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Implications for using Shipping Containers to Provide Affordable Housing

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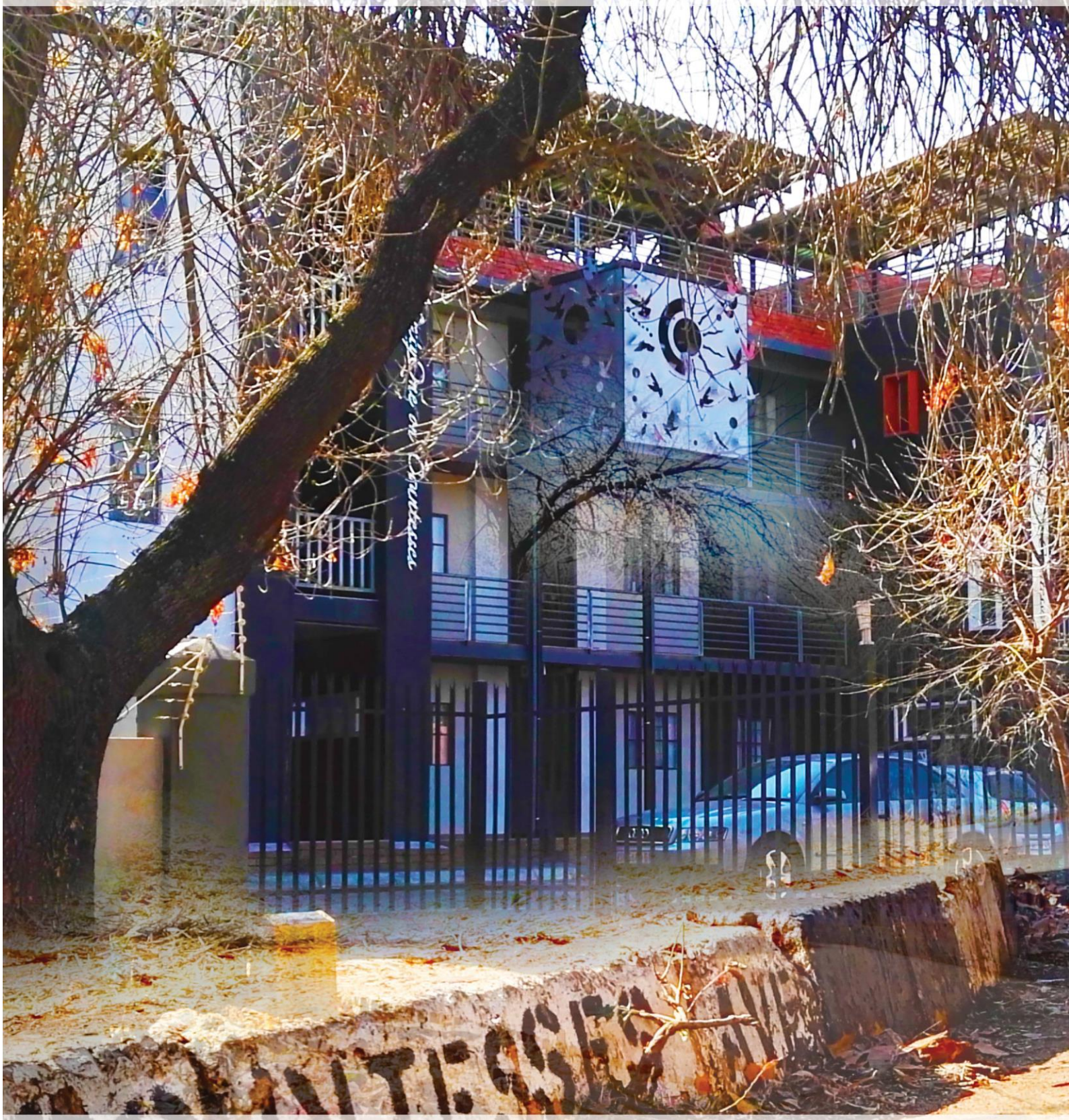
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IMPLICATIONS FOR USING SHIPPING CONTAINERS TO PROVIDE AFFORDABLE HOUSING



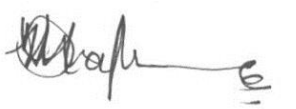
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A research report submitted to the Faculty of Engineering and Built Environment, Unversity of the Witwarersrand, Johannesburg, in fulfilment of the requirements for the Bachelor of Science with Honours in Urban and Regional Planning.

Date: November 2016

DECLARATION

I declare that this research report is my own unaided work. It is submitted for the BSc Honours degree in Urban and Regional Planning to the Faculty of Engineering and the Built Environment at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.



Minenhle Maphumulo

ABSTRACT

Southern African cities are more and more characterised by rapid urbanisation. Urban planners and other spatial practitioners are thus increasingly expected to develop innovative strategies around affordable housing to accommodate the influx populations moving to urban environments in the 21st century. In light of this, understanding the underlying elements that influence the perceptions towards alternative building materials is critical to identifying the implications of employing such components for housing. As such, shipping containers are gradually becoming a part of many contemporary cities around the world; however, that is still not the case in South African cities – even though, they are widely available and according to trends, they are a low-cost building resource.

To interrogate this, the 61 Countesses container residential building in Windsor East, Johannesburg has been selected for this case study to reveal residents' opinion. Public attitudes play a significant role in the success or failure of planning initiatives (Tighe, 2010). Recognising and understanding the aspects that sway public acceptance and the opposition is an important step in the planning process, this is especially the case for affordable housing developments, as they are often confronted by many barriers.

This research report provides the residents' perceptions of shipping container housing developments, based on their experience, with the purpose of, first, understanding the views held towards shipping containers as building units, and second to review the contribution that this particular building has made toward densifying the Windsor East neighbourhood. This research report further offers a cross-examination of neighbours' opinions of shipping container housing and social housing to reveal a link between the two. This is to build a better understanding of the possibilities of shipping container affordable housing in the Johannesburg context. This research report shows how shipping containers have been used and received in Windsor East. This research also indicates that shipping containers are more accepted in rental housing typologies. The results and recommendations offer urban planners, policy makers and developers insight of shipping container residential opinion, thereby informing them of the possibilities for shipping containers in the South African context.

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LIST OF ACRONYMS~~& TERMS~~

ARPL	-	Architecture and Planning
BNG	-	Breaking New Ground
CBD	-	Central Business District
CoJ	-	City of Johannesburg Metropolitan Municipality
DoHS	-	Department of Human Settlements
EPHP	-	Enhanced People's Housing Process
ICHIP	-	Inner City Housing Implementation Plan
IRDP	-	Integrated Residential Development Programme
ISBU	-	Intermodal Steel Building Units
JDA	-	Johannesburg Development Agency
JOSHCO	-	Johannesburg Social Housing Company
NIMBY	-	'Not-In-My-Backyard'
PHDB	-	Provincial Housing Development Boards
RDP	-	Reconstruction and Development Programme
SoAP	-	School of Architecture and Planning
TEA	-	Temporary Emergency Accommodation

CHAPTER 1: INTRODUCTION

The use of shipping containers as a construction material is a recent building system that is still being explored in many cities like Johannesburg. Shipping containers originated for the purpose of storing goods for trade and are still primarily used for the transportation of goods. Over the years, however, they have also been employed for other purposes such as military camps, in post disaster situations and for temporary as well as permanent housing. When used for housing they are referred to as Intermodal Steel Building Units (ISBUs) or green-cubes (Grant, 2013). Johannesburg is witnessing a number of shipping container developments in and around the city. The existing shipping container developments are made for both commercial as well as residential purposes. The prominent ISBU developments seen in Johannesburg include: the Mill Junction student accommodation in Newtown, the recently established 27 boxes shopping centre in Melville as well as the 61 Countesses building in Windsor- Randburg.

This research report presents findings on one neighbourhood – Windsor, where the 61 Countesses building is situated– to reveal the implications of shipping container developments. The need for investigating alternative building materials for housing is important as South African cities are rapidly urbanising and having to adapt to accommodate population growth through increasing densities (Mavuso, 2014). Interrogating shipping containers is also essential since the manner in which state housing is provided lacks creativity and innovation – the government continues to offer housing through traditional approaches and with the use of conventional materials.

The primary aim of the research is to examine the perceptions of residents with regards to shipping container housing. The relevance of this study lies in the fact that the country remains challenged by an accumulating social housing backlog. There is a need for a different model for the provision of housing and shipping containers hold some potential that can be exploited to meet the needs of urban dwellers. It is also becoming apparent that there is a demand for higher densities in urban areas to mitigate the effects of the apartheid city form, rapid urbanisation and encourage a more sustainable urban fabric.

This chapter introduces the rationale and needs for investigating shipping container developments. This chapter outlines the challenges that relate to housing in the city in its problem statement, it then discusses the objective of the research study. Thereafter it outlines the research question that guides this research report. This chapter will conclude with the research methods that are employed to tackle the research question and sub-questions.

1.1 Research Background

Sub-Saharan African cities are witnessing rapid urbanisation where large populations are navigating from rural environments towards urban settings within their countries and beyond international borders (Jenkins, 2012). Johannesburg is South Africa's key economic cosmopolitan centre and subsequently it attracts rural-to-urban and cross-border migrants which include refugees and asylums (Vearey, 2008). This has made this city home to a heterogeneous population of both local and international migrants. The increase in population is seen through the growth of informal settlements and backyard housing in and around the peripheries of the city (Mavuso, 2014). The growth of informal settlements and backyard housing typologies also indicates the need for more affordable and well-located housing in Johannesburg for the poor.

The City of Johannesburg is a growing city that continues to density through its population increases as well as spatial landscape. According to the 2011 statistics, Johannesburg houses more residents than any other major city in South Africa, with a population of 4 434827 people in 2011 (Statistics SA Census, 2011). The growth rate captured in 2011 for Johannesburg between 2001 and 2011 was believed to be 3,18% with a population density of 2696 person/km^2 (Statistics SA Census, 2011). This growth has translated into both demographic and physical urban changes as well as the production of new types of urbanism all around the city (Jenkins, 2012). The rapid urbanisation that is taking place in Johannesburg has also encouraged new spatial formations that are in contrast to formal residential housing typologies such as informal settlements, backyard housing, room and space rentals as well as shipping container housing typologies. The rise of the latter unique residential typologies also indicates the demand for more flexible, affordable and accessible spaces particularly for the working class and students in search of living spaces.

Johannesburg exhibits diverse urban and spatial growth that is realised through the use of conventional as well as non-conventional building materials to develop dwelling spaces within the former 'white' suburban areas and the township areas (Mavuso, 2014). Although local actors have taken the initiative to show the City of Johannesburg (CoJ) alternative mechanisms for providing housing, the Department of Human Settlements (DoHS) has not fully taken advantage of the initial indicators like the case study building. The DoHS encourages the use of traditional approaches and building materials to provide housing for the poor and the increasing population. Given this background, the following section of this chapter will outline the challenges that have been associated with the housing condition as well as the need for densification.

1.2Problem Statement

The prevailing issues at hand are centred on the need for the city to absorb its increasing population, the need for better located affordable housing and the demand for more innovative approaches towards delivering affordable housing faster in Johannesburg and to appropriately increase densities in neighbourhoods. These are the challenges that have to be addressed in shipping container developments.

Among many of the issues is that the combination of urbanisation and the shortage of affordable housing for economically deprived groups continues to exclude people from accessing opportunities (Huchzermeyer, 2004). This is seen as a challenge that confronts numerous major cities in South Africa including Johannesburg. The current model employed for the provision of low income housing leaves little room for innovation and creativity and it continues to locate communities at the periphery of socio-economic spheres. This, in turn, limits the residents from accessing opportunities and improving their circumstances. Essentially, urban compaction is a route that has revealed it to be useful in the integration of communities and subsequently the city (Turok, 2016).

The inability of the state to appropriately increase densities limits the poor's access to opportunities and thereby improving their situation. For the urban poor to progress and take advantage of the opportunities that metropolitan cities like Johannesburg offer, they too need to be more connected to the city and economic activities. It is also becoming apparent that there is a need for higher densities in urban areas to mitigate the effects of the apartheid city form and encourage a more sustainable urban fabric.

Lastly, the DoHS is not adequately exploring alternative building methods in the provision of housing in the city. Shipping containers are one of the alternatives building approaches that must be investigated locally and internationally. Looking into other alternative building materials is crucial in the tackling of homelessness and the growing housing backlog. The state needs to pay more attention to global trends as shipping container developments are emerging in other international cities as well. Public opinion research can contribute substantially by offering the affected state departments with a greater understanding of how residents feel about shipping containers as a building material. Household attitudes and preferences are poorly understood as well as the trade-offs that urban dwellers make between living space, access to jobs and amenities as well as housing costs (Turok, 2011). Residents' perceptions also play a large role in shaping public policy, subsequently carrying out a public opinion research of residents' perception of container housing will fill a considerable gap in the literature by providing the underlying determinants of how residents feel.

1.3 Research Question

In consideration of the context provided above, this research study will answer the following research question and sub-questions:

What are the perceptions of using shipping containers to provide affordable housing of a higher densification in Johannesburg?

Sub-questions:

1. What are the experiences of the residents living in the building and those living in the vicinity?
2. What are the challenges/issues to using shipping containers for social housing?
3. How does this project achieve higher densification in the area? How could it be further improved?
4. How do ISBU housing units relate to preconceived ideas/perceptions about social housing and ideas about home?
5. How have these been anticipated or mitigated in the development, if at all?

1.4 Research Methods and Research Approach

This section of the chapter supplies an account of the methods that I employed in undertaking this research study as well as what has influenced the investigation of shipping container residential developments. As stated above the study intends to answer whether shipping containers can be employed for densification in the city. This part of the chapter provides a discussion of the research design and the methods employed to gather the necessary data for the study. To present informed perceptions of the study building, acquired perspectives from both tenants of the 61 on Countesses building and home owners or rental occupants within the Windsor East area through the use of semi-structured interviews. Densification is investigated through understanding the trends in the area, the spatial reconfiguration of the units as well as comparing the density of the Windsor East neighbourhood to that of the case study building. In terms of understanding the overall character of the neighbourhood, desktop information and semi-structured interviews were employed. This section will reflect on what influenced my interest in investigating this particular study and it describes the approaches that I employed and provides a rationale for these approaches. This section is arranged into 4 sections: personal interest in the study, methodology, methods of data collection and ethical consideration.

1.4.1 Personal Interest in the Study

My interest in shipping container developments and low-cost housing stems from an opportunity, I was given by a company that sponsored my undergraduate studies –Arup–to attend the 2015 Green Building Convention in Cape Town. This is where I came across UmnyamaIkhaya, a Cape Town based company that offered housing solutions through the use of alternative building materials like shipping containers (UmnyamaIkhaya, 2016). This company delivers 30 meter square shipping container homes that promote a sustainable and eco-friendly living, The product that this company offers incorporates gas, the wind, solar, waterless toilets, rainwater harvesting as well as other energy saving mechanisms(UmnyamaIkhaya, 2016). Typically a two bedroom home produced by this company costs approximately R369 000 and it comes fully finished including plumbing and electrical wiring. My interest was further strengthened when the 27 boxes in Melville was established to develop a commercial and retail space constructed out of shipping containers. Thereafter I began to review articles and literature on more cargotecture buildings in Johannesburg.

1.4.2 Methodology

Qualitative methods

The study is one that can be classified as qualitative as it is concerned with people's perceptions and investigating the level of acceptance of shipping containers as a building material for housing. Qualitative research employs data collection and non-statistical analytical methods; subsequently the study takes a descriptive approach. Given that, qualitative methods have been favoured for the research process as they can assist in explaining and presenting non-measurable information such as personal opinions (Sofaer, 2002).Quantitative research includes the gathering of quantifiable data that can be used to do a descriptive analysis of the information found (Sarantakos, 2005). This type of research employs predetermined; instrument based questions, performance data, attitude data, observational data, and census data as well as statistical analysis (Creswell, 2003). Furthermore, qualitative research makes the use of statistical techniques to test premises and to prove a theory as often an effect tool to ensure objectivity and an unbiased opinion by the researcher (Philip, 1997). Creswell (2003) also argues that the qualitative approach to research encompasses the use of ethnographic design and empirical research where the behaviour patterns of participants are observed. In light of the above, a qualitative approach was seen as optimal in helping me gain knowledge on the how people feel about the Windsor East ISBU development and residents' decision-making process on the neighbourhood to reside in.

Case Study: 61 on Countesses

Case studies are research models that use a vast range of data collection as well as analysis in a variety of contexts (Sarantakos, 2005). Yin (1994) identifies a case study as an observed inquiry that seeks to find out about a contemporary phenomenon within a real-life context. It can also be understood as an account of an activity, event or space that has a real or hypothetical situation and holds the dynamics one could come across. There are three types of case studies, namely: the intrinsic, collective and instrumental. An intrinsic case study is typically employed to gain knowledge of a specific case and thus cannot be used to generalise (Sarantakos, 2005). While a collective study encompasses a number of single studies that are investigated collectively, to understand a social issue (Sarantakos, 2005). Lastly, an instrumental case study is normally conducted to inquire into a social challenge and the findings of this type of study can be applicable beyond the specific case study (Sarantakos, 2005). The latter form of a case study (instrumental) will be favoured to unpack the views of those that reside in ISBU residential apartments.

Johannesburg does not have many shipping container developments, therefore, using a case study of one of the container housing projects will provide some insight .The 61 Countesses building makes a good case study for this research as it is one of the few shipping containers residential developments examples that house low-middle income earners. This building is also an optimal case study as it caters for a diverse range of households. A case study based research enables the data to be richer and more in depth, as the focus will be narrowed to one area and one building –Windsor and the 61 Countesses building. In addition to that, studying a single development provides answers for future developments in and around the city.

The main benefit of utilising a case study is in the explicit connection that is maintained with the context. Another key advantage provided by using a case study is that it allows the researcher to investigate a contemporary case for the purpose of illumination and understanding (Hays, 2004). A case study can help produce in-depth descriptions and interpretations. Employing a case study can also be useful for providing information for decision making or to discover causal links in not readily known settings. Some of the anticipated potential drawbacks of employing a case study are that case study research lacks rigor and they provide little basis for scientific generalisation because their main purpose is to discover the uniqueness of each case. Another concern with using a case study as a research model is that case studies have been criticised for typically producing massive unreadable documents (Hays, 2004; Yin, 1994).

1.4.3 Methods of Data Collection

Semi-structured Interviews

In unpacking the various perceptions, I made use of semi-structured questionnaire interviews. Questionnaire surveys are a traditional research method which is widely used. Desai and Potter (2006) outline the three types of questionnaires: structured, semi-structured and unstructured. These are all useful and appropriate in different contexts. Adam (1990) also identified three key data collection methods that form part of qualitative research, namely: using available information, observation and semi-structured interviews. Of the three the semi-structured interview was regarded as the most effective technique for this particular study. This study employed semi-structured questionnaires as they are suitable for a diverse range of situations. It is argued that semi-structured questionnaires are most useful when seeking to understand people's perceptions, value and difference between preferences as well as suggestions (Desai and Potter, 2006). Semi-structured interviews allowed the researcher to collect detailed information in a style that was conversational. Semi-structured interviews also enabled the participants to elaborate and fully express their personal opinion on the subject matter.

With regards to the questionnaire, a combination of open ended and closed ended questions were utilised as the main research tool during the data collection process. Questionnaires were used to investigate the various factors that are believed to inform perceptions of what constitute as a 'home' as these may differ from one individual to the other. However, there was a possibility that some of the individuals might not have sufficient knowledge of ISBU housing due to the fact that it is a relatively new practice in Johannesburg. To assist the respondents, photographs were used as an aid to the questionnaires.

To avoid making the questionnaire a long series of questions, it is divided into sections. The first section of the questionnaire details the basic information like the residents socio-economic status. This is critical to establish if they are residing in the building by choice or because of economic circumstances. The second part of the questionnaire explores what the elements that constitutes a 'home' and 'adequate housing' and whether it is aligned with the constitution and literature on home-making. The third portion of the questionnaire examines the respondent's knowledge of shipping container housing as well as their perceptions of this form of housing, given their definitions of adequate housing and home. The questionnaire reveals the various perceptions and the factors that are most likely to influence these perceptions.

Procedure

I was able to do a spatial study of the site through observations, mapping and photographic analysis and conducted a total of 11 interviews with the assistance of my research partner, Jokudu Guya. The 11 interviews constituted of 5 residents from the 61 on Countesses building, 5 residents from the Windsor East neighbourhood and one of the developer of the case study building, Arthur Blake. My initial steps were to try and get a hold of one of the developers, so I went to Citiq Property office in Braamfontein but learnt that one of the key actors of the 61 Countesses development was no longer working for the company, however I got to speak to the building manager of the case study building. I explained my study and obtained a verbal consensus to approach residents and he gave me Arthur Blake's contact details. I contacted Arthur via telecommunication and email and I was finally able to get a chance to engage with the developer. He was interviewed at his house which is also his office space in Westdene. Prior to this, Arthur Blake was sent the questions that were set out for him via email as he had requested to see them before the interview. It must also be noted that the small sample of residents that I was able to talk to is not necessarily an absolute representation of the demographic of Windsor East. The small sampling of residents that already live in the ISBU development and residents that reside in the vicinity was taken due to the restriction of time and to provide a multi-vocal narrative.

I identified participants by approaching residents that were going into the case study building. The building does not have a security office on site and the residents have their own keys to the main gate. Through engaging with one of the residents, an appropriate contact was established and thereafter the snowballing method was employed to gain access to other residents within the building. The resident that gave me access into the building did not want to participate but introduced me to other residents. After knocking on 9 units in this building, I was able to get six residents willing to participate; however, the 6th resident changed his mind when Jokudu and I were in his unit so we excused ourselves and ended before we began the interview. The five tenants of the 61 Countesses building were interviewed separately in their respective units on different days. Speaking to the tenants from their own homes made residents more relaxed and comfortable as they were in a familiar environment, this also allowed the researcher to take images of the interiors and thereafter construct the household illustrations.

With regards to residents in the surrounding area, I had first gained a verbal agreement with 5 residents that I had approached randomly while doing my spatial observations in Windsor East and together we set up dates to interview them but only one out of those made the time to engage with me. After this disappointing turn, I tried a different strategy- went to Windsor East on a public holiday as this was easier since people were home. I approached

individuals randomly in the neighbourhood and requested to interview them, provided that they resided within the Windsor East area. This approach worked out better than the initial strategy, people were more eager on this day to take part in the research. I approached people sitting outside their respective buildings or washing their cars on the street, as I found that people were not willing to participant if they seemed to be on their way or intensely occupied.

To Investigate Density

There are a number of measures used to calculate and compare the built form and population densities. For the purpose of this study, the net dwelling units per hectare (Net du/ha) are employed to calculate how the building has contributed to the densification of the Windsor area. this type of densification measure compares the number of dwelling units per hectare of land, it is calculated on the basis of land utilised for residential purposes, as well as the domestic space which includes the garden and off-side parking area if any (City Space, 2012). In addition to the calculating densification through the net dwelling unit per hectare method, the density of the 61 Countesses building the population density was calculated based on an estimated figure informed by engaging with some of the residents that reside in the case study building.

With regards to the overall density of the Windsor East area, densification was explored through the mapping of the study area. The mapping of the Windsor area will be done to adequately exhibit the height of the various buildings as well as the typologies of the urban fabric. The Statistics SA Census (2011) was also employed to calculate the population density, number of dwellings and average site size of each dwelling. An understanding of the dwelling typologies will assist in investigating how 61 Countesses contributes to the densification of Windsor. With regards to the mapping, observations, photography and online GIS sources such as Google Maps, City of Johannesburg's GIS electronic Services and GCRO are employed to get accurate spatial data about the case study area. This data is analysed and processed into a series of drawn maps of the area.

Assessment of Windsor area and Available Infrastructure

In undertaking my spatial and housing typology analysis of the study area, I went to Windsor East to personally observe the physical condition of 61 Countesses and the houses in the neighbourhood. The observations of the area helped me gaining a clearer understanding of the area and the housing patterns as it is an area that is not intensely captured in literature. In addition to that, it also assisted me in assessing capturing the proximity that residents' travel to access goods and services.

Documenting Field work findings

The field work findings assisted in presenting the physical attributes of the units, a description of the household composition and the available amenities. A combination of layout plans and images are employed to reveal the physical characteristics of the rooms within each unit and how they have been manipulated to suit the needs of the residents. Different sources of information have been employed to gather and present a range of information in the form of visuals and text. The biographic details of the neighbours' in the area are presented in the form of a table and well as a map that locates each of the residents' apartment from the case study building within Windsor East. This table shows the type of housing typology these residents find themselves in as well as the proximity to the study building. The biographic information of these Windsor East residents is discussed to unpack the demographic composition of the neighbourhood. The first five illustrations portray the household composition and well as specific details like when the participant moved into the building, their income bracket, cost of rent, facilities they share and their relationship their respective housemate if they have one. The illustrations build a background on each individual participant and show their experience in this building. The plan sketches of each of the units show that each of the units is distinct. Some units are two bedrooms while others have three bedrooms.

1.4.4 Ethical Consideration

To ensure ethical considerations, an ethical clearance was obtained from the School of Architecture and Planning (SoAP) to allow for the commencement of this research study to proceed. In seeking voluntary participation from the residents in the study area, consent was required for participation and audio-recording of the responses. Participants were issued a consent form to sign before the interview in conducted, in the case where the participant is uncomfortable with signing the form a verbal agreement was obtained before proceeding. In addition to the latter considerations, the researcher adequately informed the participants of the objectives of the study and explicitly informed the participant that there would be no rewards for participation. Furthermore, the researcher ensured that the participants were not harmed (emotionally or otherwise) during the interviews for the study. The well-being and dignity of the participants was considered throughout the duration of the study.

1.5Structure of the Research Report

The report is divided into five chapters. Chapter 1 has provided a brief background to the housing and urbanisation challenges that the city is confronted by and the need for exploring alternative building materials. This chapter is an introduction to the problem that this study is responding to and a description of the methodology. This chapter has also given a brief

research background to assist in building a clearer picture of the issues related to the need for exploring alternative construction methods.

The second chapter develops a theoretical framework by focusing on four key elements of the research: cargotecture; housing; perceptions of home and densification. It begins by introducing shipping container and defining Cargotecture (shipping container architecture). Chapter two then engages with how adequate housing is understood to be a link between what is adequate housing and shipping container developments for housing. It thereafter supplies a background of the South African housing condition as well as the policies developed to mitigate the effects of the challenges to reveal the attempts that the state has initiated at different levels of the government to resolve the housing issues. It also provides a discussion on the existing dialogue of what constitutes as a home based on the existing views of the notion of home. This section of chapter two in important as it exhibits that there are numerous layers attached to the way in which people understand home. In constructing a theoretical framework for this research report, this chapter also engages with densification. It looks into the manner in which it has been seen to take place in Johannesburg. It also briefly outlines the benefits and limitations f densification.

The third chapter introduces the study area (Windsor East) in more detail. It locates Windsor within Randburg and also situates it within the broader Johannesburg city context. It further engages with its locality in relation to connectivity to the city's CBD and public facilitates. This chapter also builds a picture of Windsor East area as it provides a brief discussion on the population composition, housing typology and safety issues in the area which assists in revealing the character of the area.

The fourth chapter presents all the field work findings from observation, spatial analysis if the study area to the outcomes from the interviews conducted with the residents in Windsor as well as the architect that was a part of developing the case study building. The fourth chapter gives qualitative results of the fieldwork as stated in the research methods. It also offers a descriptive representation of the individual participants supported by illustrations of their household physical composition to paint a clearer picture of the research participants. The analysis and interpretation of the data are also exhibited in this chapter in themes that respond to the sub-questions and subsequently the main research question.

The last chapter concludes the report by providing a summary grounded on the findings presented in chapter four. It outlines the essence, benefits as well as limitations of the study. The final chapter of this report also provides recommendations –which offer a way forward- with regards to the future of shipping container residential developments in Johannesburg, informed by the perceptions documented in the Windsor East area.

CHAPTER 2: BUILDING A THEORETICAL FRAMEWORK

2.1 Introduction

This chapter provides an understanding of the existing literature on the themes that inform the investigation of shipping container developments in the Windsor area. This chapter of the study discusses the five key ideas that have framed this research and that assist towards answering the question posed in the previous chapter. These6main ideas are: cargotecture - their strengths and limitations; adequate housing, housing policies and programmes in South Africa, preconceived ideas of social housing, notion of a home and densification. The literature has revealed that housing is a major and sensitive concern in South Africa and that the government has developed numerous policies and subsidies to help decrease the housing backlog. The existing literature also provides an understanding of what shipping containers are and the debate on whether shipping containers can be considered adequate housing and a home.

2.2 Cargotecture: Definition, Strengths and Limitations

Shipping containers were invented by Malcolm McLean in 1956 who was also the owner of a large trucking company in the United States of America (Vergara, 2013). Typically a container has five closed sides and an opening at one of end with a double leaf door (Brandt, 2011). Shipping containers come in a number of sizes and were initially intended for storing goods that need to be transported as shown in Figure 1 (Botes, 2013). Freight containers are developed according to strict international quality standards to endure various weather conditions presented in the marine environment (Abrasheva, Senk and Häußling, 2012).Shipping containers are given different terminologies depending on their use. In the case where they are simply used for shipping products, they are referred to as ISO containers (Grant, 2013).



Figure 1: Shipping containers Source :(Radwan, nd)

Shipping containers have shown to be of great use during post-disaster, military and mining scenarios. They have been favourable as they have proven to be easily transported and rapidly redeployed (Grant, 2013). One of the most captured uses of containers as building

material has been for student accommodation across the globe (Brandt, 2011). Both Australia and New Zealand have become pioneers in employing shipping containers as building materials for prison developments (Grant, 2013). The projects in these two countries have exhibited that green-cubes are a viable option for human settlements. It is critical to this study to note the successful experience of the use of shipping container as this study seeks to provide the various perceptions of this form of development within the Johannesburg context.

2.2.1Cargotecture: Definition, Strengths and Limitations

As seen in the above section there is some growth in the use of shipping containers for buildings whether it is for residential or commercial use (see Figure 2). Figure 2 also shows that even a single container can be designed and reshaped for living spaces. Cargotecture is a term used to describe shipping container architecture (Vergara, 2013).Even though a number of cities are characterised by a few shipping container developments, cargotecture is still not a common practice as containers are still not seen as habitable spaces (Vergara, 2013). This form of architecture has created controversial debates and numerous discussions about its usefulness for housing purposes.

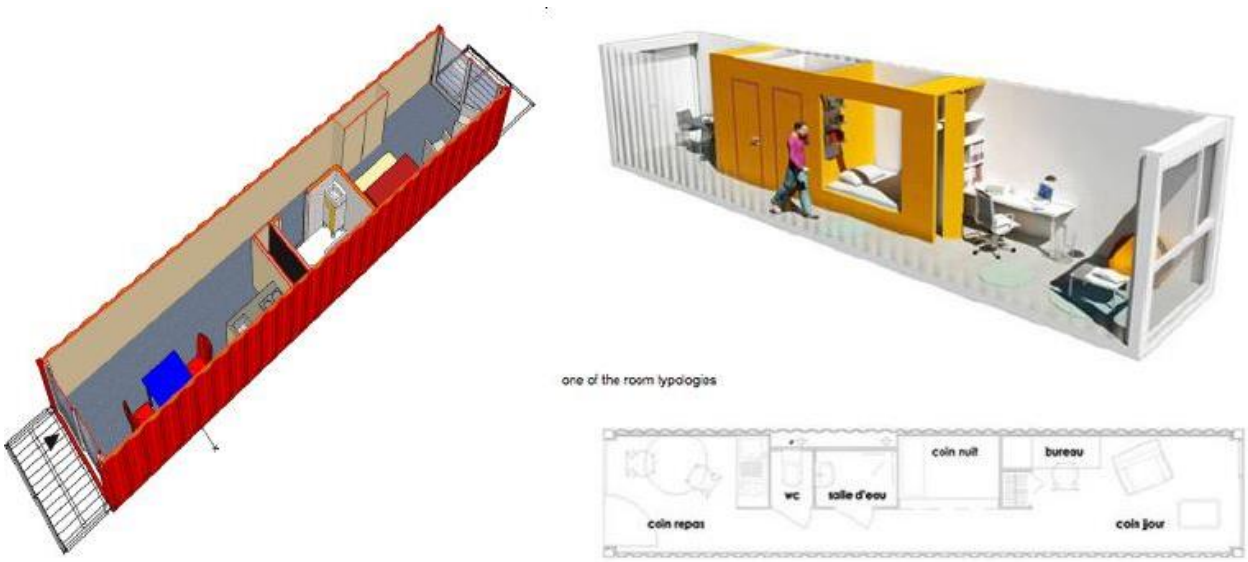


Figure 2: An example of a container room typology (Oloto and Adebayo, nd)

There are a number of cargotecture advantages and disadvantages that have been captured and this section will outline those factors to reveal both views on either side of the debate spectrum.

Strengths of Cargotecture

Containers are considered to be one of strongest mobile and modular structures as they are constructed to withstand strong winds and heavy sea weather. Shipping container architecture is also seen to be more environmentally friendly as it enables modules to be dismantled and relocated with minimal footprints, thus helping in the preservation of natural land. The use of shipping containers as a building mechanism has also been advantageous in the sense that, they are easily transportable, flexible and accessible. Silva (2013) has also indicated that they offer short construction process thus saving resources, production time and capital.

Limitations of Cargotecture

Although containers developments have some advantages, the use of shipping containers for architecture still holds numerous limitations that have been a barrier to its popular use for housing. Shipping containers have been recorded to have a life span of a little more than fifty years (Cabrera Vergara, 2013). From this point, it can be deduced that shipping container developments have a shorter life span than conventionally built buildings. The weaknesses that have been produced against shipping container developments also include the fact that they demand intensive thermal insulation to ensure that the building or unit remains cool and warm when necessary. In addition to that, cargotecture requires a different workforce that is more experienced with this type of building material. Theorists have also indicated that shipping containers are also seen as inferior building material compared to conventional bricks. These Limitations may contribute to the issue of employing shipping containers for housing especially for low-income groups particularly in South Africa where housing is sensitive topic. These limitations are important to note as they could coincide with the challenges that the residents in 61 Countesses building present.

2.4 Adequate Housing

The South African government has a constitutional obligation to ensure that everyone has access to adequate housing. Section 26 of the Constitution emphasises that the state has authority to take reasonable legislative action to achieve the progressive realisation of the right of access to adequate housing (South African Human Rights Commission, 2014). Satisfactory housing is more than brick walls and mortar. Adequate housing meets a set of minimum criteria that include: legal security of tenure, affordability, availability (of services, material, facilities and infrastructure), habitability, accessibility, location and cultural adequacy (South African Human Rights Commission, 2014). The majority of the housing that the state has provided to meet this right for the low-income group since 1994 has been developed through the use of conventional materials and there is a need to look to

alternative construction materials to improve the quality of housing (Haselau, 2013).Adequate housing is also aligned with those ideas of decent housing.

A decent home is one that is seen to meet minimum standard for housing, in reasonable state of repair, it has reasonable modern faculties and services. A careful consideration of adequate housing is important to the investigation of shipping container development. Access to decent housing is vital to human health and well-being (Turok, 2016). Decent housing offers residents privacy, self-respect, space for learning as well as social interaction (Turok, 2016). For shipping containers to be employed and converted for residential purposes, developers also need to ensure that people's right to access adequate housing is met and not violated. The right to access adequate housing is a universal and critical right that needs to be protected and realised. The right to adequate housing is significant and widely recognised right in international, regional and national human right laws (Thiele, 2002). This particular right is also listed in one of the most important legal sources – the 1966 International Covenant on Economic, Social and Cultural Rights (Thiele 2002).

A consideration of what constitutes as adequate housing is crucial as shipping containers are not the standard building material and they are preconceptions on what they ought to be used for. Shipping containers are not immediately seen to be the optimal building infrastructure at first glance and this is primarily a perception problem. The discussion on adequate housing is thus important as it has shown that the adequacy of housing is dependent on the level of privacy, protection, coverage as well as emotional and physiological growth of those living in the housing which shipping containers can also ensure. From this discussion of what adequate housing means, it is emerging that in principle shipping containers meet the standards set out for what constitutes as adequate housing. Various international and local examples like the Tietgen container student accommodation in Denmark and the local Mill Junction in Newtown exhibit that containers can be home space. However, this is not the only issue as to why people are still resistant to shipping containers being used for housing, especially in a South African context. Given that, an elaborate discussion on housing in South Africa will be offered to give a background to the housing journey in the post-apartheid period to understand the other dimensions associated with housing.

2.5 Housing in South Africa: Programmes, Policies and Subsidies

As an attempt to deconstruct the apartheid city form and mitigate its socio-economic effects; the post-apartheid government established a number of housing programmes and policies since 1994.this section of the research study will give a brief timeline and discussion of some of the various housing related programmes, policies and subsidies. A reflection of the different policies and programmes indicate the challenges that each of the noted ones had intended to react to and how that might connect to the resistance towards shipping container housing.

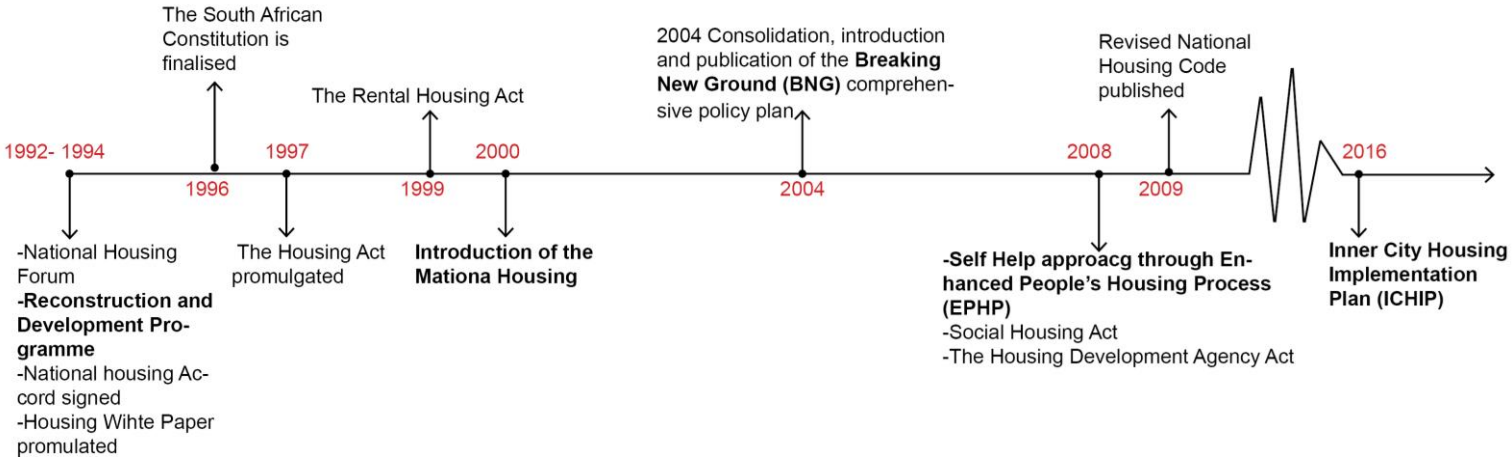


Figure 3: Timeline of the Housing related policies, programmes and subsidies. Sourced from (Gordon et al, 2011)

The Reconstruction and Development Programme (RDP) is the initial socio-economic policy framework adopted in 1994 to mobilise resource to build a contrary spatial form of the apartheid government (Lyons et al, 2001). The eligible beneficiaries of the RDP policy were provided with a single 30m square metres house on a 250m square metres plot of land. The state-subsidized housing was attainable through large-scale housing projects, flat based renting of homes as well as funding to self-build a house (Huchzermeyer, 2004).

One of the challenges hindering the large-scale provision of housing in the country is affordability. The state has thereafter established six subsidy schemes in the Housing Code that was introduced in 2000 as shown in the timeline above, to help people access housing from 2001. The project linked subsidy is intended to help beneficiaries in owning and buying property typically in projects approved by the Provincial Housing Development Boards (PHDB), while on the other hand the individual subsidy is essential in assisting people to acquire ownership of fixed properties for the first time within residential projects not approved by the (PHDB) (ManchenoGren, 2006). The consolidation subsidy supports beneficiaries that already own sites, with upgrading their housing unit on the existing plots (ManchenoGren, 2006). The subsidies established also acknowledge the role those housing

institutions that provide tenure arrangements (alternative to immediate ownership) play in the provision of housing. The subsidy given to institutions that are permitted to supply subsidised housing is the institutional subsidy (ManchenoGren, 2006). The relocation assistance subsidy operates as a strategy to stabilise the housing situation and is essential in helping people transition to a more affordable housing (ManchenoGren, 2006). The subsidy that plays a more facilitative role is the People's Housing Process (PHP) as it supports the efforts of people that seek to build their own homes. Lastly, the rural subsidy allows people that already have uncontested informal land rights to employ their land for housing purposes (ManchenoGren, 2006). There is still a need for more realistic building codes, shelter standards and the use of indigenous building materials and technologies to reduce the ultimate cost of housing while still meeting the standards of what constitutes as adequate housing (Ramashamole, 2011). The Housing Code which includes all housing subsidies for the public, municipalities, as well as private developers was thereafter revised in 2009.

Low residential densities are of great concern in the South African context. The state has put its attention towards curbing the sprawl of the city and on encouraging high densities (National Planning Commission, 2013). This is seen in the establishment of the 2004 Breaking New Ground (BNG) housing policy that attempts to guide the provision of housing in the country towards a more sustainable and compact manner as opposed to the initial RDP. The BNG is a comprehensive housing policy plan that provides a revised vision of the RDP for human settlements in South Africa. It emphasizes that to appropriately ensure that the basic right to adequate housing is realized, the Department of Human Settlements and other related departments need to move from quantity to quality neighbourhoods that serve as more than a residential area for its people (Huchzermeyer, 2004). This comprehensive plan also represented a shift in the delivery of housing from developer driven to public sector driven delivery predominantly through local government (Gordon et al, 2011).In addition, it articulates that the provision of housing needs to take a more sustainable turn where the city is promoting high densities. There has, however, been a contrast between what the BNG states in theory and what is delivered in practice (Ramashamole, 2011). In its implementations, it is evident that little has shifted from the outputs produced by the RDP.

The self-help approach was undertaken through the Enhanced People's Housing Process (EPHP) adopted in 2008 and the Integrated Residential Development Programme (IRDP). The free standing housing typologies were designed to accommodate nuclear families, which in turn side-lined a wide variety of other diverse household arrangements (Paulsen and Silverman, 2005). Even though this ensured the provision of housing for some of the poor population, it still was unable to appropriately and sustainably integrate the projects with the rest of the city. The outcomes of the policy were still low rise housing projects along

the outskirts of the city replicating the apartheid model of housing and further marginalizing the beneficiaries from opportunities.

Currently, the City of Johannesburg is working on finalising the Inner City Housing Implementation Plan (ICHIP), which is a housing policy intended to make the inner city housing market more inclusive of lower income groupings. ICHIP was developed by the city's Housing Department through a joint venture with the Johannesburg Development Agency (JDA) and Johannesburg Social Housing Company (JOSHCO). This plan includes six housing delivery programmes which indicate the routes that will be taken as well as five facilitation programmes that are meant to guide the development of the various programmes. This housing plan is important to note as it shows that the city of Johannesburg is beginning to think around alternative building technologies in the delivery of housing. The first of the six delivery programmes is the Temporary Emergency Accommodation (TEA), which is to house inner city residents that have been evicted while facilitating the appropriate accommodation solutions for households. This plan for this specific programme is for it to employ shipping containers to remodel and produce temporary housing. Even though this is a positive step towards thinking about other routes to housing the urban residents, the City still only perceives shipping containers as a temporary housing solution for short periods, whereas if it is worthy of being a temporary home for a household, then it could also be a long-term residential apartment for people.

An understanding of the South African housing policies and subsidy schemes as well as the plans that the city has for the lower income grouping assists in revealing the support options that citizens have in acquiring social housing. The discussion on the housing programmes will help in assessing whether shipping containers can be a viable source of social housing. The various programmes also show that there is still little consideration of alternative building materials as they are set out for conventional materials.

2.6 Predetermined Ideas about Social housing

Prior to elaborating on the predetermined ideas of social housing, it is important to define this term. The Social Housing policy for South Africa (2013, 4) defines social housing as *"A housing option for low-to-medium income persons that is provided by housing institutions, and that exclude immediate individual ownership*". The term 'social housing' is used when making reference to state subsided housing that is affordable for low to middle-income earners. Mayson (2014) also presents social housing as government subsidised rental housing that is targeted at the low-middle income South African earners, which may be owned and managed by the state, by non-profit organisations or by a public-private partnership. Social housing is aimed at providing decent affordable housing to the

disadvantaged, in practice towards supplying social housing the state gives institutions a capital subsidy grant per unit development to provide housing for the poor and those that do not afford to buy housing independently.

Social housing is a vital social infrastructure that serves as a tool to mitigate inequality (Ruming, 2012). Ensuring the urban poor with an affordable place to live can contribute to neighbourhood quality of life and can result in other progressive effects on households, developments and access to opportunities (Koenig, 2012). However, in many cases, affordable housing developments have received intense opposition from local residents and subsequently the development of 'not-in-my-backyard' (NIMBY) groups, movements and attitudes. The construction of new affordable housing projects has not always been seen as a noble act by the state to resolve the housing backlog and to tackle homelessness for the poor. The development of social housing has also triggered negative responses from communities particularly those where the development is proposed. Local concerns associated with social housing can be connected to the anticipated increase of social issues, service delivery, density and the overall change in the neighbourhood quality. This section of the literature review will present the preconceived ideas of social housing, to be able to contrast these views with those attached to shipping container developments –which will be obtained from the fieldwork interviews with the residents in Windsor East.

The Quality of Social housing: Decent homes?

As discussed in the 'Housing in South Africa' section, the post-democratic South African government has committed itself to reconstructing the urban fabric and establishing programmes to ensure housing for the low-income groups (Aigbavboa and Thwala, 2013). However, the dominant perceptions of state subsidised housing in South Africa are that the products are of very low quality and do not satisfy the needs of the occupants. According to Manomano and Kang'ethe (2015) Social housing beneficiaries complained about the poor quality of the windows, roofing, doors and even the walls. They also expressed that they even have to go as far as placing stones on the roof to ensure that they do not blow away. The experience of many social housing beneficiaries in the South African context has suggested that the housing quality is poor and does not satisfy all the needs of the people (Aigbavboa and Thwala, 2013).

NIMBY: A Narrow Outlook of Social Housing Outcomes

The views held towards social housing have been a combination of hope and fear, generally depending on the proposed project, neighbourhood and income grouping. This can be linked to the fact that the construction of affordable housing can have both positive and negative effects on beneficiaries, households and the community as a whole (Scally and Koenig,

2012). Those that see hope in affordable housing, see it as an enabler for better access to reasonable housing, quality services, and healthier environment as well as employment opportunities. However, the fear of anticipated outcomes associated with social housing has often resulted in NIMBY attitudes, reactions and local opposition groups.

NIMBY reactions have been documented as the fear for adverse impacts on poverty values, anti-government sentiment and racial prejudice as well as segregation (Koebel et al, 2004). Local oppositions that have resulted in NIMBY attitudes are rooted in racism and classism (Iglesias, 2002) as they reject integration with the 'other'. Therefore NIMBY groups are often collective residents that resist new humans, public service facilities or developments that they believe will have negative social, health and environmental outcomes for their neighbourhood (Ruming, 2012). NIMBYs are thus residents primarily concerned with protecting their turf and maintaining the character and quality of their neighbourhood. Ruming (2012) has further highlighted that residents are typically concerned with the possibility of increased social issues which include crime, anti-social behaviour and the changing reputation of their place as well as place-based stigmatisation.

It's more about Integration with the Urban Poor Populations

From the above discussion, it appears that the negative views attached to the social housing that has resulted in NIMBY attitudes are less about the physical characteristics of the actual housing products and more about the type of people that benefit from affordable housing and their behaviour patterns (Ruming, 2012). Opposition to the establishment of affordable housing is frequently felt in non-poor neighbourhoods (Tighe, 2010). This is connected to the fact that people hold sentimental value for their property. For most property owners, housing symbolises their largest expense as well as their significant investment (Tighe, 2010). The fear of the 'other' is also connected to the possible outcomes that may arise with high densities in non-poor neighbourhoods. Opponents also express concerns about incompatibility with surrounding land uses, increased traffic levels, the overall pace of development and increased density (Scally and Koenig, 2012). Affordable housing generally demands higher densities and this can be perceived as being of lower value than neighbouring properties (Koebel et al, 2004). Subsequently, they try to ensure that their investment is not depressingly affected by the presence of social housing and the urban poor.

The fear of newcomers into a neighbourhood is also an influential component, particularly low-income earners. This fear of the 'other' becomes a barrier to residential socio-economic integration as it calls for development to occur in existing areas and thus restricts the urban poor from accessing secure tenure and opportunities. NIMBY is also an obstacle to realising

spatial justice, particularly in South African cities that are still attempting to mitigate the effects of the apartheid city formation. The unfortunate irony of these reactions is that the residents that oppose the construction of state subsidised housing in their neighbourhood generally support and advocate for smart growth and oppose urban sprawl (Koebel et al, 2004). As expressed in this section, the development of social housing often prompts anxieties about potential negative impacts on the neighbourhood, quality of life and property values (Tighe, 2010). Mirroring on both local and international views of social housing is important for this research study as its key concern is to investigate the implications using shipping containers to provide social housing through obtaining perceptions of ISBU developments.

2.7 Notion of Home

The meaning of home is subjective and multidimensional as it is an ideological construct generated from people's emotional experiences of where they reside (Somerville, 1992).In its simplest form, a home can be defined as the place where one lives, a house, apartment or any other physical structure. However, the ways in which people see their domestic spaces relates to the various activities that they are able to undertake within that space. The meaning that various people attach to a home varies with distinct users and theorists. Porteous (1976) suggests that a home is a 'territorial core' that is a stationary feature of reference and preferred realm by those that reside in it. Home is about having some level of control of physical space and this control being secured through the personalisation of the territory (Porteous, 1976). This personalisation of space is also critical as it promotes security and identity as well as a sense of belonging to the resident. The ability to personalise one's house can thus be seen as one of the elements that contribute to a person seeing a certain space as a home as opposed to merely shelter over their heads. Given that, personalisation is an important aspect that needs to be investigated in exploring the perception of employing shipping containers for housing to understand if this type of typology enables residents to personalise their units to make them feel more at home. Through Brandt's (2011) lenses, a home is an extension of a shelter and resting place that supplies inhabitants with greater strength and well-being. This indicates that a home needs to be a space where one feels most comfortable and at ease as well as safe to ensure one's well-being.

Home can then be seen as an ideological construct developed from people's emotionally stimulating experiences of where they happen to live (Somerville, 1992).This interpretation of home is more grounded on non-physical features like memories, loving and caring social relations. This meaning of home suggests that home is not a 'socio-spatial system' but an

internal construct. This meaning can also be connected to the phrase: 'home is where the heart is'. This phrase indicates that home is any place and anything that is close to a person's heart. Through this view, home is every place and everyone of everything we care about. This idea of home as an experience in actuality challenges the idea of homelessness– the absence of home. This view of home indirectly implies that homelessness does not exist because as long as we are alive, our hearts are drawn to certain places and memories which are a place of residency.

There is another sense, connected to the apartheid city spatial formation (that ensured non-white populations resided in rural areas as well as the outskirts), traditions and cultures that influence people's interpretations of home, particularly in African societies. For instance, in the South African context, home is not only defined by the discussed elements, it is also defined by people's connectedness to homesteads. Many African people perceive the rural environments as spaces as their first of only homes as it is where their roots lie as their ancestors resided (Ahmed, 1999). Through this perspective, home is the source of identity and meaningfulness (Somerville, 1992). The rural environments are seen to be the spaces where they are freer to be who they truly are as people have fewer restrictions in practicing their cultural or traditional duties.

Other theorists have also indicated that home is a gendered space. Women are seen to have a varied attachment to home than men do as the two genders relate to the concept of home differently. Somerville (1992) has stated that women have a stronger and more positive attachment to the home than men do and this is connected to their domestic role in the household. The roles and obligations within the heterosexual household influences the way in which each member of the family sees home (Bowlby et al, 1997). The recognition that home is a gendered concept is important because this might help explain the views of the participant residents.

From the definitions of a 'home', it is visible that a home is more than its physical attributes; it also comes with emotional elements as well as attachments. In as much as a home provides a private space for the individual and possibly household, it also becomes a vehicle for expressing identity through manipulation of its external visual appearance (Porteous, 1976). Subsequently, this makes the task of designing and constructing a home, a complex and subjective task. A home needs to contribute to the well-being of the individuals that live in it, as it is the entity in which people spend the greater part of their lives. Essentially a home is the node of preference, spatial control, site of departure and return for journeys as well as a significant sanctuary for the individual (Porteous, 1976).

The concept of home is an important factor in considering the perception of shipping containers for housing but as this section has shown home is a complex idea that has additional nuances in the South African context. Nevertheless, to interrogate this concept this report will focus on specific elements like adequacy of ventilation, privacy and freedom of growth. This section has also demonstrated that home is a fluid concept that is subjective. Home is an intricate concept and this means that a range of responses could be anticipated with regards to how residents will define home for themselves. An understanding of the key features that present home as a cultural value, the investment potential of home and the impacts of gender on the meanings attached to home is essential in assessing how shipping containers are manipulated and designed to ensure that they too can become a home.

2.8 Densification

Defining densification in the spatial sense translates as the number of units in a given space (Boyko and Cooper, 2011). There are a couple of ways in which densification can be seen: habitable room per hectare, occupational density, block density, net neighbourhood residential dwelling or population density (Boyko and Cooper, 2011). Densification is an outcome of the alteration of the physical structure as well as an increase in the actual resident population. Urban integration and densification have been regarded as one of the South African government's objectives since 1994 through state policies like the White Paper, 1995 Development Facilitation Act, the Local Government Transition Act Second Amendment (1996) as well as the 1997 Housing Act (Turok, 2011).The Local Government Transition Act Second Amendment particularly tasks all local government authorities to establish Integrated Development Plans (IDPs) with Land Development Objectives to ensure that all local councils move in a direction that promotes sustainable integrated settlements, higher densities and mixed used spaces (Holman et al, 2015).

Present Urban Sprawl Dynamics

South African cities are most noticeably characterised by horizontal sprawl and segregation and their spatial makeup has made them inefficient and dysfunctional (Holman et al, 2015).The low cost housing programmes initiated post-1994 (which have been discussed in the Housing in South Africa section) as well as the suburbanisation patterns of the high and middle-income groups has further encouraged urban sprawl in cities like Johannesburg. The sprawl produced by affordable housing projects coupled with the spatial decentralisation of middle to high-income earners into enclave gated communities' challenges urban compaction and densification in South African cities (Holman et al, 2015). These patterns of urban growth not only discourage intensification of land use they also perpetuate racial, socio-economic and functional segregation that compaction attempts to mitigate. Urban

sprawl also comes with increased commuting times as residents, particularly the low-income groups, need to travel long distances to access services and economic activities. This is an issue for residents on the outskirts of the city as most areas are still not adequately connected to any form of efficient and effective public transportation (Holman et al, 2015).

Densification trends

Even though South African cities are growing outwards, some initiatives have taken place in the direction of compaction. Todes, Harrison and Weakley (2015) noted that densification is taking place in various areas through four different situations within the Johannesburg landscape and many other South African cities. The first being through backyard dwellings both formal and informal, the second being through increased occupancy where there is no spatial reconfiguration. The third trend is the subdivision of large plots of land as well as the establishment of townhouses on previously small agricultural holdings (Todes, Harrison and Weakley, 2015). In line with the manner in which densification is occurring in the city, Turok (2011) has highlighted the different approaches to densification. He has revealed that strategies to densifying cities include:

- Through state-driven procedures – these include processes such as acquiring and creating land for development as well as directly providing new low- cost housing.
- Through state stimuli to market procedures- this involves using incentives or regulation to promote new housing developers to develop at a high density.
- Through the use of fiscal measures to influence household preferences and location choices

Higher densities have different results for certain people and different areas and this makes it a complex developmental trend (Boyko and Cooper, 2011). Subsequently, the advantages of densification only speak to certain environments. Those that advocate for high densities highlight that they support more productive economies and inclusive communities by encouraging the integration of people and different land uses. Increasing density is useful in reducing the amount of space built on and in employing infrastructure more effectively and efficiently. However Paulsen and Silverman (2001) highlight that it does not make environments more liveable and sustainable without human interventions. Densification needs to be accompanied by good design as well as effective policies. Density within residential areas has become a public priority within the city and the country as a whole and is connected to the apartheid legacy of sprawl and fragmentation (Turok, 2011). Similarly to any other trend, densification is also criticised and challenged by ratepayers, private developers as well as financiers.

In light of these densification trends and the need for more affordable housing in the city, planning is challenged with formulating new innovative and effective strategies centred on providing adequate and liveable spaces. A critical reflection on densification patterns and the benefits as well as the manner in which is it realised is important for this study as it is believed that it enables residents to gain more access to services, public amenities and employment opportunities. Densification is seen to be an optimal direction by the scholars as seen in this section as well as the City of Johannesburg (CoJ) through its growth and development plans. A consideration of densification is crucial for this study since it aims to assess whether the existing shipping container development has contributed to densifying the Windsor area.

2.9 Conceptual Framework

The diagram below shows the themes within the continuous dialogues about ISBU housing presented in the literature. Figure 3 also exhibits the factors that influence each of the topics that have been discussed in the literature review which frame the study. From the diagram, it is apparent that adequate housing is influenced by location, access and the life span of the building material. It is also visible that the elements like adequate living space, privacy, warmth, security and personal growth are important in the consideration of a given space as a home. The conceptual framework diagram 4 also exhibits the aspects that contribute to an area's densification. This will assist in identifying how the case study building has contributed in densifying the Windsor neighbourhood.

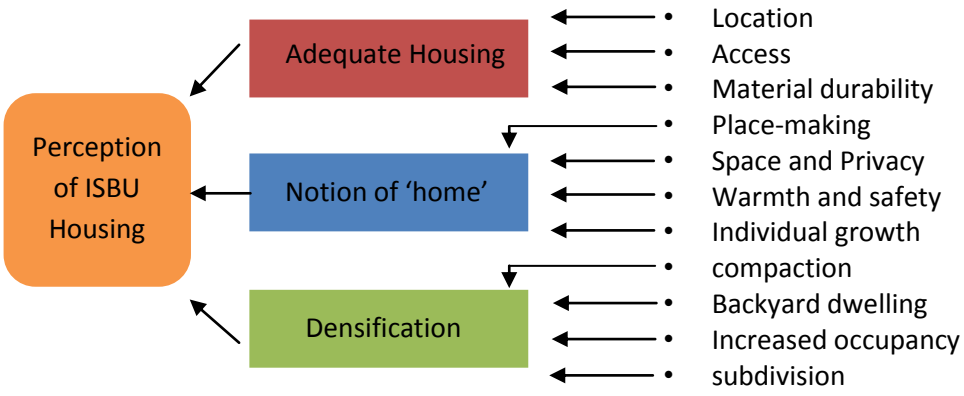


Figure 4: Conceptual framework diagram- factors that influence the perceptions of ISBU housing

Home as shelter connotes the material form of home, in terms of a physical structure which supplies the individual protection. Home as heart connotes the warmth and growth which home provides for the body enabling one to feel comfortable. Home as heart stresses on emotional rather than physiological security and health, this dimension of a home is based on relations of mutual affections and support. Home as privacy involves the power to control

one's own boundaries and this translates to the possession of a certain territory with the power to intentionally exclude other people from that personalised space.

2.10 Conclusion

This chapter has reviewed the literature on shipping containers, housing in South African adequate housing, the concept of home and densification. From the literature, it is visible that the government is still struggling to provide adequate low-cost housing as indicated in housing policies since 1994 (Haselau, 2013). Housing and housing provision has become a highly contentious, emotive and political issue. The provision of housing is a complex and ever-evolving process that demands careful considerations.

From the above discussion, it is clear that the concept of home is complex and that it can be understood in numerous ways. This discussion has shown that home is more than a roof over one's head; it is the lived experience of a locality. The literature has also exposed that the South African definition has an additional layer of the intricate meaning of home. Since home can also refer to homelands areas. However, for the purpose of this study, the latter view of the home will not be interrogated as the study area is Windsor which is situated in the urban environment. This review has also highlighted that different genders perceive the concept of home differently and an acknowledgement of this aspect in important in this research as different gendered participants can be expected to respond differently to questions associated with the notion of home.

The literature review has identified the manner in which densification is realised in the city. Identifying how densification takes place in Johannesburg is vital for assessing the current density of Windsor as well as assessing if 61 Countesses building contributes to densifying the area. This literature review has exhibited the associated discussions occurring connected to ISBU as building materials. It is becoming apparent that intergovernmental relations in housing are crucial to assist in achieving sustainable housing settlements (Ramashamole, 2011). The container should not be dismissed as a building material for habitable spaces (Abrasheva, Senk and Häußling, 2012).

CHAPTER 3: INTRODUCING WINDSOR WITHIN RANDBURG- AN AREA IN TRANSITION

3.1 Introduction

Apartheid in South Africa was built on spatial division (Kubanza, 2012). Segregation was the essence prior to 1994–the separation of people was based on race and was ensured through certain areas being preserved for specific racial groups (Kubanza, 2012). The white populations were located in the city centre, at a convenient proximity to services and infrastructure. The non-white populations were forced to reside on the peripheries of the city in small homogenous housing. Even though these patterns are still evident in Johannesburg today, the process of racial integration has begun and the housing typologies are seen to have become more diverse, particularly in the study area Randburg-Windsor.

Against this background, this chapter serves to outline the location, background and character of Windsor within the Gauteng province of South Africa. This chapter focuses on Johannesburg, Randburg and Windsor. This chapter of the report provides a contextual discussion of the study area within Johannesburg. Thereafter it will contextualise Randburg (within Johannesburg) as Windsor is one of the neighbourhoods that characterise Randburg. An overview of Randburg assists in locating the study area while providing an essential understanding of the area's historical background as well as the developmental trends. The last section of this chapter provides background information on the Windsor area, which is the place where research interviews have been conducted.

3.2. Johannesburg

Johannesburg is the central urban area in Gauteng, located adjacent to the City of Tshwane on the northern border and Ekuruhuleni on the east (Kubanza, 2012).The origins of the city of Johannesburg are connected to gold discovery in the Witwatersrand Basin. Johannesburg was established as a temporary mining camp during the late 1880s (Beavon, 1997). Gold provided a spark for the development of this city and it also anticipated the growth of other towns around the gold reef (Beavon, 1997). This city is the prime economic hub of the country, subsequently, it has become the biggest city in South Africa and the most densely populated city (Chipkin, 1993). Johannesburg is seen by many as the centre of employment, social interaction, education and prosperity hence it is a city that pulls people from neighbouring cities, provinces and countries. The nodal economic and residential areas that are important to Johannesburg include Johannesburg Central Business District, Sandton, Alexandra, Soweto, Roodepoort, Lenasia and Randburg. Windsor is located in Randburg and therefore is in proximity to this economic node.

3.3. Windsor Within Randburg: Location, Connectivity& Character

Windsor is one of the areas that constitute Randburg. Randburg is an area located in the northern part of Johannesburg in the Gauteng province, South Africa (Kubanza, 2012). Prior to 1994, Randburg (refer to Figure 4) operated as an independent municipality with its own CBD, civic centre and magistrate's court. This part of the city was also an area set aside for the white population. However, it is now characterised by a more mixed population that is dominated by black Africans, its demographic composition will be further discussed. Randburg is an affluent region of the city that is constantly developing and growing. Randburg is a Regional Node that is developing at a rapid rate. The city encourages new retail, office and residential developments within this node to promote redevelopment as this area has witnessed a decline over the years.

Windsor is one of the residential suburbs that makeup Randburg together with Parktown, Melville, Linden, Ferndale and Kensington (Mubiwa and Annegarn, 2015). These residential areas were developed during the initial colonial spatial northward expansion of Johannesburg between the 1900s and 1930s (Mubiwa and Annegarn, 2015). Windsor is a suburb that is divided into Windsor West and East; it is separated by the Randpark Golf Course as seen in Figure 4below.WindsorEast is a one square kilometre area that is dominated by townhouses, flats and complexes. Windsor is a neighbouring suburb to middle- to high-income areas which include: Cresta, Northcliff, Fairlands, Linden and Ferndale. It is also conveniently bordered by the N1 western Bypass and the M5 as shown in the map (Figure 5). This makes Windsor a well-connected neighbourhood; giving residents more access to public transportation, thus increasing residents' connectivity to the city CBD and other centres.

Windsor is located between two economic nodes: Cresta and Ferndale. This means that the residents in this area have access to economic nodes for goods and services. The map above also exhibits the Rea Vaya routes along Beyers Naude Drive and Malibongwe Drive. With access to the Bus Rapid Transit (BRT) system, the residents in Windsor have an additional mode of transportation to taxis at a walking distance. The BRT enables residents to navigate the city more easily at a lower cost. The Rea Vaya connects Johannesburg CBD and Braamfontein with Soweto.

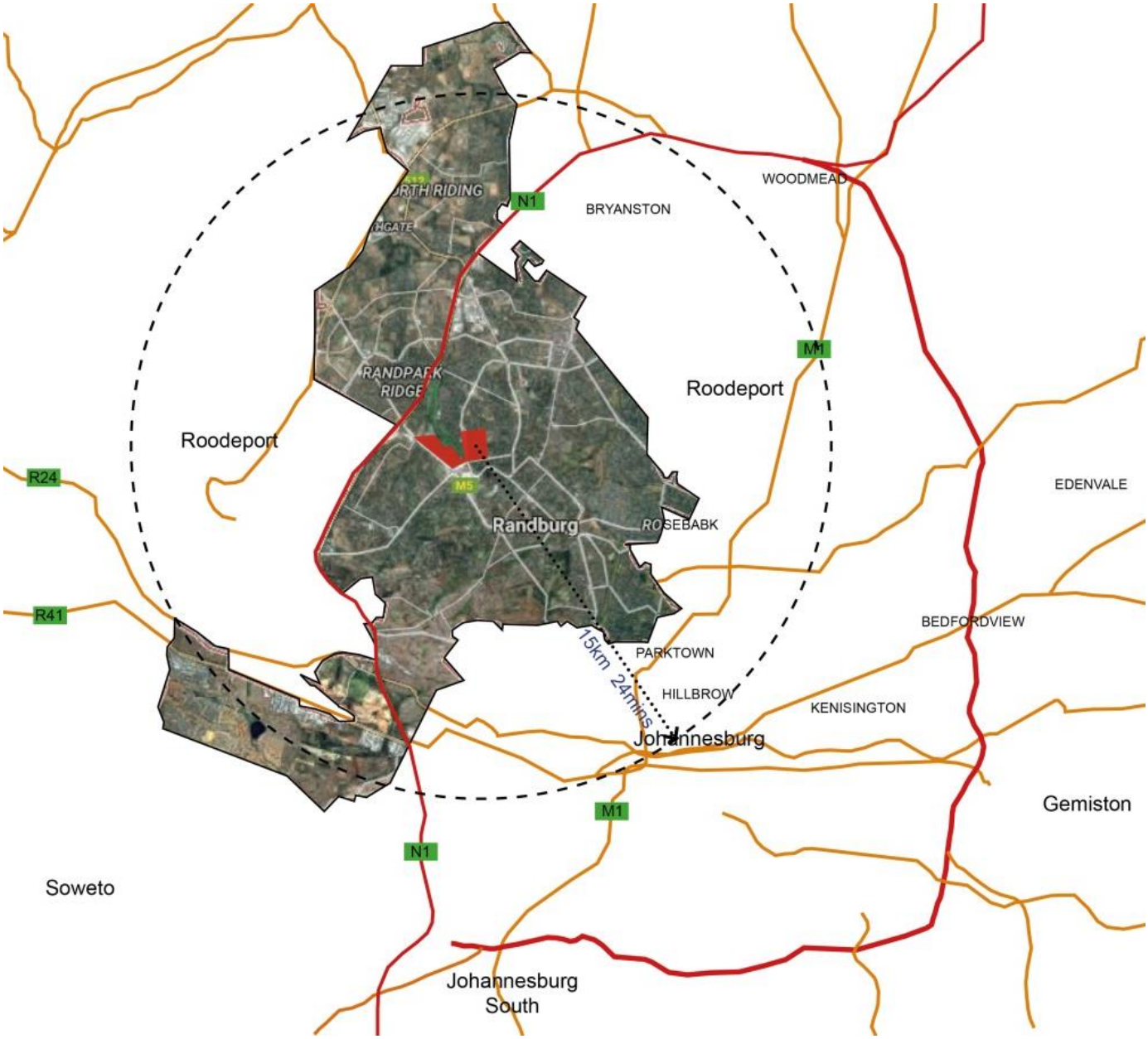


Figure 5: Map showing Windsor within Randburg and its distance from the Central Business District

The map above also shows the approximated distance between the study area and the CoJ's CBD. From the map, it is visible that Windsor is 15 kilometres away and the estimated time travel via minibus taxi is 24 minutes. The residents are Windsor East are thus less than half an hour away from the central business district which is seen as one of the key commercial and financial districts. The residents in this neighbourhood are also conveniently located close to other economic centres like Rosebank.

3.3.1 Public services and Infrastructure

Given that fact that Windsor east is a residential suburb only a square kilometre in area, there are limited public service points within this area. A few of the public services facilities

include a public swimming pool and the Windsor West Clinic. The Windsor public swimming pool is one of the CoJ's public facilities that are situated opposite the study building -61 on Countesses. However, the residents of this area depend on services within the Randburg area and those in the Johannesburg CBD.

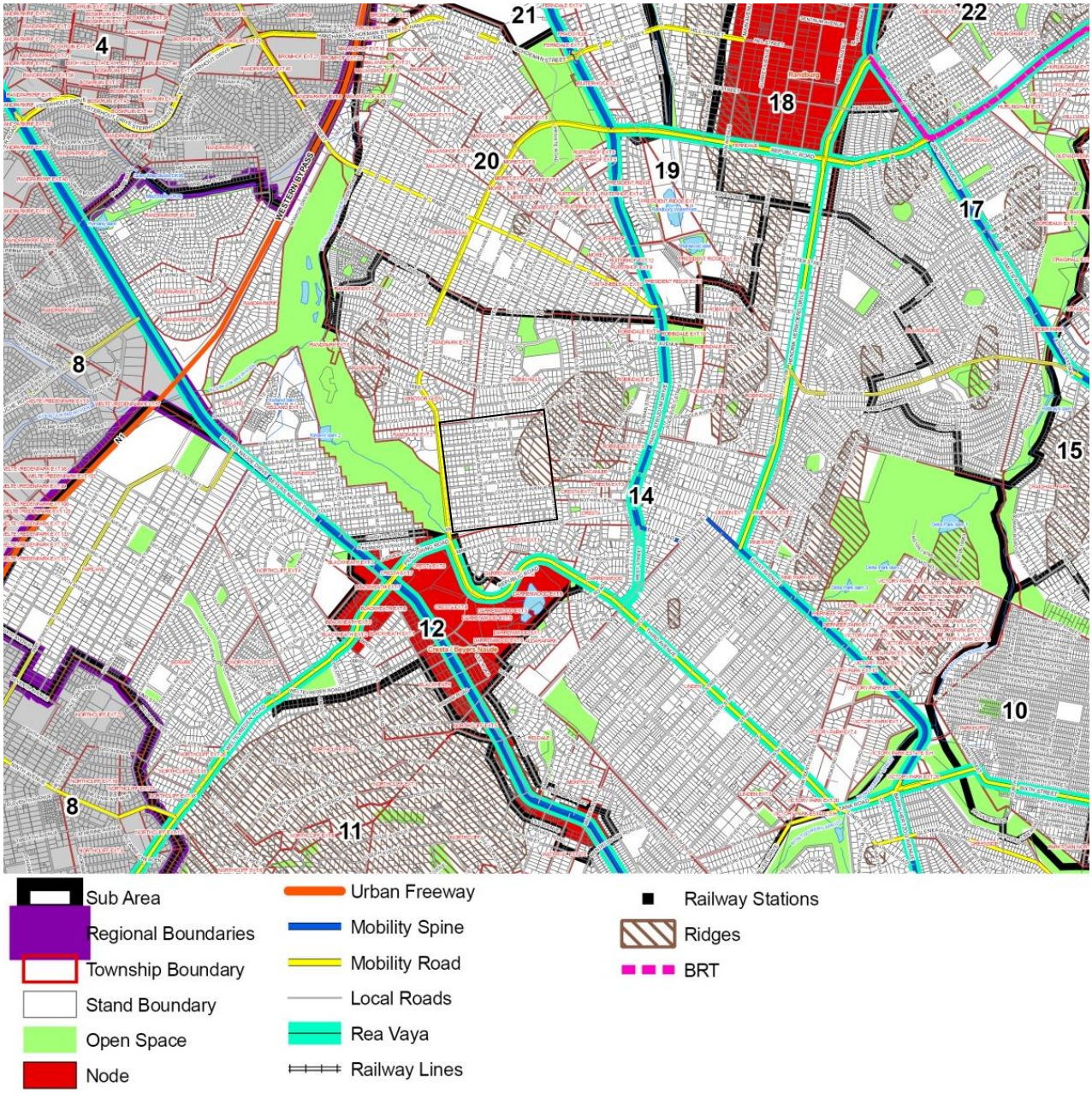


Figure 6: Road Linkages around Windsor area Source: https://gcro1.wits.ac.za/gcrojsgis

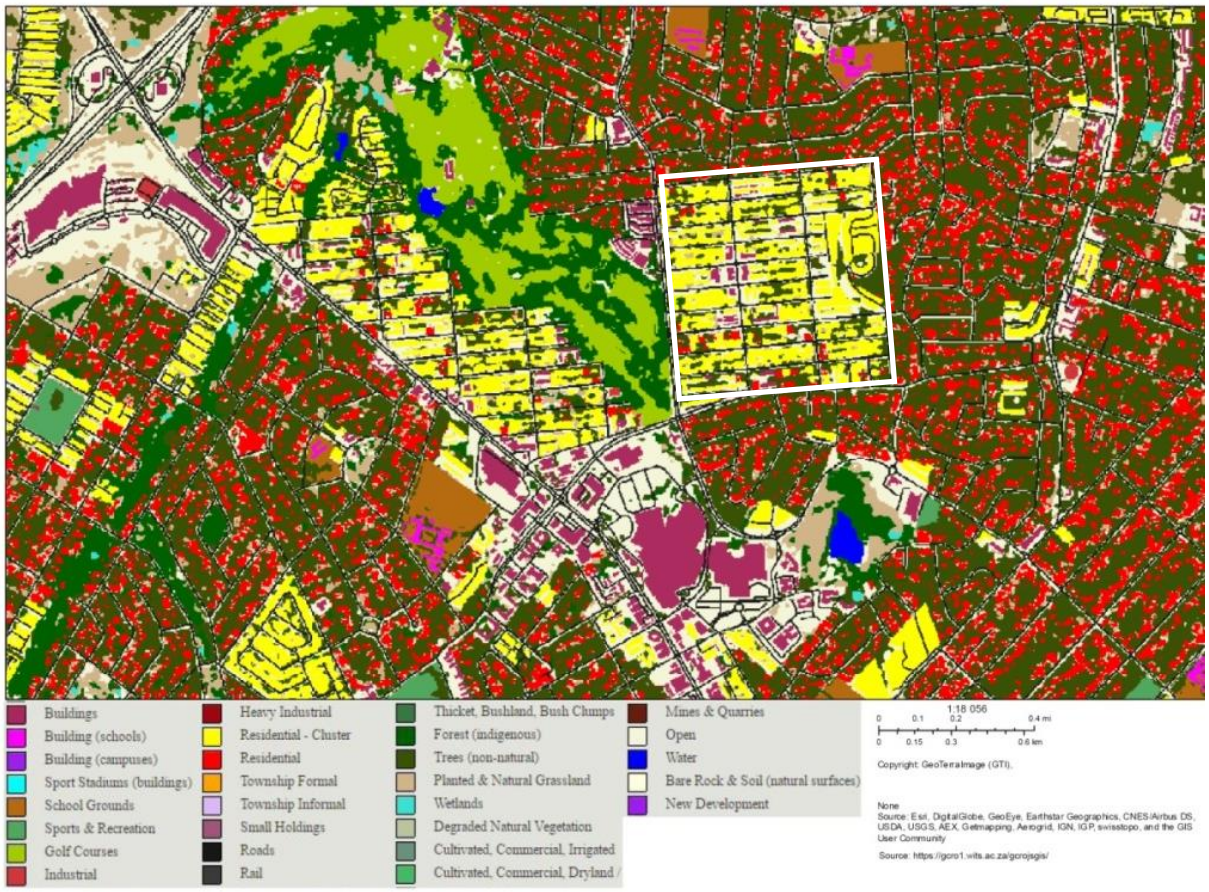


Figure 7: Map of the spatial composition of the surrounding areas

Source: https://gcro1.wits.ac.za/gcrojsgis

The education institutions that residents in Windsor are connected to are within the Randburg area. Randburg has many schools that Windsor residents have access to from primary school level to colleges. The education institutions nearest to Windsor East include Robin Hills Primary School, the King's School, Northcliff High School, Northwest Christian School and SPARK Cresta Primary School. The identified schools are a combination of public and private schools and this gives residents options depending on their affordability. The Randburg area also has colleges which among many include Damelin, Boston City Campus, the AAA School of Advertising, and Vega School of Brand Learnership. The wide range of education institutions at a close proximity to Windsor gives residents in the study area options and also contributes to making Windsor an ideal neighbourhood for families and young varsity students and new professionals looking for work opportunities. Given that, the education institutions thus play a significant role in attracting a range of populations into this area and making it a diverse neighbourhood.

Randburg is home to numerous shopping malls and entertainment nodes which include Northgate Mall, Cresta shopping centre and Randburg Square. Randburg is also well known for shopping centres like Windsor Glen and Ferndale shopping centre.

3.3.2 Demographic composition

In 2001, this area's population was approximated to be 6186 excluding those that are undocumented and illegal immigrants (Statistics SA Census, 2011). The 2011 census City of Johannesburg reveals that Winsor east's population was estimated to be 8165 (Statistics SA Census, 2011). The difference between the ten years has been a growth of 1979 people. This suggests that this area has seen a consistently rapid increase in its population over the year which has been approximately 20% in ten years. This sub-area has a relatively diverse racial population that is dominated by black Africans, which constitutes approximately three-quarters of the area's total population. The whites' population is the next highest with 985 people in the area, then Asians at 458 and lastly, the Coloured population is made up of 323 people as shown in the pie chart below.

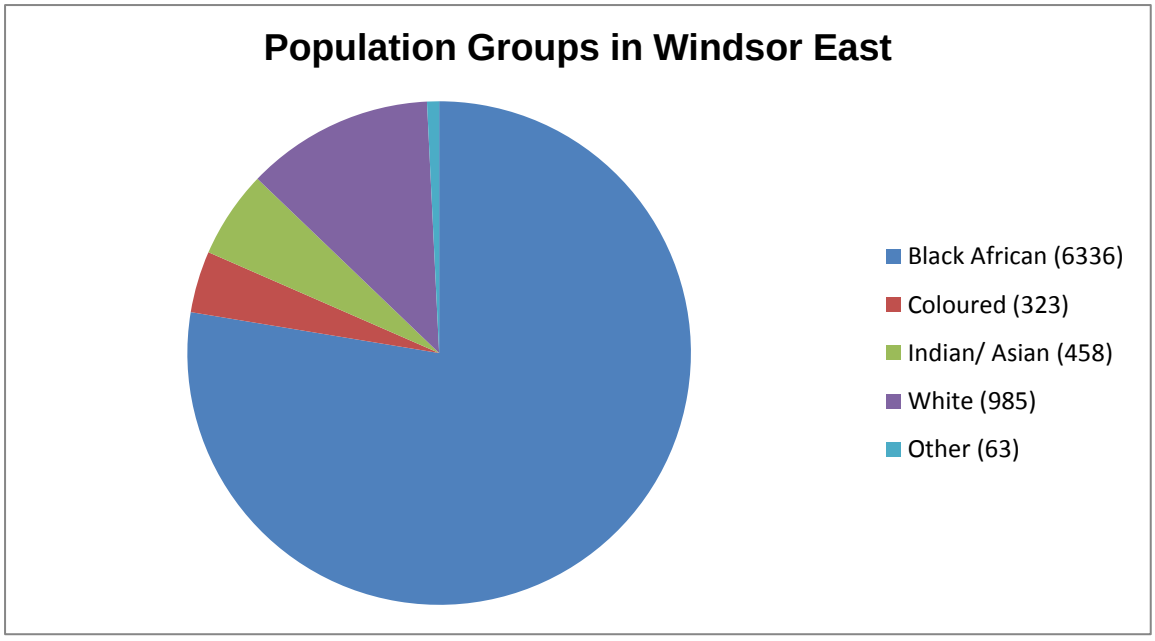
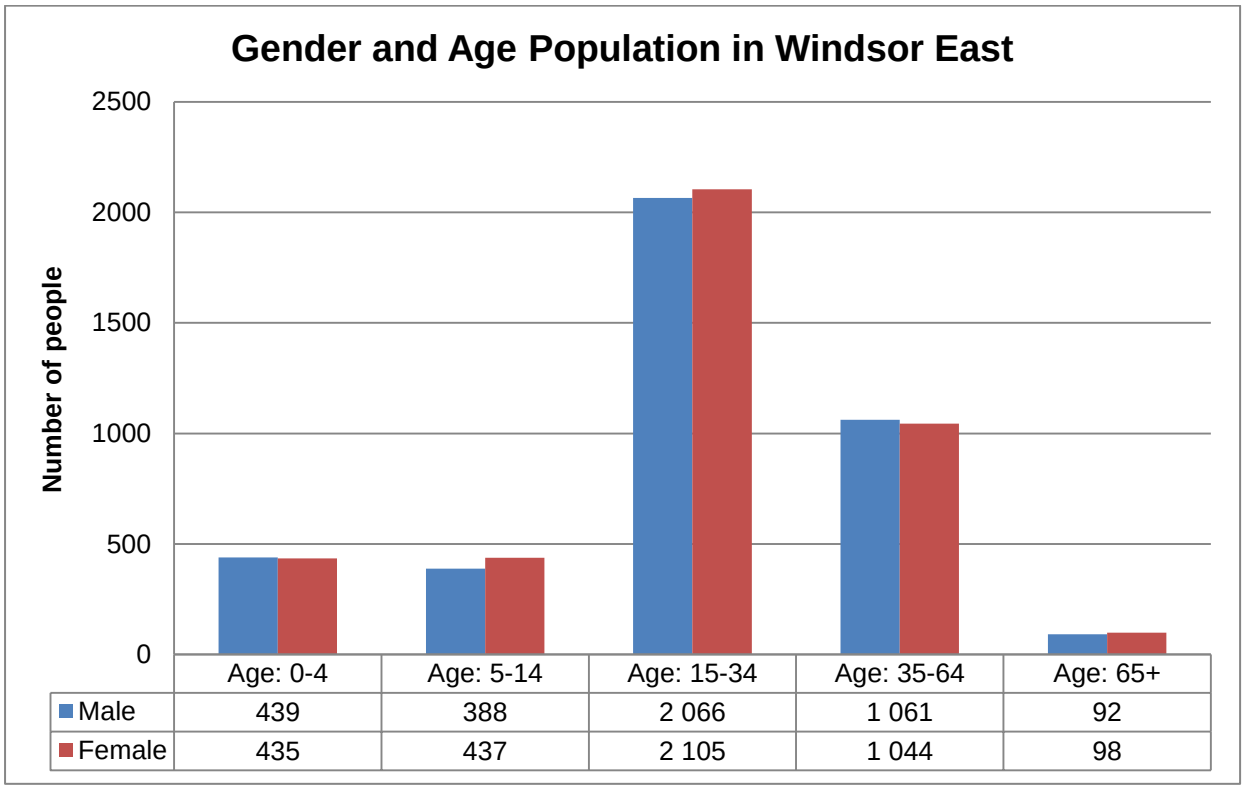


Figure 8: Racial Population Groups in Windsor East

From the residents' first languages recorded by the city's statistics, it further emphasises that the area has a diverse population. The majority of the area's population can be categorised as speaking either English, isiZulu or other languages – which are not any of the other South African languages – as their home language. This suggests that there is a significant proportion of foreign nationals in the area's population. From the researcher's encounter with residents prior to conducting the interview suggested that Windsor East is also a friendlier neighbourhood for international migrants as it has more people from Zimbabwe. Windsor is a

popular area for Zimbabwean migrants and it may be because of all the other factors (reasonable cost of rent and connectivity to the city as well as other retail economic centres) that make it popular for everyone else, plus the addition of migrants. This also suggests that the Zimbabweans see Windsor East as one of the points of arrival area in Johannesburg. This is also consistent with the rapid urbanisation as well as a number of migrants that Johannesburg accommodates.

This population composition is still true as the area is a well-located neighbourhood that houses people in transition. Windsor East houses population like students and young families even though the presence of old residents is still felt. The table below also verifies the different age groups according to gender in this study area. The table below exhibits that the most dominant population age group in this area is between 15 and 34 years old. This suggests that a significant portion if the residents are young individuals in school, varsity or young professionals. The table also reveals that there is a significant number of children in this neighbourhood that are below 14, this indicates that there are a number of families in this area.



	Age: 0-4	Age: 5-14	Age: 15-34	Age: 35-64	Age: 65+
Male	439	388	2 066	1 061	92
Female	435	437	2 105	1 044	98

Figure 9: Gender and Age Population Groups in Windsor East Sourced from Statistics SA Census (2011)

From the observations of this area, it is a destination for new migrants that are low-middle working class and those looking for minimal living conditions. This is also seen in the income

brackets that were recorded. A significant percentage of this area's population ~~earnsless~~ earns less than R10 000 (Statistics SA Census, 2011).

3.3.3 Housing Typologies

The housing typology in Windsor East has a rich variety. The housing typology includes detached houses, complex residential developments and townhouses. The diverse range of residential apartments gives the different household composition a choice. The variety of housing together with the richness of land use also pulls diverse populations like nuclear families, students as well as young and old couples. As shown in the table of the dwelling types in Windsor East, the most predominant type is apartments in blocks of flats.

61 on Countesses

The study building was developed by Citiq Property Developers in 2012(Botes, 2013) under the leadership of Arthur Blake. It is a three storey building which was constructed with the use of 21 steel shipping containers. Blake is by qualification a civil engineer with a passion for architecture. He has dedicated his career to container developments and has been a key player in the design and development of the Mill Junction student accommodation in Newtown, the 27 Boxes centre in Melville as well as the 61 on Countesses building in Windsor East. Arthur has 20 years of experience in construction and strongly believes in the container developments.

Each of the containers measured 2 metres in height by 5 metres in width by 12 metres in length. A typical unit in this building constitutes of three small bedrooms, kitchen, single bathroom with toilet and shower, combined dining room and lounge as well as a small balcony for some units.61 on Countesses is one of the few shipping container developments in the city which houses the low- to middle-income groupings. This building accommodates a range of households from young professionals to families as the building units range from two bedrooms to four bedrooms. The units in this building measure 56m^2, with the main bedroom measuring 11m^2. According to the CoJ (2012) each steel container used to produce this building cost R33 000 including their delivery to Windsor. The shipping container development was established with those that earn approximately R13 000 a month in mind, earners that would be able to afford to pay rent between R3 500 and R4000.



Figure 10: 61 on Countesses building and Windsor East surrounding area

61 on Countesses building finds itself opposite the Windsor East public pool. This building is also situated 3 minutes away from Beatrice Street which is a mobility street in this neighbourhood as shown in Figure 10 above. Beatrice Street is also an active path as most supermarkets and stores like Spar are found in this area. The Windsor Medicare Pharmacy and the Superbets casino entertainment space also lie along this street. As shown on the map (Figure 10) 61 on Countesses is also only a 10-minute walk away from Republic Road which connects this area to other neighbourhoods in the north of Randburg.

Another important thing to note about the housing typology in this area was the trend of subletting seen through advertisements on trees, street light poles and walls. Along with most streets in Windsor East, trees and walls have attachments advertising a room or space to let. The advertisements typically include an indication of the amount of space available, the date at which space would be available and the amount one would expect to pay as well as a number to call. Figure 11 below is an example of an advertisement seen in the study

area that indicates that there is space within a specific house that is available from the beginning of July. As seen in Figure 11, these advertisement notes are also found on tree branches along the main roads.

The number of advertisements suggests a demand for housing in the area as well as a variety of household composition in Windsor. These advertisements show that densification in this area could be taking place through increased occupation since a number of families can share a single house or a portion of a flat. Rooms and space letting is a common feature of housing landscape in the inner city that enables the urban poor to occupy residential areas that are generally priced highly (Mayson, 2014). Room letting is when different households jointly live together in a single apartment while sharing certain amenities like the kitchen space and bathroom. This allows people to reside in well-located neighbourhoods while paying a relatively reasonable amount towards rent.



Figure 11: Examples of room and space advertisements in Windsor East

Room letting is an important form of housing typologies is Windsor East as they enable urban residents and migrants to access services and opportunities at a lower price. This also indicates that people seek residential spaces during certain times of the years thus Windsor could be considered one of the migrant destinations in Johannesburg. Room letting is not a unique typology that is only found in Windsor, room letting has been captured in other dense areas across the city like Hillbrow that house high populations (Mayson, 2014). Even though this prevalent phenomenon does not result in changes to the external built form, it is an indication of the density in this area as this increases the amount of occupants intended to stay in a specific apartment (Todes et al, 2015). It exhibits that people are taking the initiative to access opportunities and thus better livelihoods by renting space within apartments. The growth of occupants in this area illustrates a feature of ‘resilient density’ within Windsor as this area is able to absorb the rapid household increase through the adaptation of household dynamics (Todes et al, 2015).

3.4 Quality of the Windsor East Neighbourhood

Determining the quality of a specific neighbourhood is relative and subjective depending on the individual. Connectivity, safety and the presence of human activities are seen as important indicators of liveable neighbourhoods (Jacobs, 1961). As noted in the conceptual framework, safety, access and location add to a space being constituted as adequate. The locational centrality of Windsor East creates easy navigation and accessibility and strong connection to other parts of the city. It is areas like this neighbourhood where affordable and adequate housing should be developed and not the periphery of the city (Oluseyi, 2006). The level of connectivity of the area to other neighbourhoods and economic activities as well as services contributes to a place being considered as a well-located neighbourhood amongst other factors (Oluseyi, 2006).

3.4.1 Connectivity: Mobility and Access for Residents in Windsor East

Having the ability to navigate the city is an important component in enabling urban residents to access opportunities, services, economic activities and places for leisure. Access encompasses the numerous ways in which people can move in and around the area in which they live (Bevan and Croucher, 2011). Eased movement is enabled by presence of numerous modes of public transportation. Windsor East was a central place and safe area that is close to malls, their work place and their education institution.

The interviews and the researcher's observations indicated that most residents generally used public transportation to move in and around the area and the surrounding neighbourhoods. Most of the public transport users employed minibus taxis and the Rea Vaya. Those that make use of the Rea Vaya to move into the city centre access the Bus Rapid Transit (BRT) from the Cresta Rea Vaya stop. It took him approximately 15 minutes to get to the Cresta stop from the 61 Countesses building. Beatrice Street is the main street where people access minibus taxis going to Johannesburg CBD. Beatrice Street can be considered as the backbone of Winsor East as it is also where the residents buy their small household produces like bread and milk from local supermarkets and Spar. Therefore it is a key active economic and mobility spine within the neighbourhood. To access public transport to the rest of the Randburg area, residents have to travel to the edge of the neighbourhood and catch a taxi on Republic Road. Republic road is approximately 10 minutes away from 61 on Countesses and is an important mobility spine that connects Randburg's subareas to one another. Minibus taxis that navigate through Republic Road move all the way to Malibongwe Highway which intersects through neighbourhoods like North-Ridding.

Identifying the modes of transportation that residents use to navigate in and around the city is important as it point out the level of connectivity of the neighbourhood to economic activities and residents' work places. It is also an influential factor in residents' choice of location. Taxis play the most crucial role in connecting the residents in this area with other areas at a reasonable price. The fact that residents have the option to use the Rea Vaya as their stop is 15 minutes away means that they are well positioned at a close proximity to the BRT, which stretches all the way to Southern areas of the city like Soweto. From this discussion it can be gathered that Windsor East residents are well connected to the city as they can easily access more than one mode of public transportation. Windsor East is adjacent or on some major arterial roads in Randburg and in Johannesburg with several options for public transport. It is a well connected neighbourhood and many residents cited the access to transport as a reason for locating in the area. This reinforces Windsor East as a suitable site for densification and development.

3.4.2 Safety and Noise in Windsor East

Safety and the intensity of noise are understood to be an indication of the quality of a neighbourhood. Noise levels also reflect the amount of activity or residents in a specific area. These two elements are important as they can also help understand the intensity of the area's density. The researcher's engagement with people in Windsor East during the researcher's spatial analysis and observation indicated that they were not safe were women. This suggests that women may feel less safe than men although 3 female participants did feel safe. Those that did not feel safe pointed towards the increased level of criminal activity.

This residential area has been challenged by illegal businesses and the commercial areas have been documented to be dominated by noisy nightclubs and drinking establishments (Kubanza, 2012). The Windsor area appears to be a decaying neighbourhood challenged by drug trade and deteriorating buildings. After observing the area through site visits, the buildings in this neighbourhood do not seem to be well maintained or well managed. A significant portion of the buildings have broken windows and sewage problems as some of the streets are covered with water. According to (Kubanza, 2012) Windsor was found to be an area where drugs are stored. This area is also subject to illegal immigration and organised crime. As a result of the illegal activity in the area, it has become an unsafe neighbourhood particularly for vulnerable residents like women and children; it is also an intense surveillance area. The Johannesburg Metropolitan Police Department (JMPD) is one of the key agents that supervise the streets of this neighbourhood.

The noise levels in a specific neighbourhood are generated by human activities happening in the area (Maedones and Ac, 2007) and from vehicular/motorised traffic. Higher densities can

result in noisier environments because of intensity and proximity. The neighbourhood was the busiest and noisy during the night, the weekends and holidays as well as the end of the month. This pattern suggests that is the everyday activities of residents generating noise rather than inappropriate night clubs or entertainment venues. Urban noise levels indicate the busyness of streets and sidewalks and this ensures street safety and they foster contact by bringing people together. Human activities on the streets and sidewalks of a neighbourhood tend to attract 'eyes on the street' and act as informal surveillance (Wendt, 2009).

From the discussion with the residents in the area of the quality of the neighbourhood, it can be gathered that Windsor area is considered by those that live there as a liveable neighbourhood. It is well connected to the tenants' work places and economic nodes like Patrice Street and Cresta Mall; it is also close to education institutions (primary schools, high schools and tertiary institutions like the University of the Witwatersrand and Damelin). From their experience in the area, this area is a moderately quiet place that is more active when people are back from work or school which is typically in the evening, weekends and public holidays.

3.5. Conclusion

In sum of the discussion, this chapter has introduced Windsor East within the Randburg region of Johannesburg. It also provided some insight of the Windsor East neighbourhood, through documenting the area's public services and infrastructure, demographic composition, housing typology and the unpleasant side of the neighbourhood. Windsor is however challenged by illegal activities that make it a less pleasant place to live in and makes it unsafe for residents. As a result this area is heavily supervised for the police and this further perpetuates the feeling of insecurity for residents and those looking into living in the area. As evidenced through the brief analysis of Windsor, this is a very dynamic area that pulls a diverse working class with its connectivity to the city and other economic nodes. This area is also characterized by a wide range of dwelling types that that make its housing typology flexible. The predominance of flats in this neighbourhood also implies that it is a relatively dense area as flats accommodate more residents than detached houses. It is also a well situated area which enables its residents to have smooth access to public amenities and opportunities.

CHAPTER 4: EXPERIENCES AND PERCEPTIONSIN WINDSOR EAST

4.1 Introduction

The previous chapter provided an understanding of the study area that the research took place in–Windsor East. It also contextualised the area and showed the neighbourhood in relation to the city and Randburg. The latter chapter has also provided a discussion of the interrelated concepts like adequate housing, home as well as densification. The aim of this chapter is to present the qualitative results of the fieldwork carried out in Windsor East to highlight the existing perceptions of shipping container developments. As stated in the introduction chapter, the objective of this study was not to conduct a comprehensive and thorough survey of the whole of Windsor East but rather aimed at portraying examples of some of perceptions of the shipping container housing development as well as the living spaces within the building to graphically exhibit the experience within the study building. To present informed perceptions of the focus building, I sought perspectives from both tenants of the 61 on Countesses building and home owners as well as rental occupants within the Windsor East neighbourhood. The 11 interviews were captured in the form of field work notes and voice recordings and are presented in the next section as a series of biographies of residents as well as a description of their living spaces. This is done to exhibit a more qualitative narrative of the research participants, the diversity of living spaces and how they have re-modelled the units to accommodate for multiple households.

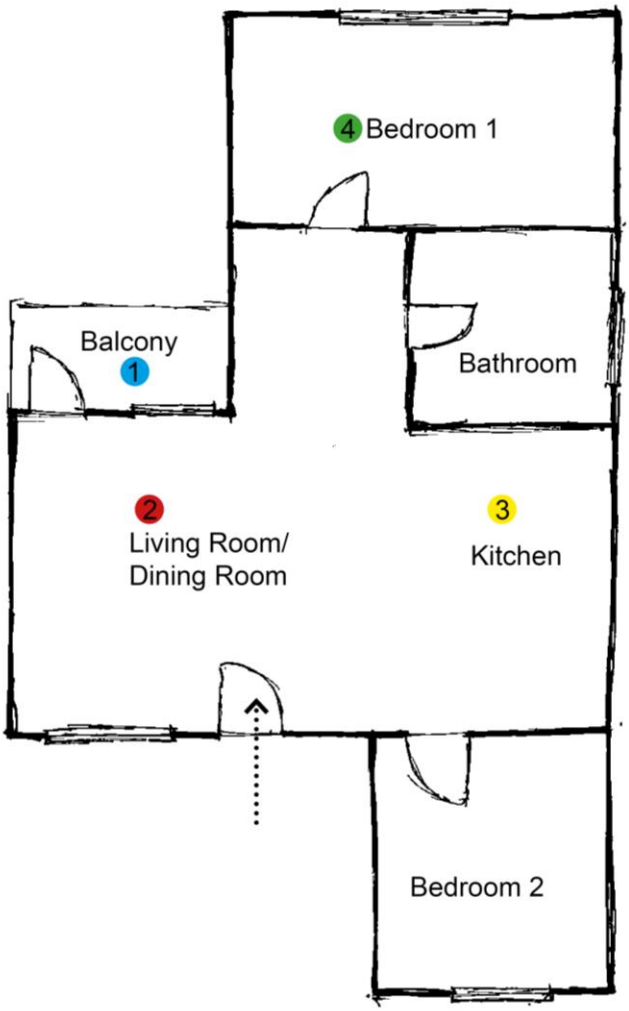
This chapter of the study discusses the 6 key discussions that have emerged from the findings informed by the engagement with all 11 participants. These 6 main ideas are: residents' experiences inside 61 Countesses building (This part also incorporates discussion of the residents' views of the common spaces, their sense of home as well as the issues experienced and associated with the case study building), neighbouring residents in Windsor East, perception of 61 Countesses, perceptions of other shipping container developments as well as occupational density in 61 Countesses through room-letting. The experiences of the 61 Countesses residents are presented in the form of descriptive illustrations of the information obtained from the interviews. The illustrations contain biographic information of each of the residents which supply an understanding of the distinct individuals and their use of their home space in the form of a sketched unit map. The biographic information of the neighbouring residents is presented in the form of a table and map that situates them from the case study building. To ensure the residents' anonymity for ethical issues, the findings do not show the respondents' faces and real names have been substituted.

4.2 Residents' experiences inside 61 Countesses

Unit 1: Kele (Young Female)	
Age	21
Place of origin	Pretoria
Occupation	Student at Damelin
Duration in unit	2 months
Occupant(s) in unit	2
Relation	House-mate
Services shared	Bathroom, kitchen, living room and balcony
Rent	R 2500
Monthly income	R 1500 - R 5500
Education level	Have attended university



Painting on the wall, indicating that tenants' ability to personalise their own space





Kele shares her unit with another student she met at school to manage with paying for rent. Kele pays a little more than her house mate as she uses the main bedroom

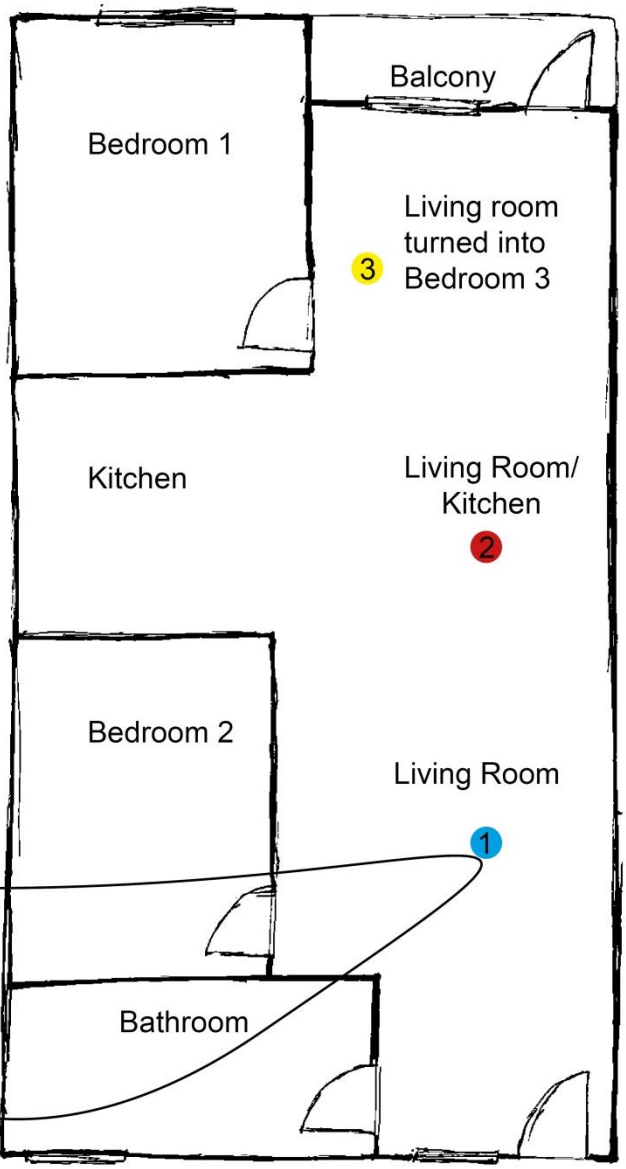
Passage leading to Bedroom 1(the participant's room)





Unit 2: Lerato(Young Female)	
Age	24
Place of origin	Mpumalanga
Occupation	Employed -Cresta
Duration in unit	Since 2012
Occupant(s) in unit	7
Relation	Siblings and cousins
Services shared	Bathroom, kitchen, living room
Rent	R 5000
Monthly income	R 1500 - R 5500
Education level	Have attended university/ College

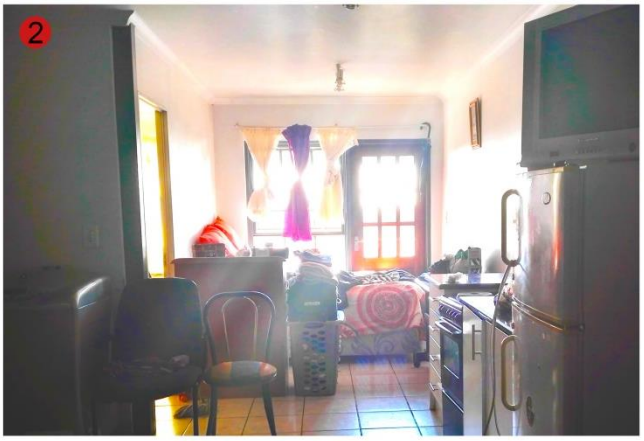
Lerato shares her unit with her family, they decided to stay in Windsor as they brother was already residing in the neighbourhood.

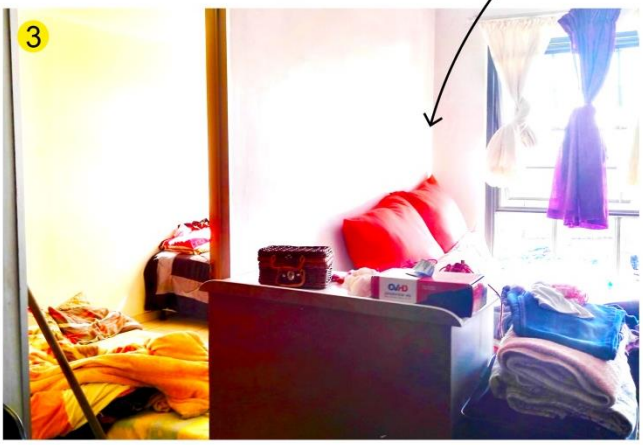


This space is used to serve numerous purposes. It is both the living room and kitchen area, but as shown in the picture the little child is also bathed her

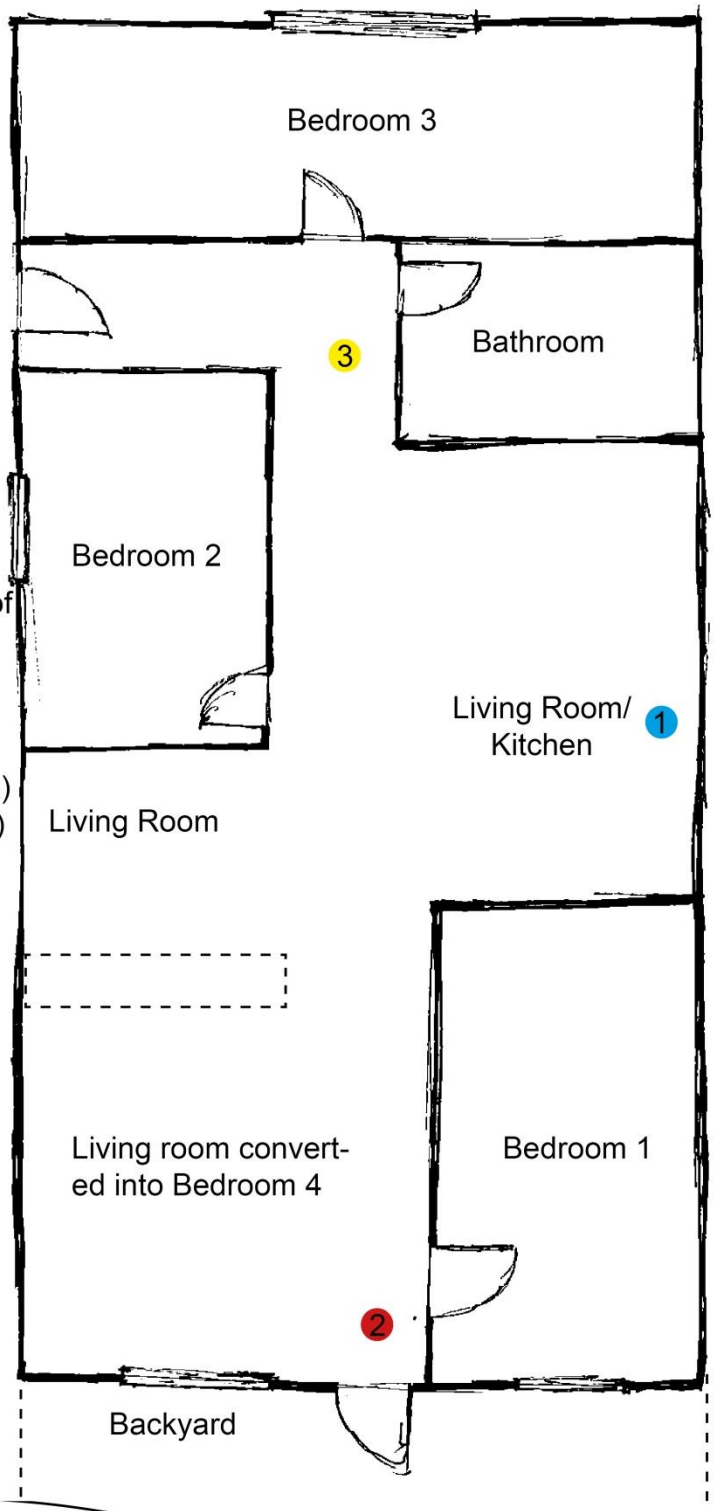


They not utilise the balcony area as much as they would like to as they have converted a portion of the living room into bedroom 3.





Unit 3: Themba (Young Male)	
Age	18
Place of origin	Johannesburg
Occupation	Student at Wits
Duration in unit	Since 2013
Occupant(s) in unit	13
Relation	Family and house-mates
Services shared	Bathroom, kitchen, living room
Rent	R 5800 (Collectively)
Monthly income	Unsure
Education level	Have attended university/ College



Themba is a first year student from the University of the Witwatersrand and shares the unit with 3 other households.

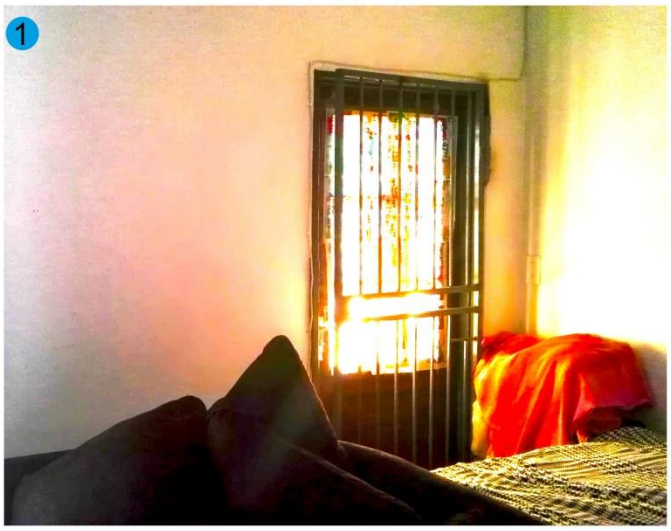
Bedroom 1: Themba's family (5 occupants)
Bedroom 2: Shared by male students (3 occupants)
Bedroom 3: Woman and her children (4 occupants)
Bedroom 4: 1 occupant

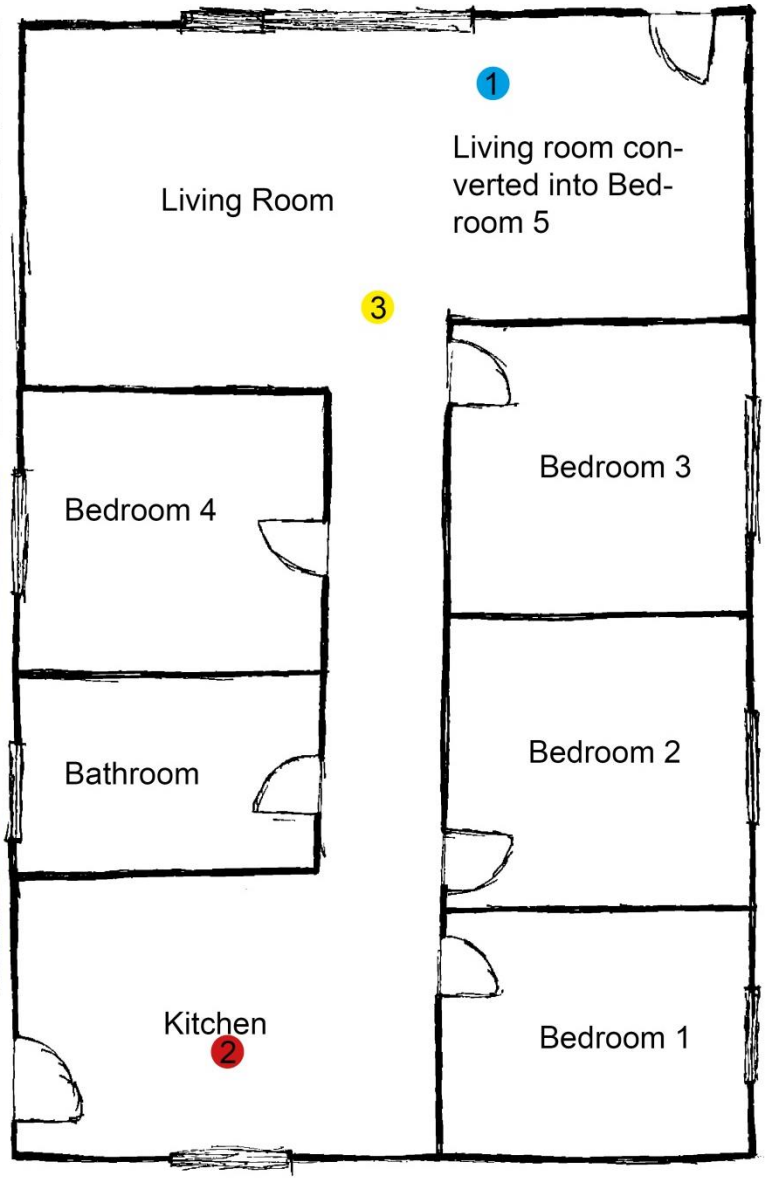






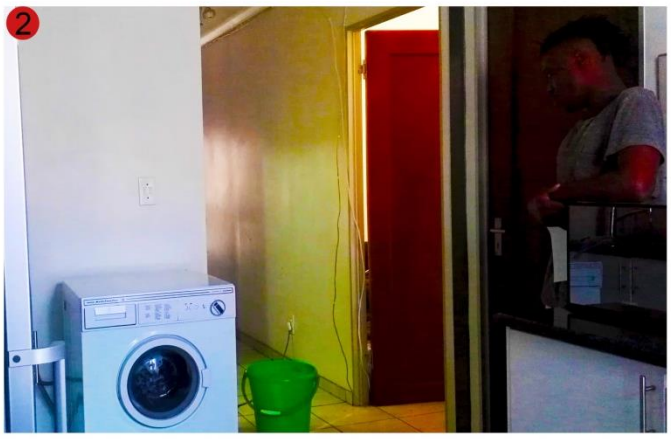
Unit 4: Bongani (Young Male)	
Age	22
Place of origin	Kwa-Zulu Natal
Occupation	Employed + @ UNISA
Duration in unit	Since 2015 -August
Occupant(s) in unit	5
Relation	House-mate
Services shared	Bathroom, kitchen, living room
Rent	R 2000
Monthly income	R 5 500 - R 10 000
Education level	Completed High School

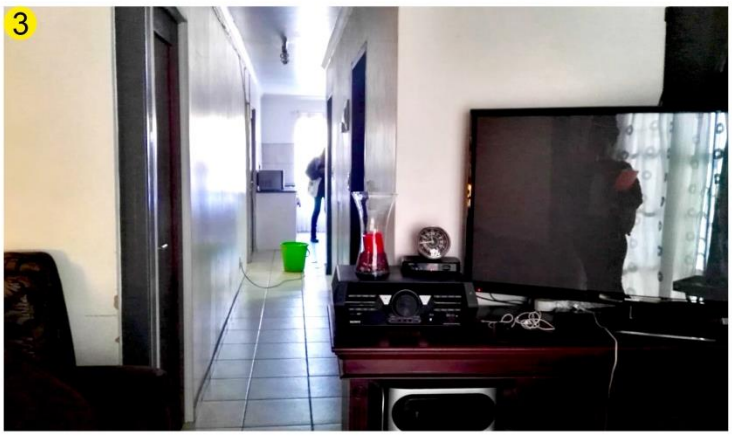




In this unit, each individual tenant has their own room. However the living room was also sectioned to serve as the 5th bedroom as shown in image 1.

Image 2 shows the kitchen space and Bomgani the participant on the right hand side.

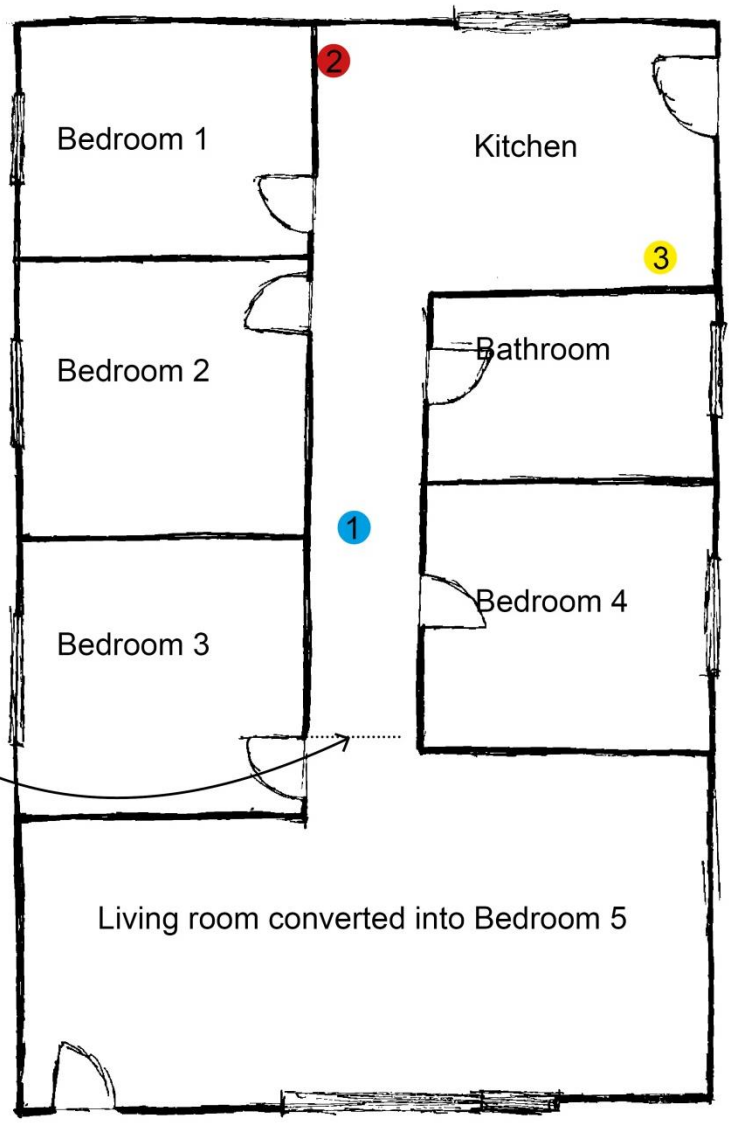


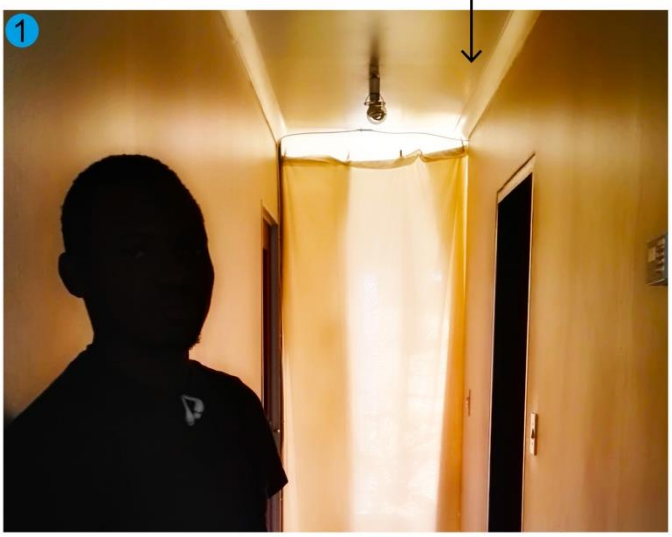


Unit 5: Tendai (Young Male)	
Age	26
Place of origin	Zimbabwe
Occupation	Employed
Duration in unit	Since May 2016
Occupant(s) in unit	5
Relation	House-mate
Services shared	Bathroom, kitchen, living room
Rent	R 2500
Monthly income	More than R 15 000
Education level	Have a Degree and Hon-ours

Tendai is an engineer from Zimbabwe that recently moved into this unit. He did not up until he moved into this flat that it was made out of shipping containers

Image 1 below shows Tendai on the left and the curtain used to indicate that the living room is now used as Bedroom 5





As seen below the units come with kitchen cup-boards and a sink but the residents have to pro-vide their own electronic facilities.





4.2.1 Sharing of Space and Services

As shown on the biographic illustrations above, the residents in the 61 Countesses building share their bathrooms, kitchen space as well as their living rooms if they have not been converted to another bedroom with the other tenants in their respective units. The residents in this building also have a roof top social space which includes benches and chairs as well as braai areas.

With regards to the internal shared spaces the tenants did not have any difficulties with them; however, they did indicate that the spaces are small especially because the units generally house more than one household and this affects their level of privacy. When it came to the external common space, all five of the 61 Countesses residents reassured me that they utilised the roof social space – when they need a break, when they have visitors or when they need to hang some of their wet laundry as there are no washing lines within the building. When they were further questioned about their interaction with their immediate neighbours, some did not know their neighbours very well but stated that they acknowledged each other but did not socialise as much.

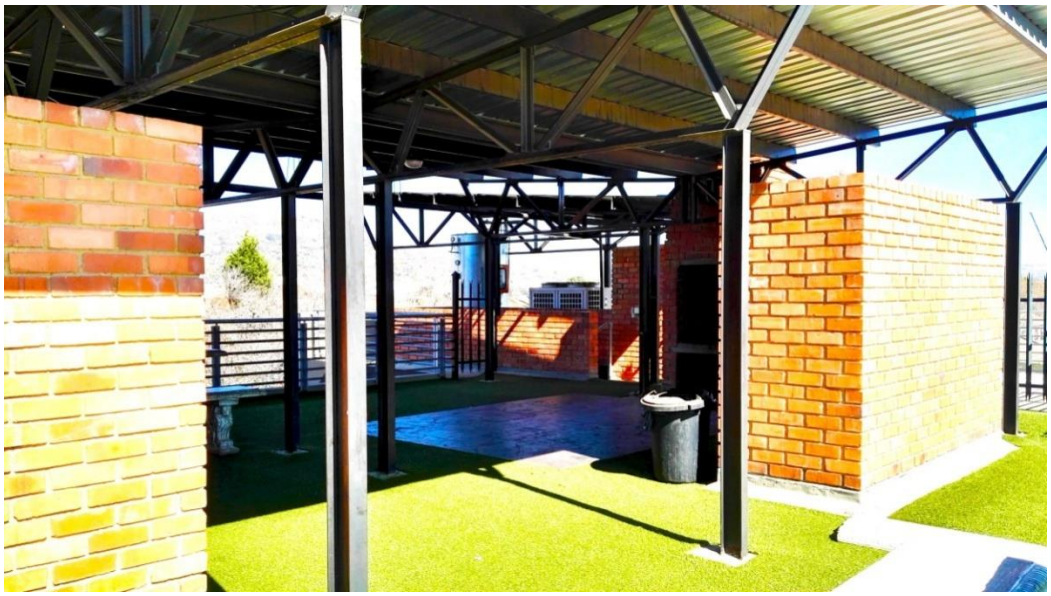


Figure 12: 61 Countesses Roof top social spaces for residents

Maher and Mcintosh (2007) argue that sharing is a sustainable practice that decreases both construction and housing costs as it provides opportunities for collective use of space amongst residents that have an agreement. Common spaces are crucial parts of buildings, especially those that are vertically developed in urban settings. Shared spaces become an immediate leisure space for tenants and enable them to have visitors as some of the lounge spaces are converted into bedrooms as seen in some of the households. Common spaces can encourage social interaction and integration; they can also enable social networks to

form amongst tenants who thus can create as sense of community (Maher and Mcintosh, 2007). However, sharing is often pitted against privacy as expressed by the some of the residents in 61 on Countesses. From the discussion with the residents in this building, the roof top space was a good space for hosting and relaxing, it has not necessarily prompted relationships with their neighbours.

4.2.2 Sense of home

As noted in chapter 2, defining home is subjective as it is a concept that contains numerous tones. Home has been defined as a space that allows people to be whoever they want to be, a space that encourages growth and expression as well as a place that they can have some peace through some form of privacy. To interrogate residents' perception of the building as a home and to unpack whether they saw their respective units as a home they were questioned about the adequacy of ventilation, privacy as well as freedom of expression.

Adequacy: ventilation, privacy and freedom

To begin the discussion, the 61 Countesses residents were initially asked if they thought the unit was adequately ventilated, cool and warm when they needed it to be. All five tenants stated that indeed the units were well ventilated and were relatively warm. They also articulated that they preferred it that way. The participants were further asked if they were able to fully express themselves and personalise their space, 4 of the five said that they were able to express themselves and add some personal touches to the space like putting up a painting or mirror on the walls, provided that you bought hooks for the wall so that you do not drill the walls. They also said that they could do anything with the space; however Kele highlighted that residents were not allowed subdividing the rooms with curtains or fabric. Themba was the only person that said he could not fully express himself in this unit. He said that he does not feel like he has a say, nor do his parents allow him to decorate the space as he wishes. As noted in the biographic illustrations, Themba lives with 4 other households, his parents and his younger siblings. His feelings towards the space are influenced by a number of different aspects. His response to the questions about sense of home stemmed from his status and role in this unit as well as him having minimal privacy in a house with 12 other people.

Privacy is directly related to freedom of control of interaction and as mentioned in the latter section, this is often influenced by sharing living spaces. The way he feels about this space is more related to his age and his status within his household and less about the material of the building. Density has also been connected to the wellbeing of individuals, Boyko and Cooper (2011) have also highlighted that people that share with people who are not part of the same family tend to not feel as comfortable as those in less dense spaces. Themba

shares with both family and other unrelated households and his feelings can be connected to the intensity of the increased occupation in his unit. Subsequently, Themba's main concern with the unit was the fact that the rooms were small and that having numerous housemates restricted him from having the privacy he required as a young male and a student. The residents from the case study building were also asked to point out the aspects that they would change about their units, 4 out of the five including Themba said they would make the units more spacious which would allow for easier movement and more privacy. The residents that had balconies attached to their units, stated that they would make them bigger to have alternative place to relax. The residents also indicated that they would make the walls thicker to make it harder to hear their neighbour's conversations.

When the residents were directly asked if they referred to their respective flats as a home, they all said yes except for Bongani. After being prompted to identify what made them feel this way, some respondents acknowledged that living with someone that they were familiar with as one of the elements that contributed to them feeling at home. Kele said that she could still do all the things she did while at her parent's house as well as the healthy relationship she had with her housemate. From this, it is emerging that the dimensions of the bedrooms do not ensure adequate privacy, therefore using shipping container to provide other residential apartments would require other mechanisms and smart design that can result in bigger bedrooms. Designing more spacious units not only ensures adequate privacy but it also allows for more comfortable occupational densification to occur through subletting as already seen in this building. The existing trends of densification need to be further enhanced and a good understanding of residents' needs is crucial in enhancing it.

4.2.3 Negative Elements Associated With the Developments

The previous section discussed how the 61 Countesses residents felt about their experience in the building. It also began a discussion on some of the issues that the residents raised in relation to their stay in the case study building. This section of the field work findings provides an elaboration on the challenges and reveals some of the negative views associated with the ISBU development from both the 61 Countesses residents as well as residents within the Windsor East neighbourhood. This section of this chapter reveals the elements which can pose as challenges to employing containers for social housing.

The developer, Arthur Blake (one of the engineers involved in the design and development of the 61 Countesses building) stated that the buildings' walls are covered with polystyrene insulation and then plastered with 35mm normal plaster in mesh. As a result of the thinness of the walls, one of the major concerns was the fact that tenants could hear their neighbours through their internal walls. Lerato, one of the residents within the vicinity stated that:

"You hear everything that they do and say next door, the walls are thin and when someone raises their voice we can all hear them" (Lerato, 61 Countesses)

Lerato further expressed that this makes her feel like she does not have adequate privacy as their neighbours could also hear through her walls. She then added that this also gives off the impression that the walls could collapse on them at any point. Kele (61 Countesses) also shared that there was an incident of domestic violence that she could hear through the walls but felt helpless as this was none of her business. She felt as though she should do something as she could hear the discussion but she also felt that she had no right to intervene in other people's household matters. The lack of sound proofing and the thin walls in the building makes it difficult for the residents to mind their own business.

Another challenge is that residents shared were the size of the bedrooms. Themba (61 Countesses) stated that there is limited space for circulation within the unit. As a result, 3 out of 5 residents stated that they would change the size of the units and make them more spacious. This particular building was ~~upcycled~~up-cycled. This means that the employing a specific material (in this case the shipping container) in its original shape and form without melting it to remodel it into a completely new product. This is not only a cost effective route but it is also a more environmentally friendly path. However, this also has implications on the design of the building for architects and urban designers, in the case of 61 Countesses, the developer also expressed that it demands more strategic design as the shape and form of the container guides the design and size of the rooms within each unit.

The discussion with the developer also revealed that financial institutions pose as a barrier to exploring alternative building materials. Arthur Blake also stated that financial institutions show no support towards these types of developments, he said:

"Banks are risk averse and surprisingly I found them to be very unimaginative and not innovative at all. They want to go for the thing that works best that they know they don't have to think about – do I have to give the bond or not? So I think we have a long way to go four, five, six years for banks to be on par because over the next five years we are going to see a boom in the container construction in South Africa. "(Arthur Blake, developer).

A reflection on the negative element connected to this building is crucial for planners, urban designers, municipalities as well as developers as these challenges are some of the implications for ISBU residential developments. These challenges identified and discussed provide some insight from the user end, from residents that have experienced container development. However, the discussions of the limitation associated with this particular development appear to apply to any other building as well. The issues that were found are

not necessarily unique to shipping container residential apartment, some of these issues can be experienced in traditional built buildings as well.

4.3Neighbouring Residents in Windsor East

The researcher thereafter interviewed 5 residents from the Windsor East neighbourhood, all of whom were under 30 years of age. The table below builds a picture of neighbouring residents that were interviewed in relation to their stay in Windsor East and their views of the 61 on Countesses building.

Neighbours	**1 Sharon (female)**	**2 Wiseman (male)**	**3 Nakai (female)**	**4 Khethiwe (female)**	**5 Khutso (male)**
Age	20	26	25	22	28
Place of Origin	Johannesburg	Zimbabwe	Zimbabwe	Zimbabwe	North West
Occupation	Student at Wits	Electrician	Sales executive	Hairdresser	Policeman
Duration in Unit	Since 2003	Since 2015	Since May 2016	Since Dec 2015	Since 2014
Occupant (s)	3	4	5	5	3
Relation	Parents	Housemate	Family	Family	Family
Restriction on occupants	No	Yes	No	Not sure	No
Services Shared	Bathroom, Kitchen, living room and balcony	Bathroom, Kitchen and living room	Bathroom, Kitchen, living room and balcony	Bathroom, Kitchen and living room	Bathroom, Kitchen and living room
Rent or Owner	Parents own flat	R 6000 rent (collectively)	Mother owns apartment	R 2500 rent	Own
Monthly Income	N/A	R1500-R 5500	R1500-R 5500	R5500-R10 000	R5500-R10 000
Education level	Have attended university	Completed high school	Has tertiary degree	Completed high school	Has tertiary degree

Table 1: Biographic table of the neighbouring participant residents in Windsor East

The table above also shows that 3 out of 5 of the Windsor residents were Zimbabwean; this reflects the area's popularity for foreign nationals. The period for which they have been living in this neighbourhood shows that they are have not been living in Windsor East for more than 5 years except for Sharon, who has been living in this neighbourhood for 13 years. This sample of residents also receives less than R10 000, which is consistent with the sample of residents living in the case study building -61 Countesses.



Figure 13: Map showing the residency of the Windsor East neighbours of the 61 Countesses building

4.4Perceptions of 61 Countesses

The residents' perceptions of the physical and psychological comfort as well as architectural quality of the 61 Countesses building was measured with questions that interrogated their sense of home, challenges, and safety based on their experience in Windsor East, as shown in the previous discussions. The way in which residents viewed the case study building was found to be influenced by their income, design of the building and their choice to conceal 61 on Countesses, having been given the choice hypothetically.

The rentals that the residents of 61 Countesses pay for accommodation are aligned with what most residents in Windsor East pay towards rent. The residents generally pay between R5000 to R6000 for each unit in the 61 Countesses building. The residents are in a similar income bracket, with only a few outliers like (the engineer) that receive more than R15000 as shown in the pie chart below (Figure 14).

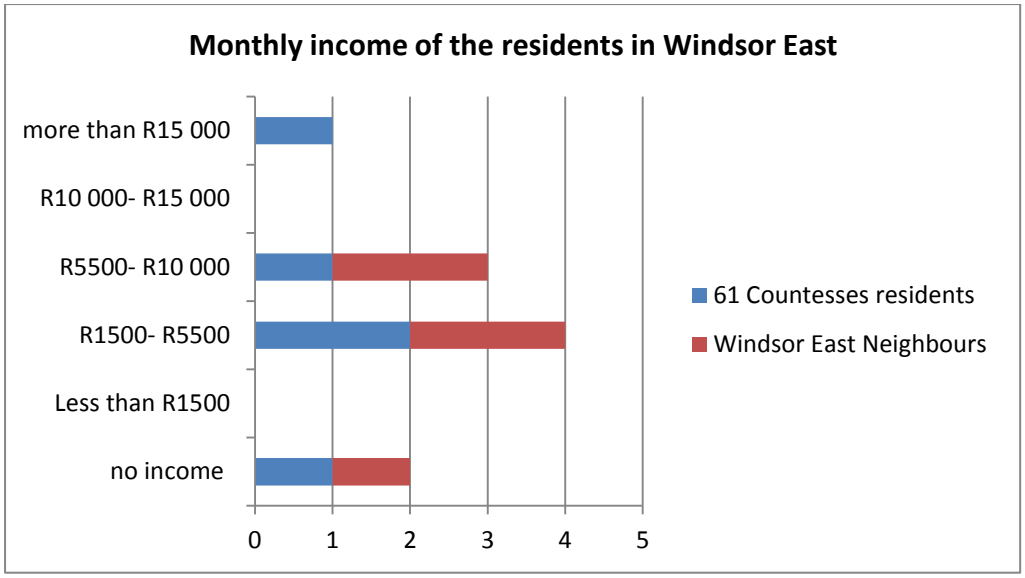


Figure 14: Bar chart displaying residents estimated monthly income

This similarity illustrates that the housing development is targeted at the existing economic class that resides or wishes to reside in the area. The housing development is therefore not at odds with the existing population and therefore less likely to receive resistance as in the case of social housing in more affluent areas. Even though 61 Countesses building is not a social housing project, it does cater for residents in the low-middle income earners.

Although the residents did not object to the development on the basis of differences of socio-economics, residents did object to the construction method. Arthur Blake expressed that homeowners were worried that the development would result in negative effects on their property prices. He also expressed that homeowners had not yet bought into the container construction system, they thought of containers as 'shacks on steroids'. He stated that it was challenging in the beginning as homeowners were anxious; as a result the developers had to do a significant amount of explaining to the homeowners in this neighbourhood. However, once the building was constructed the homeowners in the area were pleased with the outcomes. The lack of community engagement also contributed to level of anxiety from homeowners. Arthur admitted that there was not any public participatory process prior to the development, he said:

"I didn't really inform people because I was just building a building, so I didn't realise that they would be so shocked…If you build a building you don't do a public participation, if you build a flat with brick and mortar, you don't go into public participation you just start building. So I had no reason to think that there should be public participation because for me, I was just building another building. The method was different but the outcome would be the same and I knew how it was going to look in the end." (Arthur Blake, developer)

From Blake's lens, containers are no different than any other building block. He treats containers like any other material as they too can produce the same outcome as bricks. He did however express that he understood the necessity of public engagement after the development but still argued that shipping container development ought to be looked at the same way as any other material. Arthur has been a key figure in the development of shipping containers developments in Johannesburg but this exposes that he too is unaware of the negative perceptions. This is a key finding because he had not anticipated the negative responses from the tenants and homeowners. The findings also give evidence that tenants are less critical than landowners about the developments taking place in their neighbourhoods as they are not as invested in the property as homeowners are. Tenants are typically concerned about short term implications as opposed to property owners who are more invested in the property and quality of the neighbourhood as a whole for their asset. The tenants could have also been more positive towards the 61 Countesses building because any new development in a decaying environment is a sign of good. Arthur also argued that residents didn't really care much for what was happening because Windsor Eat was not a pleasant area. It can also be deduced that proposed housing developments are more positively received in low to middle income grouped areas as opposed to high income suburban environments.

The design of the building conceals the shipping containers but this was originally to bypass title deed restrictions which prohibited the use of steel (Blake, 2016). However, this proved to be beneficial to the development because the negative reactions to the shipping containers by residents had not been anticipated. The opinions of residents at the time of construction are reinforced in the opinions of the development's current residents:

> *"No, the sight of containers would make me feel like I live in a warehouse and It would make it cold" (Kele, 61 Countesses).*

> *"No, I'd feel like I live in a shack" (Bongani, 61 Countesses).*

A significant number of the residents interviewed in Windsor East shared the same views as Kele and Bongani. From the above quotations, it is apparent that people are notably affected by the way in which buildings may appear as this has implications on whether they feel at home or not. Building materials and image play major roles in how people view their home spaces. 8 out of 10 of the residents assured me that that they would not reside in a building where they were constantly reminded that the building was made out of shipping containers. Other residents raised concerns about safety and visual appearance. Shipping containers are seen to be hazardous material that needs to be disguised and coated by other building

materials. Shipping containers are also associated with light industry activities or informal dwellings as opposed to a place to live and grow.

However, 2 of the 10 residents from the Windsor East neighbourhood felt more open minded. The two residents expressed that they would not mind as long as it were well designed and the necessary measures were taken to ensure that it was safe and durable. They felt as though it would be a creative statement and it would be visually appealing as well. The two of the residents that had a different outlook were younger than most of the other participants. Perhaps the reason these participants were more open towards this idea was because of their age – indicating a possible correlation between openness to ISBU container development and youth.

The responses from the residents suggest that residents feel like a bare shipping container residential development is not adequate housing as opposed to one that disguises that it is made out of containers. The residents' replies indicate that they do not perceive unconcealed ISBU developments as durable as much as those that are covered. Given that, this implies that residents are more willing to reside in a shipping container development that makes them feel like they too live in a standard and traditionally built apartment. This also points to the importance of image and presentation in developing and delivering housing. The discussion with the participants reinforces the association of containers with temporary structures like informal dwellings. Apart from disguising the steel structure, 61 Countesses building was not designed any differently than any other conventional building. The containers give a certain direction to design because of their sizes and shape and the units were adequately ventilated and insulated as per the SANS and the National Building Regulations requirements that provide a framework for practitioners to follow.

4.5 Perceptions of Other Shipping Container Developments

The research study also explored residents' opinions and perceptions of other shipping container developments in Johannesburg. Participants were shown two images of other green-cube buildings around the city, namely: the Mill Junction student accommodation in Newtown and the 27 Boxes centre in Melville. They were then asked if they knew about these two developments. The results showed that people were not as conscious of these two buildings, 8 out of the 10 said they did not know the Mill Junction on the silos and 2 knew of it and had seen it from a distance. With regards to the 27 Boxes centre, the majority of the residents said they did not know it, only 1 resident from the Windsor East sample said they knew about it. This showed that residents in this neighbourhood are not as informed about other shipping container developments in and around the city.

When they were further questioned about their knowledge of the 61 Countesses building within their own neighbourhood, the outcomes indicated that the residents within the study area were aware that the case study building was made out of shipping containers. However, one of the new tenants (Tendai) that I interviewed from the 61 Countesses building expressed that he was not aware that the building was constructed with green-cubes. He only realized that when he had already moved in the area and the building. This was due to fact that he is still relatively new in Johannesburg and that the building's raw material is concealed on the exterior and internally. When he was further asked if he would have still resided in the building if he knew before hand, he responded and said that he would have still rented in the building as it was still conveniently located close to his work place and the fact that people had already been living in it for some time meant that it was safe and that the engineers had done a remarkable job on ensuring its stability.

I also posed a question asking what the residents thought of the building being made out of containers and of shipping containers a building material in general. Numerous positive reactions emerged from the participants. Two of the residents specifically said:

> *"I think it's positive, creative and innovative. I also think it's environmentally friendly*" (Wiseman –Windsor resident).

> *"I think it's a cool idea because, otherwise those things would have been going to waste to begin with, so why not utilize one object for more than one reason and to give people a home is the best reason you could utilize that for"*(Sharon –Windsor resident).

Many of the other residents shared the same sentiments as the residents that said the above. However, one other resident within the Windsor area felt as though she did not have enough background knowledge of them to have a good and informed statement about containers. The participants held positive feelings towards containers as a building material; they felt that it was more cost effective than the traditional brick and mortar route. The residents from the case study building were positive about the structure; Themba even described the building as strong and protective when I asked him when he thought of containers as a building material.

> *"It was a good idea, at first I didn't know the outcome but they are good because they are strong and in terms of whether it is very protective so yeah." (Themba, 61 Countesses resident)*

He also indicated that he lived in a different apartment in the Windsor East neighbourhood before living in 61 Countesses and watched the building being constructed before they

moved in. He said that he was first reluctant about it but admitted that it was a great idea and turned out okay, hence they are living there- even though he did not make the decision to move, his parents did.

When they were asked if they would live in a free standing house made of containers, 7 of the participants said yes and 3 said no. One of the residents (Kele) that had experience in a container household indicated that a free standing might be better than a vertically developed shipping container building, especially since she had complained about the lack of sound proofing in the building. This suggests that residents would be keen on living in a shipping container detached house. This also implies that the sample from Windsor East consider shipping container housing as adequate shelter and that can be a home space for them and their family. She thought that a free standing ISBU home would enable for more privacy. When they were further asked if they would buy a shipping container house only 4 said yes and the other 6 residents said no, two of the 61 Countesses residents said:

> *"No, I don't think it's something that should be sold. I don't think of it as an investment"* (Themba, 2016).

> "*No, I'd only rent. It's not worth the investment. Bricks are more durable, they also need less maintenance plus containers can fall at any point"* (Kele, 2016).

The residents that objected the idea of purchasing a shipping container house emphatically stated that they would only be willing to rent it. They would not consider buying it from someone nor build it to possess it as there may be difficulties in selling it as well. Wiseman (Windsor resident) also highlighted the fact that they are still metal and would have to be treated and maintained differently. Arthur also emphasises that the lack of support from financial institutions hinders people's creativity in the way they build their own homes by saying:

> *"The biggest thing that stops containers is the banks because a lot of people want to be creative and build their homes with containers but once they know that they won't be able to sell a house to get a bond or get a bond for themselves, they give up and there are a very few people that can do things with their own cash." (Arthur Blake, developer).*

From Arthur's statement, it is visible that anxieties also lie with selling and buying property constructed from shipping containers. This also indicates that some residents see containers as adequate housing but the absence of financial institutions support has a direct influence on the idea of buying property made out of shipping container. With regards to this outcome,

it is clear that people see shipping containers as a liveable space for their family but they are not as keen on purchasing them because of the fear of having to deal with all the additional aspects of maintaining it as well as the trouble that might emerge from trading it. However, the few that would consider buying a house made of out containers, they saw it as a material that enabled modification a lot easier than bricks and also expressed that they would only consider it provided that it is well planned and designed.

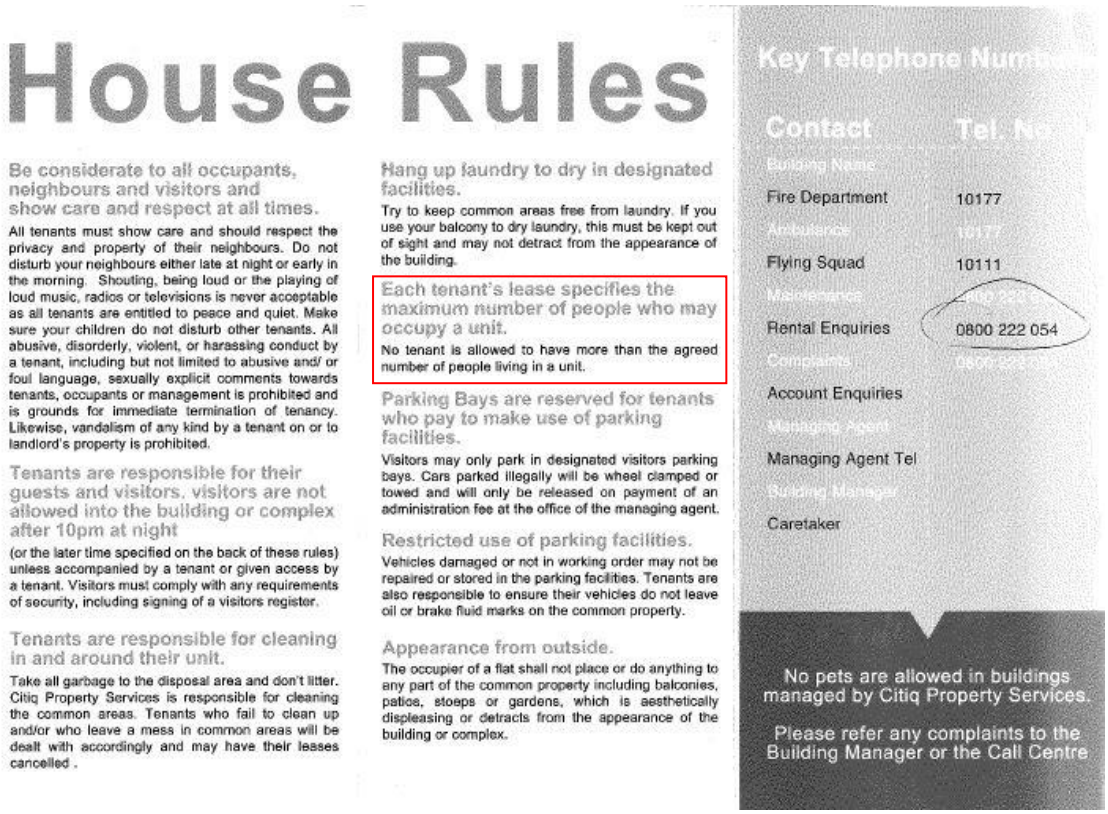
Another interesting point about the responses, particularly Kele's, is that what she said when I asked her, did not necessarily correspond with her actions. She lives in a container made unit and is fine with it however she also states that she wouldn't purchase it as it may fall at any point in time. There appears to be a discrepancy between how some residents feel and what they do which presents an aspect of irrationality. Her response suggests that she does not really think that the building would collapse or she would not be still staying there. This is important as it indicates that it's the perception that Kele has of containers that makes her think they might collapse even though her experience informs her that the building will not fall on her head.

In sum of this discussion, it is becoming evident that the residents within the Windsor area do not have existing knowledge of other ISBU developments in the city like the examples provided –the Mill Junction student accommodation and the commercial 27 Boxes. They also do not view green-cube buildings as much of an investment as brick built developments. They have raised concerns with the trade of the house, the maintenance as well as durability of it. The concerns that have surfaced from engaging with the residents in Windsor are possible concerns that would emerge if containers were employed to provide social housing of a higher density in Johannesburg. The outcomes from this group of residents also suggest that people would be more keen to live in rental based shipping container social housing as opposed to owning an ISBU social house. The responses from the residents have also reflected that residents feel that there is a better future for rental shipping container affordable housing in the city.

4.6Occupational Density in 61 Countesses through Room-Letting

The literature review discussion on densification revealed that density is directly connected with a number of diverse concepts (Boyko and Cooper, 2011). The density seen within the 61 Countesses building is not one that is has a spatial presence as it is occurring through room-letting within the units. From the 61 Countesses unit plans that portrayed how each unit is internally subdivided and remodelled to enable for more occupants as well as the public property advertisements, it is apparent that room-letting is a common practice within units. Room rentals are a significant part of the Windsor East area and this is understood as

a livelihood strategy that allows people to live at a close proximity to access their needs and opportunities while paying a reasonable amount for rent.



House Rules

Be considerate to all occupants, neighbours and visitors and show care and respect at all times.

All tenants must show care and should respect the privacy and property of their neighbours. Do not disturb your neighbours either late at night or early in the morning. Shouting, being loud or the playing of loud music, radios or televisions is never acceptable as all tenants are entitled to peace and quiet. Make sure your children do not disturb other tenants. All abusive, disorderly, violent, or harassing conduct by a tenant, including but not limited to abusive and/ or foul language, sexually explicit comments towards tenants, occupants or management is prohibited and is grounds for immediate termination of tenancy. Likewise, vandalism of any kind by a tenant on or to landlord's property is prohibited.

Tenants are responsible for their guests and visitors. visitors are not allowed into the building or complex after 10pm at night

(or the later time specified on the back of these rules) unless accompanied by a tenant or given access by a tenant. Visitors must comply with any requirements of security, including signing of a visitors register.

Tenants are responsible for cleaning in and around their unit.

Take all garbage to the disposal area and don't litter. Citiq Property Services is responsible for cleaning the common areas. Tenants who fail to clean up and/or who leave a mess in common areas will be dealt with accordingly and may have their leases cancelled .

Hang up faundry to dry in designated facilities.

Try to keep common areas free from laundry. If you use your balcony to dry laundry, this must be kept out of sight and may not detract from the appearance of the building.

Each tenant's lease specifies the maximum number of people who may occupy a unit.

No tenant is allowed to have more than the agreed number of people living in a unit.

Parking Bays are reserved for tenants who pay to make use of parking facilities.

Visitors may only park in designated visitors parking bays. Cars parked illegally will be wheel clamped or towed and will only be released on payment of an administration fee at the office of the managing agent.

Restricted use of parking facilities.

Vehicles damaged or not in working order may not be repaired or stored in the parking facilities. Tenants are also responsible to ensure their vehicles do not leave oil or brake fluid marks on the common property.

Appearance from outside.

The occupier of a flat shall not place or do anything to any part of the common property including balconies, patios, stoeps or gardens, which is aesthetically displeasing or detracts from the appearance of the building or complex.

Key Telephone Numbers

Contact	Tel. No
Fire Department	10177
Flying Squad	10111
Rental Enquiries	0800 222 054
Account Enquiries	
Managing Agent Tel	
Caretaker	

No pets are allowed in buildings managed by Citiq Property Services.

Please refer any complaints to the Building Manager or the Call Centre

Figure 15: Citiq Property House Rules for the residential developments that the company manages

From the interviews conducted with the residents in the 61 Countesses building, 3 out of the 5 participants said that there was no restriction on the number of people that could reside in a single unit. While Tendai expressed that their restriction on the number of tenants was 6 people. Bongani, the fourth 61 Countesses participant indicated he was not sure but assumed there would be depending on the size of the unit as well as the number of bedrooms it contained. The building's house rules developed by Citiq Property Service (see figure 14above) also suggest that each tenant has a tailored lease that specifies the maximum number of residents that can occupy a single unit.

From this, it seems that flexibility of the residents' tenure that enables of the number of people that can reside in a single unit. The flexibility of the tenures within this building also create room for space sharing which in turn enables occupants, particularly foreign migrants, to deal with the insecure socio-economic status as well as the lack of tenure security (Mayson, 2014). The patterns of space remodelling to allow for room-letting seen in this building exposes that there is a significant unmet demand for low-income rental housing, particularly for transitional tenants that seek non-permanent residency in the Johannesburg.

These trends also exhibit that densification in taking place through increased resident occupancy which does not have a spatial presence.

The subletting in the 61 Countesses building can also be connected to issues of adequate housing affordability. This building accommodates an income earning range that sits just little below the one that was intended to reside in it. The developers, constructed this building targeting those that earn approximately R13000 but only 1 out of the 5, 61 Countesses residents that the researcher spoke to earned above R13 000. This suggests that the residents in this building do not necessarily afford to rent out the whole apartment thus they sublet to make their residency more affordable. Boyko and Cooper (2011) also argue that residents are more willing to pay for minimal dwelling spaces in neighbourhoods that are more connected, have better pedestrian accessibility to commercial uses and have an evenly distributed mixed land uses.

Windsor East is a residential suburb with a diverse housing typology that caters for distinct households and individuals. The shifting housing typology in Windsor East also reflects the growth and demand in this area similarly to room-letting. Windsor East is characterised by a diverse dwelling typology (see Figure 15) that attracts varied residents and tenants and encourages densification.

Windsor East Dwelling types	**2001**	**2011**
House or brick/ concrete block structure on a separate stand or yard	155	401
Traditional dwelling structure made of traditional materials	14	8
Flat or apartment in a block of flats	1042	1203
Cluster house in complex	0	273
Townhouse (semi-detached house in a complex)	1148	344
Semi-detached house	0	7
House / flat/ room in backyard	75	63
Informal dwelling (shack not in backyard)	5	11
Other	36	10
Total	2475	2320

Table 2: Table showing the diverse dwelling type in Windsor East for the year 2001 and 2011. Sourced from Statistics SA Census (2011)

As shown in the table above, the predominant dwelling types in the study area are blocks of flats as shown in the table below. Figure 16 shows a table exhibiting the dwelling types in

Windsor East for the year 2001 and 2011. The table displays how the housing typology has shifted over the ten-year period; the neighbourhood has witnessed a decrease in the number of backyard dwellings, semi-detached houses and traditional dwellings. However there has been an increase in the number of block of flats. 61 Countesses has added more character to the complex urban fabric in this area. The case study building falls within the flat or apartment in a block of flat category in the table above, however it is not included in these numbers as it was built the year before the statistics were captured. The predominance of flats within this neighbourhood as well as the identified trend of room- subletting also suggests that Windsor East is a densifying area. As noted in the last chapter, Windsor is a conveniently located neighbourhood with a diverse character and has well connected street network which allows residents to move through the neighbourhood with ease. The location advantage that Windsor East gives residents contributes to it being a dense neighbourhood.

Windsor East Density

- Site Area: 1 km^2 = 100ha
- Population: 8165 (2011)
- Gross density= 8165 people on 100ha = 81,65 people/ha
- Net density= 8165 people on 50ha= **163,3 people/ha** (given that Windsor East is an old neighbourhood it can be expected that 50% of the 100ha is non-residential)
- ~~Population Density : 8165 per km^2= 0,008165 per m^2~~

61 Countesses Density

- Site Area: 5949.84m^2
- Number of units: 15 residential units
- Estimated population: 32 occupants in the five units (approx. 96 residents in total)
- Population Density= 0,016 square meter/person x 1000= **160 people/ha**

The 61Countesses density calculations above are based on an estimated current population of the tenants in the building. In light of the calculations above, it is visible that there is no significant increase of the population density in the case study building in comparison to the rest of the neighbourhood. The presence of the case study building has maintained that overall neighbourhood density since Windsor East was estimated to have a net density of 163 people/ha and the case study building with a density of 160 people/ha. The subletting trend identified in the case study building has also been accompanied by reduced living space as shown in some of the unit plans. However residents seem to be tolerating this due to the lower price of rent, attractive external communal spaces and connectivity to economic spaces.

High rise buildings raise urban densities but are subsequently more costly to construct and maintain and this undermines their affordability for tenures (Turok, 2011). The design of the building and the remodelling of the units by residents in this building have ensured occupational density and lower rates for the tenants within a low rise building. The density in 61 Countesses has occurred in a moderately low rise building and with minimal changes to the external appearance of the building. The trends shown in this building need to be encouraged and facilitated with support of the Department of Human settlement (DoHS) and the CoJ's Housing Department.

The densification in 61 Countesses and the rest of the Windsor East neighbourhood seems to have contributed to the resilience of this neighbourhood, where resilience is based on the adaptability and persistence of the urban form (Todes et al, 2015). The occupancy density taking place in this neighbourhood could be further enhanced through more flexible tenure leases that allow residents to sub-divide their units. Merging different forms of housing tenure that mix age groups, cultures and family types foresters densification and social integration within a community. The encouragement of subletting can result in numerous benefits associated with increased densification. Turok (2011) also argues that residential density is particularly important to South African cities attempting to mitigate the effects of the apartheid city form, sprawling and socio-economic spatial division. Residential urban densities translate to a significant choice around housing and accommodation options (Todes et al, 2015) for urban dwellers. High urban densities also have the potential to support more productive economies, more vibrant and inclusive neighbourhoods by encouraging social networks and closer connections between people and work places (Todes et al, 2015; Turok, 2011).

4.7 Conclusion

The fieldwork findings of this research have supplied useful qualitative insight into the way in which residents feel about the container residential development in their Winsor East neighbourhood as well as the role it plays in this context. The major findings of this research have been that residents in Windsor East indeed see shipping containers units as adequate housing and a home space where they can fully express themselves. Despite the positive functions of the 61 Countesses building, most residents felt that container housing was not something they would invest in. Subsequently, residents are keener on renting as opposed to owning a shipping container home. In addition to that the choice to conceal the residential units and the building has had a significant impact on the acceptance of the developments as the findings have shown that people would not have been eager to reside in it if the raw material was visible and this corresponds with Arthur's statement: "*When people want*

something better, they do not want something that reminds them of a shack". Another key finding is that the main concern with the development has been the thin walls as well as the size of the bedrooms, which has had an impact on the residents' privacy. With regards to densification, the 61 on Countesses building has not significantly densified the neighbourhood, the density seen in the building is in line with that of the rest of the neighbourhood. The findings have also shown that subletting plays a vital role in increasing the occupancy in this building and densifying the area. Room-letting is directly linked to affordability and access as it allows urban residents to take advantage of the opportunities of being close to economic nodes while paying a reasonable amount towards rent. Subletting also encourages sharing of common spaces which is seen as a sustainable practice even though it has implications on spatially expressed cultural notions like territory and privacy Maher and Mcintosh (2007). Rooms and space subdivision within Windsor East thus gives residents location advantages, affordable accommodation and a sense of community.

CHAPTER 5: FINAL REFLECTIONS AND CLOSING REMARKS

5.1 Introduction

This chapter follows after the field work findings that dealt with an integration of experiences, perceptions, and discussions. The fact-finding journey assisted in unpacking the perceptions of shipping container developments to inform the researcher and tackling the sub-questions. This chapter supplies a summary of the discussion that has been carried throughout this research report. This final chapter of this research report offers an overview of the research report; it thereafter outlines the benefits of this research for planning and following that it indicates the limitations that came about during the discourse of the research. This chapter also provides recommendations directed to key agents in the production of space- local government officials, the related state departments as well as private developers in estate development. Taking into consideration chapter two of the literature review, chapter four of the findings and the fact that the objective of this research report was to supply a sample of the perceptions held towards ISBU developments, this chapter also offers critical points which enhance the understanding of the implications of using shipping containers to provide social housing in Johannesburg.

5.2 Overview of Research

Reverting to the main research question, which is '*What are the perceptions of using shipping containers to provide affordable housing of a higher densification in Johannesburg?*' In tackling this question, this report looked into a new type of housing typology, the 61 on Countesses building, in the Windsor East neighbourhood that is catering for the low to lower-middle income earners. The existing container housing typology was utilised as a case study, to understand the experiences and perceptions of residents within and around the development. A series of qualitative interviews with 10 residents in the study area were conducted employing standardised discussion guidelines, to analyse the views held towards this specific container residential development and the experiences of the tenants in the 61 Countesses building. The constructed questionnaires (Appendix D and E) that served as discussion guidelines were directly linked to the key themes of this report. The key ideas that came from the literature review were adequate housing and the notion of home with regards to cargotecture. The ideas that emerged from the theoretical framework were used to develop the sub-questions and played a significant role in fostering the fieldwork process as well as laying the foundation for the analysis of the findings.

Prior to engaging with the participants, the questionnaires were tested on my research partner Jokudu Guya and other students and lead to minor changes being made before going into the field. The researcher identified participants by approaching any residents that were going into the case study building and through engaging with one of the residents, an appropriate contact was established and thereafter the snowballing method was employed to gain access to other residents within the vicinity. The five tenants of the 61 Countesses building were interviewed separately in their respective units on different days. Speaking to the tenants from their respective homes made residents more relaxed and comfortable as they were in a familiar environment, this also allowed the researcher to take images of the interiors and thereafter construct the illustrations that were presented in chapter 4.With regards to the neighbouring residents, the researcher approached random individuals in this neighbourhood and requested to interview them, provided that they resided within the Windsor East area. After going to the Citiq Property office in Braamfontein where the researcher obtained Arthur Blake's contact, the researcher was able to get a chance to engage with the developer. He was interviewed at his house which is also his office space in Westdene. Prior to this, Arthur Blake was sent the questions (refer to Appendix F) that were set out for him via email as he had requested to see them before the interview. It must also be noted that the small sample of residents that the researcher was able to talk to is not necessarily an absolute representation of the demographic of Windsor East. The small sampling of residents that already live in the ISBU development and residents that reside in the vicinity was taken due to the restriction of time and to provide a multi-vocal narrative. The methods of semi-structured interviews and neighbourhood observation assisted this cause. The choice to employ semi-structured interviews allowed the residents to feel comfortable and helped in ensuring that the interviews were conversational.

One of the key findings was the positive responses from residents towards container development for housing of a higher density provided that they remain disguised (similarly to the case study building). The choice to conceal the building with other building materials has proven to make residents feel more at home as opposed to an informal dwelling. People need to see value in what they live in and feel like they are residing in something better than the informal dwelling they would've built themselves. Subsequently, the residents in the vicinity saw value in the case study building, hence they are living there. The engagement with the residents within the vicinity indicated that residents live in that specific building because they see it as adequate shelter and that their residency there was not out desperation as the rentals in the neighbourhood sit within the same bracket. The general impression that was created from the encounters with the research participants is that shipping containers are adequate building blocks that can create home spaces for urban

residents. The participants within the vicinity also verified that they indeed saw the building as adequate housing and that they felt at home within their respective units.

The challenges noted that were associated with the 61 Countesses building were not exceptional as the issues associated with this typology is that the challenges that were found are not necessarily unique to shipping container residential apartment, some of these issues can be experienced is traditional built buildings as well. The researcher's encounter with the residents and the developer exposed that the thinness of the walls was the major concerns. This had implications on the residents' level of privacy as they could hear dialogue taking place in other units. Residents also found the sizes of the bedrooms too are small and this is connected to the fact that most of the residents in the building share their units with other households. The lack of financial institutions support also poses as a barrier to the use of shipping containers Even though the participants found containers housing to be adequate and meet their standard of what a home should be they were not keen on owning a container home, most of them were only willing to rent in a container built home. A significant portion of the residents found the container housing to not be a worthy investment as it would be difficult to trade or obtain. This shows that even though a unit might fulfil the needs of the residents, it does not necessarily mean that they will be keen on accepting it as their own. Botes (2013) connects this to the existing norms and cultural expectation that is present in each person. This also suggests that container housing would be more optimal in the rental market. The lack of community engagement from the developer's side revealed that the Arthur Blake had not anticipated these concerned to emerge when developing the case study building. Another finding was that shipping containers developments in Johannesburg are currently pushed by a single agent, Arthur Blake, as he was the major player is all the existing predominant container developers in Johannesburg: Mill Junction, 27 Boxes and 61 Countesses building. This suggests a need for other built environment professionals to promote this building method and presents an opportunity for other developers to penetrate the cargotecture industry.

Windsor East remains a densifying residential neighbourhood with a fair amount of businesses and commerce along Beatrice Street. Densification in Windsor East is occurring in both planned and unplanned ways through formal and informal market forces. The findings also exposed that subletting is a common trend in the building as well as the Windsor east area, which is enabling increased occupancy and thus high densities within this neighbourhood without a significant change to the built form. Although the density seen in 61 Countesses building was aligned with that of Windsor East area, the case study building has had no significant density increase compared to the rest of the neighbourhood. Another key finding was that room letting is a livelihood strategy that enables residents to

reside in areas and buildings that they would not be able to afford on their own. This informal process taking place within a formal building has improved the quality of life for the tenants. It is also allowing the participants to live in a close proximity to their place of work or study while paying an affordable amount. The increased occupational densification taking place in the 61 Countesses building and the Windsor East area could be further improved by more flexible tenure lease agreements and supportive sub-rental policies.

This research has also confirmed that Windsor East is a conveniently located area that sites close to economic activities, retail centres, public services and amenities parallel to the chapter 3. Windsor is also well connected through the various modes of public transportation to its surrounding areas as well as the city's CBD. This research has also found that Windsor East is a familiar site amongst transitional residents looking for short term residencies like varsity students or urban migrants that are new to Johannesburg. Windsor East is also home to a number of foreign and local migrants seeking better opportunities. Living in Windsor East allows residents to access their working environments and take advantage of the opportunities and economic activities within a close proximity. Another point that has emerged about this neighbourhood is that it is challenged by drug trade and this has implications on how safe residents feel in this area, particularly women tenants.

5.3 Possibilities for Container Housing

The task to deliver affordable housing to the majority has proven to be daunting for the South African government (Witbooi, 2015). This study argues for the need for more creative and innovative ways in tackling the housing challenges confronting the Department of Human Settlement (DoHS) and the engagement with a sample of residents from Windsor East has offered insight on the trends in this area. The findings have shown that residents see the container development as adequate housing and their respective units as homes where they can generally express themselves, grow and develop. This study has also shown that rental housing is a vital component in accommodating large numbers of families in the study building as well as the Windsor East neighbourhood. It has also indicated that an important precondition for the growth of subletting is the existing adequate demand. The residents' responses have also indicated that there is a widespread preference for renting as opposed to ownership when it comes to container housing and this presents an opportunity that the DoHS needs to take advantage of in its mandate to delivering affordable housing.

In the beginning, the researcher intended on unpacking the perceptions held towards shipping container developments to see if they would be a viable option for social housing in Johannesburg. However, during the course of the research, it began apparent that containers might be a better route for rental housing as well as the gap housing market more

than ownership social housing. In addition to the residents' responses towards owning a container home, Arthur Blake also expressed that there is a misconception that the use of containers can cut construction cost by half, whereas this is not true. Arthur state indeed containers are fast, green and cost effective and give a lot of architectural opportunities that would cost more in brick and mortar but not by 50% of the cost. He did, however, highlight that using containers reduced the construction period tremendously. For instance, the 61 Countesses building was constructed in 4 months but it would have taken 18-24 months to build using bricks. This means that containers are optimal routes when trying to house a significant number of people in a short space of time and not necessarily social housing. He further articulated that gap housing could be the area for shipping container residential developments.

Gap housing is housing that is realised through public-private partnership designated for those earning a total monthly gross income between R3 501 and R18 000. This type of housing is termed 'gap' as it attempts to accommodate those that earn above RDP beneficiaries and still earn a little less to affordable buying own property at that stage. The gap income earners lie between the gap of those that earn too much to obtain a fully state subsided house but earn a little less to get a bank bond at the normal market-related prices.

5.4Benefits of the Research and Implications for Urban Planning

Very little literature has unpacked the user-end perspectives of the few shipping container housing developments in the Johannesburg and such research may assist in enhancing the knowledge base by providing an understanding of the implications of shipping container residential developments on housing. The aim of this report was to begin a discussion on alternative building materials to provide a way forward related to the current housing challenges. The housing backlog in South Africa continues to haunt the government and this report proposes a consideration of an emerging technical solution that may prove to alleviate some of the issues. This report will be a useful addition to the existing literature on alternative building methods, particularly shipping container housing projects in the City of Johannesburg.

This research report has introduced various concepts that relate to container housing and has documented the experiences of the residents within the vicinity. It has also revealed people's perceptions about the 61 on Countesses residential development, the Windsor East neighbourhood and densification taking place in the case study building. The findings can inform future decision-making processes and similar development initiatives in the city. This body of research has also brought together two intertwined fields –planning and architecture. Work that enhances the connection between disciplines offers knowledge to both schools of

thought whilst creating a platform for multitude of cross-references within the built environment. In addition to that, the fact that this research was conducted during a time when shipping containers are serving as housing solutions in other parts of the world while South African cities are characterised by rapid urbanisation and homelessness, brings significant relevance. The study of the perceptions of shipping container housing has provided lessons for both students and professionals in urban planning and estate development. Even though perceptions are merely ideas that people have in their heads towards a certain person, place, object or product that determine how they form an opinion towards it, they offer some insight of how people feel (Tighe, 2010). Perceptions are generally informed by a range of elements like cultural norms and preferences as well as the existing knowledge one may have on a specific topic. A consideration of residents' opinion is a critical element of the housing development planning process.

5.5Limitations Encountered Throughout the Study

The aim of this research report was to revealed residents' perceptions of ISBU developments within the Windsor area in Randburg -residents that already live in the shipping container development as well as those that do not. This research investigated the level of acceptance of ISBU development in this neighbourhood. As is with much other research, during the course of this study the researcher was confronted by a number of challenges. One of the first challenges encountered in the course of this research was the fact that there is still a limited amount of academic research on the reuse of containers for housing. In addition to that, cargotecture is still a relatively new typology in Johannesburg and other South African cities. This means that there are only a few shipping container residential developments in the city and this narrowed down the case study options. Another impediment encountered during the study was the lack of information about the 61 Countesses building, as it is a relatively new developed built in 2012. For instance, the building plans for 61 Countesses building were not in the City's achieves, as a result, the researcher had to draw unit plans based on the pictures the researcher was allowed to take in the units of the participants. Windsor is a relatively small neighbourhood that is not documented as much as other areas in Johannesburg. This posed as an obstacle in acquiring desktop information about the neighbourhood. There is little to no literature on the area, subsequently, I relied heavy on the 2011 statistics, my observations as well as the literature on Randburg as a whole. Another weakness of this research is that a small sample size of residents was used in the fieldwork. Even though this made me take into consideration the views of only 10 residents and one of the developers, it allowed me to get in-depth responses from the residents and to document each of the residents' experience and household composition.

With what has been flagged as limitations during this study, this report recommends that more rigorous qualitative research is done on alternative building methods, particularly container housing. The knowledge base of cargotecture needs to be expanded and explored. This report also encourages academics to capture the experiences and views of other shipping container developments in the city to unpack more implications of this type of typology in different contexts. Windsor East has proven to be an interesting and diverse low to lower-middle income neighbourhood and more research on this area is required, particularly when real estate investors are seeing potential in this area and initiating new typologies like the 61 Countesses building.

5.6Recommendations: Way Forward

This report has begun an important process of gathering some of the perceptions attached to container housing by engaging with residents in Windsor East and one of the key developers of the case study building –Arthur Blake. After considering the above findings, a number of recommendations have emerged directed to policy makers, urban planners as well as developers and architects.

Recommendations to policy makers

- This report recommends that adequate measures be taken by policy makers to encourage financial institutions to recognise shipping containers developments as adequate housing. This can, in turn, assist in recognising container housing as appropriate collateral. Urban regeneration policies are influential elements that attempt to rebuild communities and improve service coordination, policy makers' needs to take into account Alternative Building Technologies (ABTs) like shipping containers. Policy makers are recommended to encourage the private sector and other key stakeholders that shape space to make use of alternative building material through policies. This would not only 'normalise' the use of unconventional materials but it would also improve awareness and possibly change negative perceptions held towards ABTs.
- The literature review presented a number of different housing subsidies that the government has set aside to help citizens obtain housing through various ways. However, the existing housing subsidies do not seem to incorporate those willing to invest in unconventionally built property. Subsequently, this research report also recommends policy makers to develop housing subsidies that support ISBU developments.
- This report recommends the City to start thinking about the possibilities that containers hold and to think of containers as more than temporary housing, the 61

Countesses building is exemplary of how containers can indeed be long term residency for urban dwellers. This report argues that container housing needs to be more supported by the Department of Human Settlements (DoHS) through its policies to increase the awareness of how effective they can be in home-making for not only residents but for financial institutions as well.

Recommendations to other urban planners

- The trend of small-scale private rentals noted within the 61 Countesses building as well as the rest of the Windsor East neighbourhood needs to be embraced by spatial practitioners. Windsor East has established rental living spaces in a manner that may be deemed as 'non-conventional' attracts a number of urban dwellers every year due to the flexibility and inclusive nature of how its spaces are formed and operate. However,therental policy has not yet focussed on subletting and room or space letting patterns that play a significant role towards densifying neighbourhoods. Higher densities can offer urban residents and municipalities numerous benefits. High densities offer residential thresholds to support an active retail sector, well located social amenities and functional public transport system (Carey, 2010). Subsequently, this report argues that the housing policy needs to refocus its attention towards fostering the existing livelihoods strategies that urban residents are already employing to access prime locations that place them at a convenient location to take advantage of economic opportunities.
- This research report has made it visible that subletting is a common and strategic approach that residents in the 61 Countesses building and the Windsor East area are employing as a livelihood strategy. Subletting also indicates a trend towards smaller households in this area. This report has also made it apparent that this trend is directly linked to affordability. It is important for planners to establish plans that ensure that affordable housing is located in priority areas and not along the edges of the city, and where affordable housing is that only consumes only a portion of a household's income. According to Hillier and Culhane (2003), affordable housing is housing that demands no more than 30% of a household's gross income. Given this, planners need to plan housing solution towards the need for intermediate size accommodation that supports urban densification.

Recommendations to developers and architects

- Although containers as a building material were seen as innovative and good alternative building material, the residents did not particularly see shipping container

developments as something they would want for themselves in the long run. The mixed feelings that people have towards containers as building blocks need to be better understood and interrogated before a building is constructed. This brings me to the need for public engagement and public participation prior a development. The discussion with Arthur revealed that he did not necessarily have to engage with the community before 61 Countesses was built but overtime he had to explain himself to the residents in the neighbourhood. In light of that, this report recommends developers to engage with local residents. Engagement with local actor is particularly important in the South African context where housing is a sensitive aspect and where people still poses little knowledge about containers as a building material.

- Another key finding was that the choice to conceal the building had a significant impact on how the residents in the case study building felt about their units. Given that, this research report encourages developers and architects interested in residential ISBU developments to disguise the buildings as this has implications on how people perceive their designated living space.
- Arthur articulated that containers hold a number of benefits as they are more environmentally friendly and more cost-effective. He also stressed the fact that container a more of a viable option when looking to accommodate a significant number of people in a short period of time. The use of shipping containers cuts construction costs by almost a third than what brick and mortar can do. In light of this important point, this report encourages developers and architects to explore this building material.

5.7Conclusion

This research study has shown that the general consensus among the residents in Windsor East is that consider the units in the 61 Countesses building as a home and adequate housing. However, they do not see container residential developments as an investment. This research has also shown that the case study building is densifying the neighbourhood through sub-letting and flexible lease agreements that allow for multiple households to reside in a single unit, depending on the size. This study, in a broader sense, has revealed the benefits and limitations of this type of home-making to find out the implications of providing shipping container social housing within the Johannesburg context. This study serves as a foundation into many realms that have not been extensively explored by the urban planning profession. Cargotecture is an increasingly popular trend internationally and an emerging one in the South African context and active research on these building routes could yield interesting literature on approaches towards providing housing. This research report has illustrated how the container rental living spaces in 61 Countesses are used, shared and

viewed by some of the neighbouring residents within the Windsor East area. This report has shown that post-development evaluations of housing are important has they offer lessons from those who are already using the units. It has used the conceptual framework developed in chapter 2, to guide the discussion around adequate housing, home and densification with the participants.

The right to access adequate housing is a universal right as a sense of home is a universal need and containers are viable resources that can assist in meeting this need in cities (Brandt, 2011). The interviews with the residents have shown that containers can satisfy this need without compromising their quality of life. The findings discussion has also revealed that the growing demand for affordable and adequate rental accommodation is still unmet within Windsor as a result 'informal' subletting is filling the gap within 'formal' apartments to allow residents to share living costs. The findings are hoped to inform developers and the state of the possibilities of employing shipping containers within this context. This report has also shown how the existing project contributes to densifying the study area through subletting and how it could be further enhanced to ensure the positive outcomes associated with densification. The idea of container housing is an important aspect to the discussions on increasing densities and providing well located low-cost housing.

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7. APPENDIX

Appendix A: ETHICAL CLEARANCE CERTIFICATE



SCHOOL OF ARCHITECTURE AND PLANNING
HUMAN RESERCH ETHICS COMMITTEE

SCHOOL OF ARCHITECTURE & PLANNING

CLEARANCE CERTIFICATE
PROTOCOL NUMBER: SOAP80/24/06/2016

PROJECT TITLE:	IMPLICATIONS FOR USING SHIPPING CONTAINERS TO PROVIDE SOCIAL HOUSING
INVESTIGATOR/S:	Minenhle Maphumulo (Student No. 753493)
SCHOOL:	Architecture and Planning
DEGREE PROGRAMME:	BSc Honours Urban and Regional Planning
DATE CONSIDERED:	11 August 2016
DECISION OF THE COMMITTEE:	APPROVED
EXPIRY DATE:	11 August 2017

CHAIRPERSON _____
(Professor Daniel Irurah)

DATE:

cc: Supervisor/s: Alexandra Parker

DECLARATION OF INVESTIGATORS

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to endure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

_____ 18/08/2016
Signature **Date**

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AppendixB: PARTICIPANT INFORMATION SHEET

Greetings Sir/Madam

My name is Minenhle Maphumulo. I am currently completing my Honours Degree in Urban and Regional Planning at the University of the Witwatersrand. As part of our course, we are required to do a research paper on a topic of our choice. I have chosen to explore people's views about shipping container developments for housing. The idea is to reveal the perceptions of Inter Steel Building Units (ISBU) developments within the Windsor area in Randburg-Johannesburg. It is also to unpack the level of acceptance of ISBU developments for housing to possibly inform developers and the state. An additional objective of this study is to also provide a discussion on the implications for using shipping containers to provide social housing. Lastly it also intends on investigating how the existing project contributes to densifying the study area and how it could be further enhanced to ensure the positive outcomes associated with densification. I would appreciate some of your time to ask you some questions to carry out my study. This will require no more than 30-45 minutes of your time and can be arranged around your schedule and your place of residents. Please note that participation is completely voluntary.

If you feel uncomfortable at any time you will be allowed to withdraw from the study. During the process of the interview I would like to record your responses. However if you would prefer to not be taped, it will be fine. If you would not mind to be recorded, please note the recordings will be safely kept. The recordings will only be able to be accessed by me to ensure confidentiality. Your name will not be used anywhere in the research, if you would rather remain anonymous. The final report will be available electronically and if you would like a copy, you can contact me. It is not anticipated that you will experience any threat to your wellbeing during the data collection.

Kind regards

Minenhle Maphumulo

Email: 753493@students.wits.ac.za

Supervisor: Dr Alexandra Parker

Alexandra.parker@students.wits.ac.za

AppendixC: CONSENT FORM

In order to participate, you will be required to complete this Consent Form and sign in which you acknowledge that you understand what the research is about and that you have given your consent to participate.

I herebyconfirm that I have been informed by the student researcher of the purpose, procedure and my rights as a participant. I have received, read and understand the written information sheet. I have also been informed of:

- □ the nature of my participation in the form of an interview
- □ the place and duration of the study
- □ the reasons for why I was selected to participate in the study
- □ the voluntary nature, refusal to answer, and withdrawing from the study
- □ no payment or incentives
- □ no loss of benefits or risks
- □ anonymity
- □ confidentiality
- □ how the research findings will be disseminated

I therefore agree to participate in this study by completing the survey interview

I AGREE/ DO NOT AGREE to be audio-recorded during the interview

I AGREE/ DO NOT AGREE to have my place photographed

_____

Name of Participant

_____ _____

Signature of participant Date

Appendix D: QUESTIONNAIRE FOR THE 61 COUNTESSES RESIDENTS

1. DEMOGRAPHIC INFO

Name (Optional):

1.1 Age

1.2 Gender: male female

1.3 Where are you originally from?

1.4 Number of people living in this building unit/household:

1.5 What is your relation with the other person(s) living with you?

1.6 Is there a restriction to the number of people that can live in this unit/household?

1.7 What level of education have you attained?

- None
- Completed primary school
- Completed grade 9
- Completed high school
- Have attended university/ college
- Have a tertiary degree/ tertiary qualification

1.8 What do you do for a living?

1.9 What is your approximated household monthly income?

- No income
- Less than R1 500
- Between R1 500 and R5 500
- Between R5 500 and R10 000
- Between R10 000 and R15 000
- More than 15 000

1.10 Where do you work or study

1.11 Where do you shop?

2. BACKGROUNDS: NEIGHBOURHOOD, ACCESS AND PUBLIC FACILITIES

2.1 When did you start living in this apartment?

2.2 Why did you choose to live in this specific neighborhood?

2.3 Do you feel secure in thisneighborhood?

2.4 Is the neighborhood noisy or quiet?

2.5 During which time of the day is it noisy or quiet?

2.6 Do you generally use public or private transportation to get to work/school?

2.6.1If public, which mode of public transportation do you typically use?

2.7 Where do you access public transportation from this building?

2.8 How long does it take you to reach the public transport?

2.9 What are the factors that you considered before living in this building?

2.10 What were your considerations before choosing to live in this area?

2.11 What are your needs in a place to live?

2.12 Do you feel safe in this building?

3. TENURE, SESNSE OF HOME AND ADEQUECY

3.1 How much do you pay for rent a month?

3.2 Does the, amount aboveinclude electricity and water?

3.3 If no, how much do you spend on electricity and water?

3.4 Is this unit adequately ventilated? Is it warm and cool?

3.5 Can you fully express yourself is this flat?

3.6 Are you able to decorate your space?

3.7 Is it the way you would like it?

3.10 Do you refer to this flat as a home?

3.8 Does it feel like a home to you?

3.8.1 What about it makes it feel like a home/ what would make it feel more of a home?

3.9 Is there adequate privacy in this building?

3.11 What would you change about this space?

3.12 Does this building have communal/shared spaces?

3.13 How do you feel about shared spaces? E.g. parking bays, washing lines

3.14Do you use these spaces?

3.15Do you know your neighbors?

3.15.1 Do you get along with them?

3.16 What are the advantages of living in thisbuilding?

3.17 What are the disadvantages of living in this building?

4. SHIPPING CONTAINER DEVELOPMENTS

4.1 Do you know of the Mill Junctions student accommodation in Newtown? (Refer to figure 1)

4.2 Do you know of the 27 boxes in Melville? (Refer to figure 2)

4.3 Are you aware that this building was made out of shipping containers?

4.4 What do you think of this?

4.5 What do you think about containers as building materials?

4.6 Would you have lived here if the shipping container raw material was not concealed?

4.7 What do you think of social housing?

4.8 Do you think shipping containers can/should be used to provide social housing?

4.9 Would you consider living in a state subsided house?

4.10 Would you live in a free standing housemade of shipping containers?

4.11 Would you buy a house made of shipping containers?

Appendix E: QUESTIONNAIRE FOR THE RESIDENTS IN THE WINDSOR AREAS

1. DEMOGRAPHIC INFO

Name (Optional):

1.1 Age:

1.2 Gender: male female

1.3 Where are you originally from?

1.4Number of people living in this building unit/household:

1.5 What is your relation with the other person(s) living with you?

1.6 Is there a restriction to the number of people that can live in this unit/household?

1.7 What level of education have you attained?

- None
- Completed primary school
- Completed grade 9
- Completed high school
- Have attended university/ college
- Have a tertiary degree/ tertiary qualification

1.8 What do you do for a living?

1.9 What is your approximated household monthly income?

- No income
- Less than R1 500
- Between R1 500 and R5 500
- Between R5 500 and R10 000
- Between R10 000 and R15 000
- More than 15 000

1.10 Where do you work or study

1.11 Where do you shop?

2 BACKGROUND: NEIGHBOURHOOD, ACCESS AND PUBLIC FACILITIES

2.1 When did you start living in this apartment/house?

2.2 Why did you choose to live in this specific neighborhood?

2.3 Do you feel secure in this neighborhood?

2.4 Is the neighborhood noisy or quiet?

2.5 During which time of the day is it noisy or quiet?

2.6 Do you generally use public or private transportation to get to work/school?

2.7 If public, which mode of public transportation do you typically use?

2.8 Where do you access public transportation from this building/house?

2.9 How long does it take you to reach the public transport?

2.10 What are the factors that you considered before living in this building/house?

2.11 What were your considerations before choosing to live in this area?

2.12 What are your needs in a place to live?

2.13 Do you feel safe in this building/house?

3. TENURE, SESNSE OF HOME AND ADEQUECY

3.1 Do you own or rent this household?

3.2 If you rent, how much do you pay for rent a month?

3.3 Does the, amount above include electricity and water?

3.4 If no, how much do you spend on electricity and water?

3.5 Is this unit/house adequately ventilated? Is it warm and cool?

3.6 Can you fully express yourself is this flat?

3.7 Are you able to decorate your space?

3.8 Is it the way you would like it?

3.9 Does it feel like a home to you?

3.10 Is there adequate privacy in this building?

3.11 Do you consider your flat/ house a home?

3.12 What would you change about this space?

3.13 Does this building/house have communal/shared spaces?

3.13.1 If yes, do you use these spaces?

3.14 How do you feel about shared spaces? E.g. parking bays, washing lines

3.15Do you know your neighbors?

3.15.1 Dou you get along with them?

4 SHIPPING CONTAINER DEVELOPMENTS

4.1 Do you know of the Mill Junctions student accommodation in Newtown? (Refer to figure 1)

4.2 Do you know of the 27 boxes in Melville? (Refer to figure 2)

4.3 What do you think of the 61 Countesses residential building in this area?

4.4 Do you know anyone staying there?

4.5 How has the development of the61 Countesses affected the neighborhood?

4.6 Are you aware that it was made out of shipping containers?

4.7 What do you think of this?

4.8 What do you think about containers as building materials?

4.9 Has the development of 61 Countesses affected the value of the property in the area?

4.10 Has it affected the traffic volumes? If so how?

4.11 Have you had any issues with the development or the people living there?

4.12 Would you have lived at 61 Countesses if you were not living where you live now? Why?

4.13 Would you have lived here if the shipping container raw material was not concealed?

4.14 Would you recommend 61 Countesses to someone looking for an apartment in the area? Why?

4.15 What do you think of social housing?

4.16 Do you think shipping containers can/should be used to provide social housing?

4.17 Would you consider living in a state subsided house?

4.18 Would you live in a free standing housemade of shipping containers?

4.19 Would you buy a house made of shipping containers?

QUESTIONNAIRE ANNEXURE



Figure 16~~1~~: Mill Junction in Newtown Source: http://www.domusweb.it/content/dam/domusweb/en/architecture/2014/05/13/mill_junction/Mill-Junction-06.jpg



Figure 172: 27 boxes. Source: http://inafricaandbeyond.com/wp-content/uploads/2015/07/A20150725_155722-2-001.jpg

Appendix F: QUESTIONNAIRE FOR THE DEVELOPER

1. DESICION MAKING PROCESS

1.1 What informed the decision to construct 61 Countesses building out of shipping containers?

1.2 Why were the shipping containers the optimal building material for this building?

1.3 How long did it take to complete the construction of the building?

1.4 How long would it have taken to build the same building using bricks?

1.5 How accessible is it to find/buy shipping containers for building purposes?

1.6 Why did you make the choice to conceal the building's raw material (shipping containers)?

1.7 Do you think the response to the building would have differed if it was not concealed?

1.7.1 If so, how would it have differed?

1.8 Why was the Windsor area the optimal neighbourhood for a building made of shipping containers?

2. DESIGN OF THE 61 COUNTESSES

2.1 What do you think about containers as building materials?

2.2 Is there a specific type of shipping container that is better for housing purposes?

2.3 How was 61 Countesses designed differently from buildings made out of conventional materials to ensure it that it was habitable?

2.4 How was the building designed to not look like shipping containers?

2.5 What were the measures you took to try and make the building feel like a home as opposed to a house?

2.6 How did you ensure that each unit remains adequately ventilated to remain cool and warm?

2.7 Did this construction of this building require any building permission?

2.7.1 If so, which body/agency grants this permission?

2.8 Is the application for a building permission process different?

2.9 Were there specific by-laws that you needed to be taken into consideration?

2.9.1 if so, what were they?

2.10 Were there additional considerations in designing 61 countesses as opposed to brick buildings?

2.10.1 If so, what were the additional considerations?

2.11 Is there anything you wish you knew before design and construction of this building?

2.12 What advice would you give to someone thinking of building with containers?

3 RESPONSES

3.1 What were the initial responses towards shipping containers as building material in the Windsor area?

3.2 Were there any concerns related to property value?

3.3 How do financial institutions feel about these types of developments?

3.4 Do financial institutions support those that want to invest in these types of development?

3.5 Do financial institutions view shipping container developments as adequate collateral?

3.6 Are there challenges with selling or buying property made of shipping containers?

3.7 Were there challenges with using shipping containers for this building?

3.7.1 If so, what were the challenges with using shipping containers for this building?

3.8 How did you deal with the challenges?

3.9 Does this building contribute to densifying this area?

3.10 Do you think shipping containers can/should be used to provide social housing?

3.11 Would you consider developing shipping container state subsided houses?

3.12 Would you continue to invest in more shipping container residential developments?