved houses, new structures, population growth, or that the neighbourhood has not changed, or they were generally satisfied with it. The socio-economic changes identified were that things were expensive despite availability of commodities, some people have leased out their houses, theft and drug abuse by youths, lack of jobs, loss of sense of community, and that most of the older people have died.

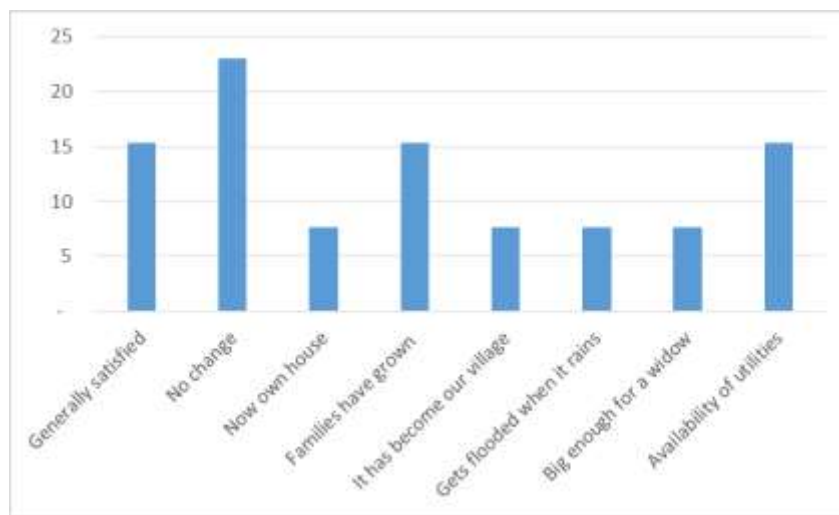


Figure 5. 6 Perception of changes to the house by Respondent

Source: Field Data, 2017

From the responses in Figure 5.12 that were obtained on the area, three residents said the area has not changed, while two residents said that they now have utility services, two thought their families have grown and need to be accommodated, one respondent said “we consider this area as our village”. Based on responses presented, by those satisfied with the environment and those with a positive outlook of their housing, it can be observed that some residents have become attached to their residential area. Some residents are still dependent on their parents and possibly do not have a choice of where to reside (Butcher and Oldfield, 2009).

5.5 Impact of Densification on Services in the Study Area

The impact of densification from the responses is based on the cost of housing and the way payment for services is made at the transformed houses. The visual analysis of the physical structures of the residential area presented using historical imagery from Google Earth in Plate 5.2 shows that the aesthetics of the area have been changing over time. These changes can be anticipated to have been related to electricity and water supply lines, and in the managed of refuse generated at each residential dwelling.

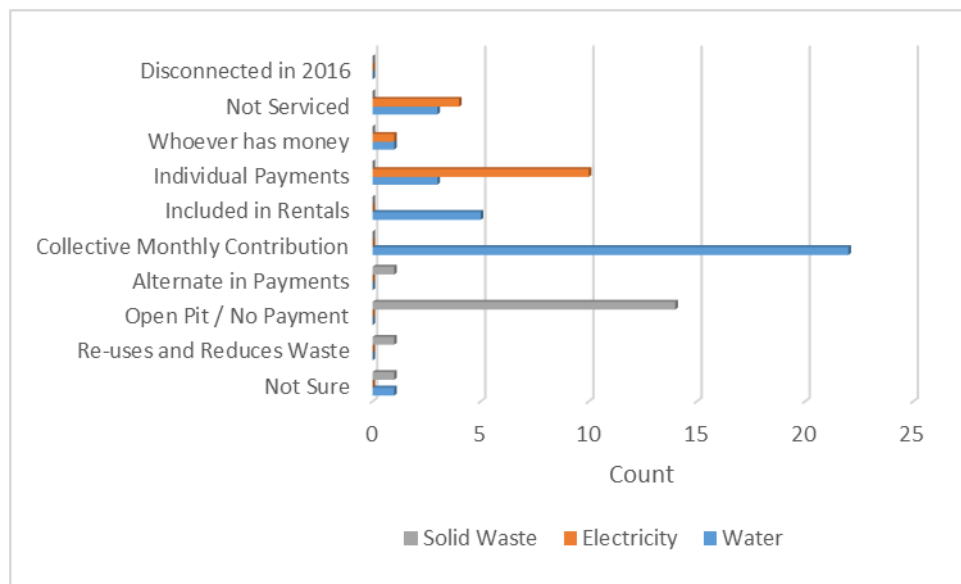


Figure 5.7 Responses on Basic Services

Source: Field Data, 2017

All water supply and electricity supplied to residential areas in Lusaka is provided at a fee to the users. In Chilenje residential area, both water and electricity are supplied on a prepaid system for the service. When service providers are serving a plot in an area with single dwelling units, it is assumed that they are serving one household. However, with the occupation of more than one

dwelling unit on a specific plot, the existing service database on the number of clients being served may be underestimated.

It can be seen in Figure 5.13 that collective monthly contribution among the residents in the additional dwelling units is common with water supply followed by electricity. This is contrary to the findings by Govender et al. (2011) in their study where residents of the main houses charged tenants for water usage when the water was supplied to their houses for free. One interesting observation is that collectively monthly contribution of fees for water supply is the prevalent mode of paying for the service.

Figure 5.13 also shows that there are some residents who neither have water nor electricity supply. The reason is that the area did not have these services. Occupants that bought the houses had to apply and pay for the houses to be supplied with water and electricity from the respective service providers. Some occupants do not have these services because they could not afford the connection and user fees, therefore affirming the findings by Makasa (2010) that may poor people could never afford to pay for service. There is evidence that densification will take place because of the availability of services. Nonetheless, availability of basic services to an area does not guarantee supply to a household that cannot afford to pay for the service. The findings also revealed that two respondents had no piped water since the year 2016 after a disconnection for non-payment for the post-paid service then. This could indicate that there are some households in Chilenje that have low incomes such that they cannot even pay for essential services like water and electricity supply.

5.6 Summary

The house types in the study area improved during the various phased constructions of the house sites. The initial houses were two rooms with ablution outside. The number of rooms in later houses increased and they had indoor plumbing and piped water supply. With the sale of public housing to sitting tenants in 1996, many of the current tenants are the ones that bought the houses and those that still occupy the house the parents bought from the Council.

From the google images analysed in the study, it was observed that from 2004 to 2016, there was a gradual reduction in the residential yard space on properties in the study area. This was necessitated by the increasing construction of additional housing units on the properties to

accommodate the large family size and/or as income for the household. A few of the additional units were built by a family member as their stake at the family house or residence for additional income. House extensions and on a smaller scale re-development also contributed to the reduction of yard space.

Most of the additional units and extensions were one or two rooms rentals with communal ablution and toilets for residential purposes. The monthly rentals were K300, K500 or K800. These rooms were occupied by two or four persons. Where the home-owners occupied the rooms, the main house was rented at K700 or K1000.

When asked on their perception of the neighbourhood, most of the respondents did not give their perceptions of changes in the neighbourhood possibly because they were children or dependants of the initial house purchases. Nonetheless, there was a general opinion that things were tough. Slightly contrary to the residents' perception of the neighbourhood, there was a sense of place among respondents when asked on their perception of the house they lived in.

Payment for services such water supply, electricity supply, and refuse collectively were collectively done by households. However, the majority use open pits for refuse disposal. With the reduction in yard space, there will be no space to accommodate an open refuse pit.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The purpose of the study was to determine the nature of densification in built up area. This was addressed through three objectives which sought to understand the forms of densification in Chilenje, to ascertain residents' perception of the density in the study are and to determine the impact of densification on services provided to residents in Chilenje.

6.2 Conclusion

The purpose of the study was to determine the nature of densification in the built-up areas of Lusaka. The objectives of the study were to understand the forms of densification taking place in Chilenje, to ascertain residents' perception of the density in the study area, and to determine the impact of densification on services provided to residents in Chilenje.

In line with the first objective, the study revealed that one room dwelling units were built by residents on site for either family occupation or to generate income. Other forms of housing transformation such as extensions to the existing house and renovations did occur but were not that prominent in the study area. Further, transformation of houses was found to continually take place in Chilenje.

Under the second objective, the residents of Chilenje noted that the density of the area has changed. This was evident in the new structures built, improved houses, improved services, population growth, high cost of living, homes have been leased out, loss of community cohesion, theft and drug abuse among youths and lack of jobs.

Lastly, the area has access to basic services and the single access services are accessed by several households living on one plot.

6.3 Recommendations

Based on the results of the study, it is recommended that:

- a) The formulation of densification policies and strategies of an area during the preparation of local area plans, a planning authority needs to be cognisant of planning needs that are

appealing to residents in a planning area such as the type of housing units on demand and its estimated cost.

- b) The Council should intensify inspection on development in the low-cost area so that the type, quantity and quality of new dwelling units conform to the minimum legal standard and that they do not infringe on utility service lines.
- c) The service providers may also have to undertake visits to their customers to ensure compliance and improve their records of customers served.

For future research, I recommend that a comparative study on the use of yard space by original purchasers and the second generation of property owners in the former public houses be undertaken.

REFERENCES

- Abidin, N.Z., Abdullah, M.I., Basrah, N. and Alias, M.N., 2019, November. Residential satisfaction: Literature review and a conceptual framework. In *IOP conference series: Earth and environmental science* 385(1), IOP Publishing.
- Aduwo, B. E., Ibem, E.O. and Opoko, P. A., (2013) Residents' Transformation of Dwelling Units in Public Housing Estates in Lagos, Nigeria: Implications for Policy and Practice. *International Journal of Education and Research*, 1(4), 5-20.
- Al-Dail, M. A., (1998) Change Detection in Urban Areas using Satellite Data. *Journal of King Saud University-Engineering Sciences*, 10(2), 217-227.
- Aryani, S.M. and Wahyuningsih, I.E.S., (2015) The house design transformation: the preferences and the patterns. *Procedia Environmental Sciences*, 28.717-724.
- Bajracharya, A., Pradhan, P., Amatya, P., Khokhali, B.B., Shrestha, S. and Hasan, A., (2015) Planning for affordable housing during densification in Kathmandu. *IIED*, London.
- Basila, C., (2005) Zambia's housing scheme of the mid 1990s: Have the poor been really empowered? Trondheim: Norwegian University of Science and Technology. Masters' Thesis
- Baxter, P. and Jack, S., (2008) Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report* 13:4, 544-559.
<http://www.nova.edu/ssss/QR/QR13-4/baxter.pdf>
- Bergsteinsson, F., (2014) Is Urban Densification a Reachable Goal? The Case of Eternitten. Aalborg University.
- Bibby, P., J. Henneberry and Halleux, J., (2018) Under the radar? 'Soft' residential densification in England, 2001–2011 *Environment and Planning B: Urban Analytics and City Science* 0(0) 1–17. [Journals,sagepub.com/home/epb](https://journals.sagepub.com/home/epb)
- Brewer, K. and Grant, J. L., (2015) Seeking Density and Mix in Suburbs: Challenges for Mid-sized Cities. *Planning Theory and practice* 16:2, 151-168.
- Bull, T., (1992) Multiplication by division *Profit* October, 11-12.

Butcher, S. and Oldfield, S., (2009). De facto v/s de jure home ownership: Women's everyday negotiations in Lusaka and Cape Town. *Feminist Africa*, 13(4).

Carlow, V. M., (2014) Limits- Urban Density and Mobility Networks in West Berlin during the Period of Containment. *Sustainability*. 6: 7452-7465.

Central Statistical Office (2004) 2000 Census of Population and Housing. Lusaka Province Analytical Report. Lusaka, Central Statistical Office.

Central Statistical Office (2012) 2010 Census of Population and Housing Population. Summary Report. Lusaka, Central Statistical Office.

Central Statistical Office (2013a) Lusaka Province, 2010 Census of Population and Housing Descriptive Table. Series A – D. Lusaka, Central Statistical Office.

Central Statistical Office (2013b) Lusaka Province, 2010 Census of Population and Housing Descriptive Table. Series F – I. Lusaka, Central Statistical Office.

Central Statistical Office (2013c) 2010 Census of Population and Housing. Population and Demographic Projections 2011 – 2035. Lusaka, Central Statistical Office.

Collins, J., (1969) Lusaka: The Myth of the Garden City. *Zambia Urban Studies*. Institute for Social Research, University of Zambia.

Cuff, D., T. Higgins and Dahl, P. J., (Ed.s) (2010) *Backyard Homes*. CityLAB, UCLA Department of Architecture +Urban Design. Los Angeles.

Dempsey, N., C. Brown, S Raman, S. Porta, M. Jenks, C. Jones and G. Bramley (2010) 'Elements of Urban Form'. Jenks M. and Jones C. (Ed.s) *Dimensions of the Sustainable City*. Future City 2. 21-51, London: Springer.

El-hadj, M. B., Faye, I. and Geh, Z. F., (2018) The housing sector in Africa: Setting the Scene. In *Housing Market Dynamics in Africa* 1-21. Palgrave Macmillan, London.

Fataar, R., (2016) *Densification and the Ambition for a Democratic City*. Paper presented at the No Cost Housing Conference, ETH Zurich.

Forsyth, A., (2003) Measuring Density: Working Definitions for Residential Density and Building Intensity. *Design Brief*, No. 8. Calumn, University of Minnesota.

Free Dictionary (2012)

[densification](https://www.thefreedictionary.com/densification)

Govender T., J., M. Barnes and Pieper, C. H., (2011) The Impact of Densification by Means of Informal Shacks in the Backyards of Low-Cost Houses on the Environment and Service Delivery in Cape Town, South Africa. *Environmental Health Insights* 5:23-52.

Government of the Republic of Zambia (GRZ), (2015) Urban and Regional Planning Act No. 3 of the Laws of Zambia. Lusaka, Government Gazette Printers.

Hao, P., (2012) Spatial Evolution of Urban Villages in Shenzhen. Faculty of Geosciences. Utrecht University.

Japan International Cooperation Agency (JICA), (2007) *Comprehensive Urban Development Plan for the City of Lusaka*. Ministry of Local Government and Housing and Lusaka City Council.

Jenks, M., (2000a) Appropriateness of the Compact City Concepts to Developing Countries. In Jenks M. and Burgess R. (Ed), *Compact Cities: Sustainable Urban Forms for Developing Countries*. London: Spon Press: 343-350.

Jenks, M. (2000b) 'Sustainable Urban Forms in Developing Countries?' In Jenks M. and Burgess R. (Ed), *Compact Cities: Sustainable Urban Forms for Developing Countries*. London: Spon Press: 343-350.

Jenks M. and Jones C. (2010) *Dimensions of the Sustainable City*. Future City 2. London: Springer.

Kiai, S. K. (2013) *Sustainable Housing Densification in Kileleshwa: Nairobi, Kenya*. Unpublished MA Thesis, University of Nairobi.

Knauder, S. (1982) *Shacks and Mansions*. Lusaka: Multimedia.

- Krūmiņš, J., Sechi, G. and Berzins, M., (2018) Residential satisfaction and mobility behaviour among the young: insights from the post-Soviet city of Riga. *Belgeo. Revue belge de géographie*, 3.
- Kyttä, M., A. Broberg, T. Tzoulas and Snabb, K., (2013) Towards contextual sensitive urban densification: location-based softGIS knowledge revealing perceived residential environmental quality. *Landscape and Urban Planning* (113)30-46, Elsevier.
- Lategan, L. G. and Cilliers, E. J., (2015) South Africa's informal backyard rental sector through the lens of urban resilience and sustainability. *WIT Transactions on Ecology and the Environment*, 193, 847-858.
- Lemanski, C., (2009) Augmented informality: SA's backyard dwellings as a byproduct of formal housing policies, *Habitat International*, 33(4), 472–484.
- Lupton, R., and Power, A., (2004) What we know about neighbourhood change: a literature review.
- Lusaka City Council (LCC), (2008) *Lusaka City State of the Environment Outlook Report*. Environmental Council of Zambia.
- Makachia, P. A., (2005) Influence of house form on dweller-initiated transformations in urban housing. XXXIII IAHS World Congress on Housing Transforming Housing Environments through Design September 27-30, 2005, Pretoria, South Africa.
- Makasa, P., (2010) *The 1996 Zambia Housing Policy*. Delft University.
- Mohit, M. A. and Raja, A. M., (2014) Residential Satisfaction – Concepts, Theories and Empirical Studies. *Planning Malaysia: Urban Planning and Local Governance III*, 47-66.
- Mukozomba, F. B., (2005) Urban Settlements in Zambia. In: Gonzalez, S. A (Ed.) *Cities Divided: Spatial Segregation in Urban Africa*. Barcelona: ACOPHE, 142-151.
- Mutale, E., (2004) *The Management of Urban Development in Zambia*. Ashgate Publishing Limited.

Mwimba, C., (2002) *The Colonial Legacy of Town Planning in Zambia*. Paper to the South African Planning Institution International Conference on 'Planning Africa 2002': 18 – 20 September 2002, Durban, South Africa.

Nastasi, B and Diana, L., (2014) *Redevelopment and Densification of Public Housing Megastructures: Cohousing as a Transition Policies Tool*. Cohousing. Programs and projects for the redevelopment of existenteng heritage. Roma, October 2014.

Nguluma H. M., (2003) *Housing Themselves: Transformations, Modernisation and Spatial Qualities in Informal Settlements in Dar es Salaam, Tanzania*, Doctoral Thesis, Department of Infrastructure p.106 Division of Urban Studies.

Ogura, M., (1991) *Rural-Urban Migration in Zambia and Migrant Ties to Home Villages*. *The Development Economies*, XXIX-2 June.

Okeyinka, Y., (2014) *Multi – habitation: A form of Housing in African Urban Environments*. *IOSR Journal of Environmental Science, Toxicology and Food Technology Volume 8, Issue 4 Ver. II: 21-25*.

Perrault, C. A., (2012) *Assessing Urban Density A Multi-dimension Model*. New-York, Columbia Graduate School of Architecture (Unpublished thesis).

Pinnegar S., Randolph. B. and Freestone, R., (2015) *Incremental urbanism: Characteristics and implications of residential renewal through owner-driven demolition and rebuilding*. *Town Planning Review* 86 (3): 279–301.

Pinto, A.T., Gonçalves, J.A., Beja, P. and Pradinho Honrado, J., (2019) *From archived historical aerial imagery to informative orthophotos: A framework for retrieving the past in long-term socioecological research*. *Remote Sensing*, 11(11), 1388.

Pourdeihimi S., R. Madani and Mousavinia, F., (2017) *Physical Factors Affecting Perception of Density in Residential Environments, A Case Study of Residential Quarters in Mashhad*. *Journal of Iranian Architecture Studies* 1(11): 43-61.

Rakodi, C., (1986) Colonial Urban Policy and Planning in Northern Rhodesia and its Legacy. *Third World Planning Review* (8)3.

Richardson, H. W., Bae, C. C. and Baxamusa, M., (2000) 'Compact Cities in Developing Countries: Assessment and Implications' In Jenks M. and Burges R. (Ed), *Compact Cities: Sustainable Urban Forms for Developing Countries*. 25-36. London: Spon Press.

Roberts, B. H., (2007) Changes in Urban Density: Its implications on Sustainable Development of Australian Cities. https://sallan.org/pdf-docs/OZ_changesinurbandensity.pdf.

Schlyter, A., (2002) *Empowered with Ownership: The Privatisation of Housing in Lusaka* Institute of Southern African Studies.

Schlyter, A., (2003a) *Multi-Habitation: Urban Housing and Everyday Life in Chitungwiza, Zimbabwe*. Uppsala: Nordic Africa Institute.

Schlyter, A., (2003b) The Privatisation of Public Housing and the Exclusion of Women: A Case Study in Lusaka, Zambia. *Gender and Urban Housing in Southern Africa: Emerging Issues*.

Schlyter, A., and Tran, H. A., (2005). Unequal impacts of privatisation of housing. Cases of Hanoi and Lusaka. In A paper presented at an international workshop on Everyday Realities of 'Globalising' Cities in Africa, Nordic Africa Institute, Uppsala, Sweden.

Shapurjee, Y. and Charlton, S., (2013) Transforming SA's low-income housing projects through backyard dwellings: intersections with households and the state in Alexandra, Johannesburg. *Journal of Housing and the Built Environment*, 28(4), pp. 653–666, 2013.

Sivam A., Karuppanan, S. and Davis, M. C., (2012) Stakeholders' Perception of Residential Density: A Case Study of Adelaide, Australia. *Journal of Housing and the Built Environment* 27: 473-494.

Smith, M. R., (2009) Planned Densification. *Urban Land Magazine* June 2009.

Tapias Pedraza, E., Kunze, A., Roccasalva, G. and Schmitt, G., (2013) Best Practices for Urban Densification: A decision-making support process using microclimate analysis methods and

parametric models for optimizing urban climate comfort. In *eCAADe 2013 computation and performance: proceedings of the 31. International Conference on Education and Research in Computer Aided Architectural Design in Europe; 18-20 September 2013, Delft, The Netherlands, Faculty of Architecture, Delft University* (No. 978-94-91207-04-4, pp. 41-50). eCAADe (Education and research in Computer Aided Architectural Design in Europe); Faculty of Architecture, Delft University of Technology.

Tennakoon, T. M. M. P. and Kulatunga, U., (2019) Understanding Liveability: Related concepts definitions. In: Sandanayake, Y. G., Gunatilake, S. and Waidyasekara, A. (eds). Proceedings of the 8th World Construction Symposium, Colombo, Sri Lanka, 8-10 November 2019. 578 – 587.

Tipple, G., (2000) *Extending Themselves User-initiated transformations of government-built housing in developing countries*. Liverpool: Liverpool University Press.

Tongco, D. C., (2007) Purposive Sampling as a Tool for Informant Selection. *A Journal of Plants, People, and Applied Research Ethnobotany Research & Applications* 5:147-158.

Touati-Morel, A., (2016) The ‘hidden mechanisms’ of land use policies: The case of socio-spatial impacts of suburban densification. *Territoire(s)* 5: 1–18.

United Nations Conference on Trade and Development (UNCTAD)(2020) Handbook of Statistics 2020 – Population
https://unctad.org/system/files/official-document/tdstat45_FS11_en.pdf.

United Nations Department of Economic and Social Affairs (2018) 2018 Revision of World Urbanisation Prospects. <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html#:~:text=News-.68%25%20of%20the%20world%20population%20projected%20to%20live%20in,areas%20by%202050%2C%20says%20UN&text=Today%2C%2055%25%20of%20the%20world's,increase%20to%2068%25%20by%202050.>

United Nations Human Settlement Programme (UNHABITAT) (2012) Zambia Urban Housing Sector Profile. United Nations Human Settlements Programme (UN-Habitat), Nairobi

Van Kooij, U., Neuve-Eglise, J., Spronk, M., Vervoorn, A., Weber, H. and Zoll, K., (Eds) (2017) Densification? Better management please! *BPD Magazine* (5) Drukkerij Roelofs.

Williams, G., (1983) *The Peugeot guide to Lusaka*. Lusaka: The Zambia Geographical Association.

Williams K, Burton, E. and Jenks, M., (1996) Achieving the compact city through intensification: An acceptable option? In: Jenks M, Burton E and Williams K (eds) *The Compact City: A Sustainable Urban Form?* London: Spon, 83–96.

Yin, R. K., (2003) *Case Study Research: Design and Methods* 3rd Ed. California. Sage.

Zhao,Q., Chen, J., Liang, Y. and Sun, B., (2008) Analyzing the Variation of Building Density Using High Spatial Resolution Satellite Images: the Example of Shanghai City Xian-Zhang Pan. Institute of Soil Science, Chinese Academy of Sciences, Nanjing 210008, China.

Zubir, S. S. and Brebbia, C. A., (2013) *The Sustainable19 City VIII* (2 Volume Set): Urban Regeneration and Sustainability. Wit Press.

Zulu, R. and Oyama, S., (2017) Urbanization, housing problems and residential land conflicts in Zambia. *Japanese Journal of Human Geography*, 69(1), pp.73-86.

APPENDICES

Appendix A: Observation and Interview Schedule

THE UNIVERSITY OF ZAMBIA
SCHOOL OF NATUTRAL SCIENCES
DEPARTMENT OF GEOGHRAPHY AND ENVIRONMENTAL STUDIES
MASTER OF SCIENCE IN SPATIAL PLANNING
OBSERVATION AND INTERVIEW SCHEDULE

General Data

Name of Interviewer:

Date:

House Code:

Observation

1. Condition of the house:

2. Current Use of house:

3. Type of alteration to house:

Renovation Re-development Extension

Modification Additional Units on plot

4. If extension/modification, specify the type

5. Level of alteration:(Under construction/complete)

6. Number of additional unit(s)

7. Use of the additional unit(s)

8. Location of the additional units/Extension

Front-yard Backyard Left side Right Side

9. Sketch of alteration on plot

Interviewee Data

Name:

Age:

- 15 -19 20 - 24 25-29 30 – 34 35 – 39 40 - 44
- 45 – 49 50 – 54 55 – 59 60 – 64 65 and above

Sex: Male Female

Occupation Status

1. Owner/Tenant
2. How long have you occupied this house?.....
3. Why did you move to this house?
4. What attracted you to this area?
-
5. If owner, when was the house purchased?
6. From whom was it purchased?
7. What was the purchase price?

Residential and Neighbourhood Feel/Experience

8. When you moved into the house, what is your experience of the:
 - a. House?.....
 -
 - b. Neighbourhood?
 -
9. What is your current/present experience of the
 - a. House?.....
 -
 - b. Neighbourhood?
 -
10. When did the experience changed, if any? (Year & month)

11. What caused the change?
.....
.....

Additional Units

12. Number of rental unit(s) and their nature, if any (Description e.g., 2 roomed bedsitters, flats, front shops etc.)
.....

13. If for rentals, price of rental unit(s).....

14. Duration of the tenancy

One Month Two Months Three Months Four Months Six months One Year others, specify

15. If for residential use, number of occupants:

16. When the additional units were built?

17. If not complete,

a. When did the construction work start?

b. What caused the halt to construction works?
.....

c. When is it likely to finish?.....

18. What prompted the construction of additional unit(s)?

19. Has the expectation been met by the additional unit(s)?Yes / No

20. Any lessons learnt from having the units?
.....

21. Were architects used for alteration plans? Yes / No

22. If no to No. 21, who did the alteration plans?.....

23. Were the alteration plans approved by council Yes / No

24. How are services paid for? (Tick were appropriate)

Service	Included in rentals	Individual metres for tenants	Collective Monthly contribution	Others, Specify
Water				
Electricity				
Solid Waste				

25. Comments

.....

Appendix B: Key Informant Interview Guide

UNIVERSITY OF ZAMBIA
SCHOOL OF NATURAL SCIENCES
DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL STUDIES
MASTER OF SCIENCE IN SPATIAL PLANNING

Key Informant Interview Guide

A. Plot Data

1. What kind of zoning is Old Chilenje Township?
2. What is the average plot size in Old Chilenje (Elephant Houses)?
3. What kind of houses are there?
4. What is the house size?
5. What is your opinion on the house size?
6. What could be the range of the age of the property owners?

B. Planning Decision and Control

7. Has the City Planning Department been receiving planning applications from the area?
YES/NO
8. What kind of applications?
9. What has been the frequency of applications and possible reason for such a frequency?
10. Please explain what the councils' response to the applications has been.
11. What could have been the reason for such decisions?

C. Neighbourhood Change

12. How would you describe the neighbourhood?
13. How is the neighbourhood looking in relation to how it was planned and intended to look?