A CASE STUDY TO DETERMINE IF MICRO-UNIT DEVELOPMENTS CREATE ANOTHER STEP ALONG THE HOUSING LADDER FOR LOW-INCOME HOMEOWNERS IN SOWETO

by

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Abstract

The South African government has been providing subsidised housing for decades, yet a large portion of the population live in inadequate housing. More recently, it has been found that many residents earn more than what is allowed to qualify for a housing subsidy; however, they earn too little to enter the formal market. These residents, therefore, turn to the informal market, where they obtain housing in informal settlements or housing in backyards. A new housing development trend is emerging in the form of backyard micro-unit developments.

This research proposal examines the potential of backyard micro-unit development to address the low-income housing demand and how these developments can be used as a means to climb the housing ladder.

An exploratory case study is undertaken to understand housing trends within Soweto, South Africa. A mixed research approach was used together with both quantitative and qualitative data. The COVID-19 pandemic, however, posed a significant limitation on fieldwork; therefore, the study relied on secondary data sources.

The analysis indicates that the backyard micro-unit developments mimic the formal market, and the backyard micro-unit developments provide an adequate housing option for low-income earners. Furthermore, the demand for affordable accommodation results in the commercialisation of the informal rental market and presents the opportunity for homeowners to move up the housing ladder, and it addresses the mounting housing backlog in Soweto. Furthermore, the analysis indicates the significance of a title deed for residents in townships and its role in their ability to climb the housing ladder.

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Abbreviations

BNG	Breaking New Ground
CAHF	Centre for Affordable Housing Finance in Africa
CBD	Central Business District
CoJ	City of Johannesburg
FLISP	Finance-Linked Institutional Subsidy Program
GTI	GeoTerraImage
MPT	Modern Portfolio Theory
NDP	Neighbourhood Development Partnership
NHBRC	National Home Builders Registration Council
NOI	Net Operating Income
NURCHA	National Urban Reconstruction and Housing Agency
NUSP	National Upgrading Support Programme
RDP	Reconstruction and Development Programme
UISP	Upgrading of Informal Settlements Programme
USDG	Urban Settlements Development Grant

1 Introduction to the study

1.1 Introduction

The government of South Africa has been providing subsidised housing for low-income earners for many decades. However, informal settlements are increasing, and people are finding alternative means of accommodation. A new trend emerged in various neighbourhoods across South Africa. Homeowners rent rooms in their houses and allow the erection of shacks and wendy houses on their properties for additional income. In more recent years, brick and mortar buildings are replacing backyard shacks and informal structures. Albeit brick and mortar, many of these backyard micro-unit buildings are still informal, and no statutory approvals are granted. This trend is regarded as a direct reflection on the state and progress of the government subsidised schemes. Each property has a value base comprised of the value of land as well as any improvements made after that.

Furthermore, the residential properties are grouped into sub-markets based on the property value. Existing literature makes mention of either four or five tiers of the housing sub-market ranging from entry-level to the high-end and luxury level. The properties of the government subsidised scheme is valued below R300,000 and thus falls within the bottom tier (entry-level) of the housing sub-market.

This research will explore the recent trends in alternative housing provision and the associated rental income for low-income earners. This rental market is a potential opportunity for property owners stuck on the bottom rung of the housing ladder to experience upward mobility. The focus and aim of this research are not to iterate the history of government subsidised programmes. Instead, this study will assess the need for alternative housing opportunities, especially micro-unit developments, and how this indicates a gap in the housing market. This study will explore to what degree the additional income generated can aid property owners to climb to the next step of the housing ladder. The focus of the study will be concentrated within the geographic area of Soweto, South Africa.

The township of Soweto is located towards southwest of Johannesburg, Gauteng Province of South Africa. Soweto is an acronym derived from the first two letters of each word in the phrase “South-Western Township” (South African History Online, 2021). Over time, Soweto has become the largest township in South Africa, characterised by a concentration of predominantly black people. Residents are primarily employed within the neighbouring industrial and residential areas in Johannesburg. The broader Soweto area has built up over time, comprising several smaller townships.

Soweto is located in the central-eastern part of Region D of the City of Johannesburg. This western periphery forms the furthest boundary of the City of Johannesburg. On the eastern border, the Region is separated from Johannesburg South by the Western Bypass of the N1, and to the south lies Region G (which is home to Lenasia, Ennerdale and Orange Farm). Despite the significant public investment, the area is still characterised by limited housing typologies, poor living conditions (with overcrowding in places), high unemployment, limited infrastructure and poor levels of service delivery.

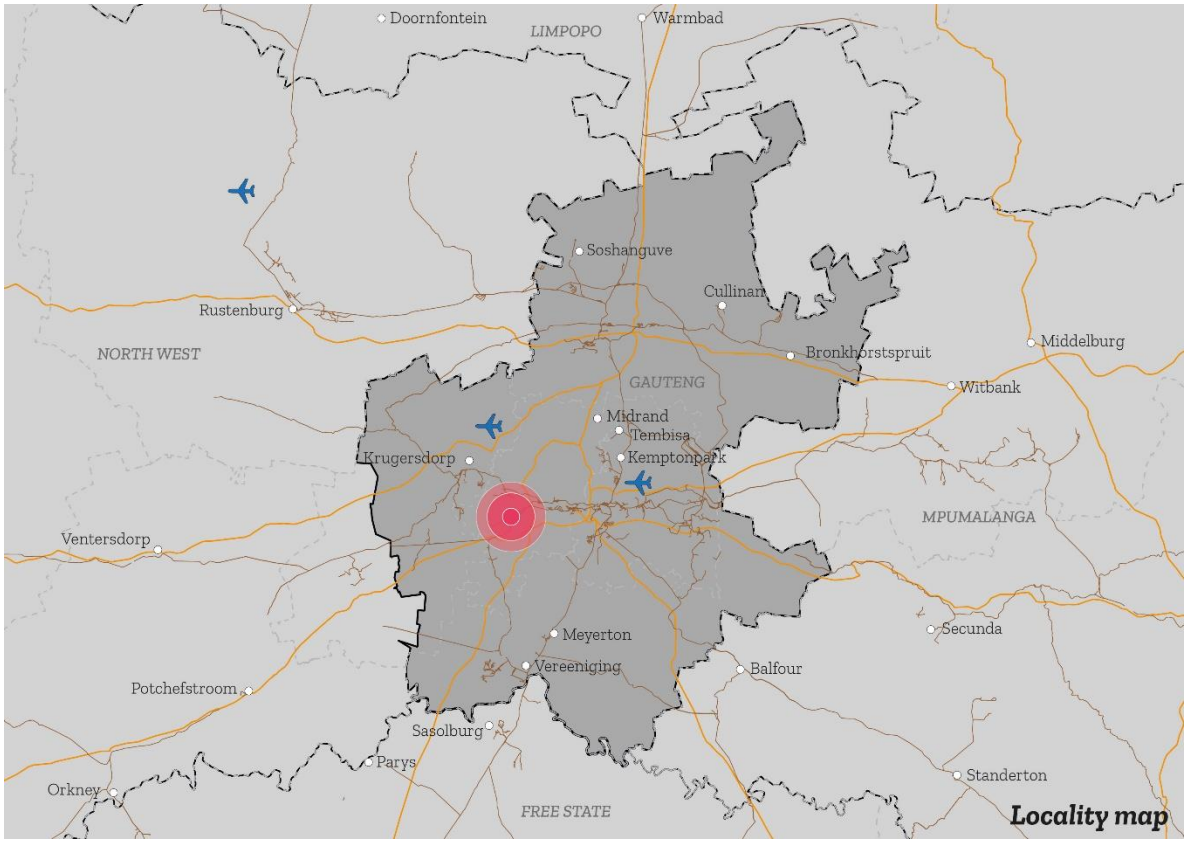

Figure 1: Location of Soweto

Source: (Van Eeden, 2021)

Three research questions underpin the research: firstly, where do the most significant housing supply and demand lie within Soweto, secondly, what role do micro-unit developments play to meet specific housing market segments within Soweto and lastly, how can the micro-unit developments ensure wealth creation and aid homeowners climb to the next step of the housing ladder.

This dissertation is structured into six chapters with the references provided in chapter 7. Chapter 1 will comprise the research problem, research questions and outline the aims and objectives of the research. Chapter 2 focuses on a detailed review of existing literature pertaining to housing delivery, housing sub-markets, the housing ladder, etc. The research methodology is described in Chapter 3, followed by a description of the Case Study in Chapter 4. Data analysis and research findings are undertaken in Chapter 5, and the conclusion is provided in Chapter 6.

1.2 Background to the study

The South African government has been tasked with providing housing to address the historical inequalities within the country. The 1994 White Paper on Housing was prepared and adopted to prioritise the needs of the previously disadvantaged and aimed to provide 1 million houses within five years (Jenkins, 1999, Goebel, 2007). The history of government subsidised housing is clearly articulated in the works of Huchzermeyer (2001) and Charlton & Kihato (2006) and will not be discussed in detail in this report. Turok, however, suggests that there is uncertainty within the government housing policy (Turok & Borel-Saladin, 2016), and this is mainly due to the perception that "the right to adequate housing" as per the Constitution of South Africa is understood to mean the right to homeownership as opposed to the sites and services schemes that were provided under the previous government (Huchzermeyer, 2001). As such, subsidised housing programmes like the Reconstruction and Development Programme (RDP) provide land and building to beneficiaries (Hunchzermeyer, 2009, 2011; Lemanski, 2011; Turok, 2016). These RDP houses comprise a single house (approximately 40sqm) on a serviced erf (Gunter, 2013).

Literature criticises the government subsidised schemes in terms of the location and financing of these government subsidised schemes. One critical element is the high consumer costs resulting from these settlements located towards the periphery of existing towns and cities. In addition, these low-income housing developments are located towards the periphery since land tend to be cheaper than near economic opportunity. Huchzermeyer (2001) indicated that low-income housing developments should occur on well-located land (in close proximity to job opportunities) to reduce transportation costs.

Some, like Berrisford, argue that locating government housing projects on the periphery of towns reinforces apartheid planning practices (Berrisford, 1999). Huchzermeyer opens the debate of wealth creation and accessibility to job opportunities. She states that residents default on the payment towards services since they do not have a stable income. Furthermore, she argues that if these low-income households are located in closer proximity to job opportunities, they may have additional disposable income, and municipalities would be able to collect rates and taxes to supplement infrastructure upgrading and maintenance of existing infrastructure (Huchzermeyer, 2001).

The other main critique is concerning the financing of housing. Through various engagements between commercial banks and the government, the National Housing Finance Corporation

was created in 1996 and aimed to assist low-income earners in entering the conventional mortgage market. Also, the National Urban Reconstruction and Housing Agency (NURCHA) was created to provide bridging finance to developers and credit to low-income households. However, these mechanisms failed (Tomlinson, 1997 & Huchzermeyer, 2001). The traditional mortgage loan systems are too complex and expensive to apply to government subsidised housing provisions (Huchzermeyer, 2001). The inaccessible mortgage loan systems are affirmed with the resale and new residential transactions. The CAHF reports that only 1,120 mortgages or 11% of resale transactions below R300,000 were financed (Centre for Affordable Housing Finance in Africa, 2020). The Centre for Affordable Housing Finance in Africa (CAHF) further indicates that banks may show an interest in providing finance for the affordable housing market; however, very little financing has been provided in this market. During the first quarter of 2021 approximately 87% of mortgages were for properties valued over R700,000 whilst only 2% of mortgages were for properties below R350,000 (Centre for Affordable Housing Finance, n.d.).

The residential sector of the property market is either formal or informal. The formal market comprises housing typologies registered in the relevant Deeds Office and has appropriate town planning and building plan approvals, whilst the informal market is unregulated and comprises informal dwellings, e.g. shacks and backyard dwellings (Issar, 2022). This informal market houses the most vulnerable people (Gunter, 2014). However, it should be noted that the informal market mirrors that of the traditional market (Gunter, 2014) – properties are sold to a willing buyer at an agreed-upon price.

The formal residential sector has housing sub-markets, and these sub-markets are based on specific characteristics such as geographic location, the structural character of the building, prices, etc. (Goodman & Thibodeau, 1998). Depending on the source, the housing sub-market in South Africa is reported to have either four sub-markets (Butcher, 2020) or five sub-markets, according to the CAHF. The difference between these two sources lies within the higher end of the market. According to Butcher, the housing sub-market is as follows: firstly, the entry market with properties worth less than R300,000, secondly, the affordable market with properties worth between R300,000 and R600,000; thirdly, the conventional market with properties worth between R600,000 and R1.2 million and lastly the high-end market with properties worth more than R1.2 million. The CAHF provides the following housing sub-markets: firstly, the entry market with properties worth less than R300,000, secondly, the affordable market with properties worth between R300,000 and R600,000 thirdly, the

conventional market with properties valued between R600,00 and R900,000 the high-end market with properties worth between R900,000 and R1.2 million and lastly the luxury market with properties worth more than R1.2 million (Centre for Affordable Housing Finance in Africa, 2020). Both sources indicate that government subsidised housing lies within the entry market.

Informal settlements are proliferating (Del Mistro & Hensher, 2009, Lemanski, 2009, Gunter, 2014 & Cousins et al., 2005), and low-income earners face numerous barriers to entering the formal housing market. These barriers include the high cost to secure homeownership, ability to qualify for government subsidies, significant housing waiting lists and limited and irregular income (Gunter, 2014). Moola et al. and Arku et al. (2012) also state a lack of affordable housing stock for these low-income earners.

The inability of the government to reduce the housing backlog leads to the proliferation of informal settlements. Furthermore, the inability to find suitable accommodation closer to job opportunities leads to a rapidly growing informal housing market. The informal housing market, albeit unregulated, has led to the surge in alternative housing opportunities targeted at low-income earners (Rogerson & Letsie, 2013 & Gunter, 2014). There has been a surge in backyard dwellings within existing townships and a reduction in expanding informal settlements towards the periphery of urban areas. Traditionally, backyard shacks and wendy houses were built in the backyard; however, these informal structures have been replaced by brick-and-mortar buildings in more recent years. Homeowners, predominantly those who benefitted from government subsidised properties, rent rooms within their houses (Gunter, 2014 and Poulsen, 2010) and allow wendy houses and shacks to be constructed on their properties to supplement their income.

These backyard dwellings are affordable to low-income earners (Payne, 1989); however, the unregulated and below standard infrastructure provision makes it more affordable. Therefore, it is in some ways viewed in a positive light as it addresses the need in a more responsive manner (Turok & Borel-Saladin, 2016). The backyard dwellings, in many instances, provide flexible rental accommodation, are located in closer proximity to job opportunities, has better access to infrastructure services and provide better safety than that of the informal settlement (Turok & Borel-Saladin, 2016). Furthermore, the backyard rental housing opportunity is beneficial to both the homeowner and the tenant. The capital costs associated with a backyard dwelling is much more affordable to the homeowner, and rent payments are often flexible, and it is rare to find evictions (Rubin and Gardner, 2013).

It is argued that the government subsidised programmes are failing due to the lack of available funds and the scale at which informal settlement upgrading is occurring is not adequate to address the housing need (Nzau & Trillo, 2020). Nzau and Trillo suggest that new and innovative means should be considered to address the housing need. One such approach proposed is the innovative land use incentives which would encourage the private sector (Nzau & Trillo, 2020).

The CAHF reports that in 2019 the government subsidised housing accounted for 31% of the total residential property market. Furthermore, they report that a total of 43% of residential properties in Johannesburg is within the entry market and affordable market (Centre for Affordable Housing Finance in Africa, 2020), whilst the government subsidised housing comprises 27% of the residential property market within the City of Johannesburg (Centre for Affordable Housing Finance in Africa, 2020) with 54% of properties within the affordable sub-market are government subsidised properties.

A total of 93% of the government subsidised properties in Johannesburg are already over eight years old and therefore eligible to be sold (Centre for Affordable Housing Finance in Africa, 2020). These properties form the first step of the formal housing ladder; however, the transaction values are very low, and residents, therefore, struggle to reach the next step of the housing ladder (Lemanski, 2011).

1.3 Problem statement

The problem to be examined in this study may be stated as follows:

Insufficient subsidised housing is supplied by the Government and the demand is growing rapidly. The private sector is filling the gap and enabling wealth creation for homeowners.

1.4 Research questions

The research questions to be addressed may be stated as follows:

a. What is the housing gap given the number of housing units supplied into the study area versus the housing demand?

b. What role does micro-unit backyard developments play to meet specific housing sub-market within Soweto? and

c. How can the micro-unit backyard developments encourage wealth creation and aid homeowners in going to the next step on the property ladder?

1.5 Research aim

This research study aims to:

Assess backyard micro-unit development in Soweto as a plausible solution to addressing the housing demand and unpack how these developments can be used as a means to climb the housing ladder.

1.6 Research proposition

The research proposition to be tested in this study is:

Does backyard micro-unit development have the potential to provide sufficient housing units to fill the housing gap and can these units facilitate wealth creation for homeowners and enable homeowners climb the housing ladder.

1.7 Research objectives

The objectives to be achieved are as follows:

a. Determine if backyard micro-unit developments are a plausible solution to the housing demand?

b. Determine the number of backyard micro-unit developments that can be developed;

c. Determine the income that can be generated from backyard micro-unit developments and if this can enable homeowners climb the housing ladder.

1.8 Research Methodology

The above objectives of this study will be achieved by adopting the following research method:

A case study research method will be used to determine a concrete, contextual and in-depth understanding of the housing dynamics found within Soweto. This case study method could provide new and unexpected insights which open a new direction for future research. It should be noted that although backyard micro-unit developments are starting to appear in other locations, a single case (Soweto) will be assessed as part of this dissertation.

A theoretical framework will be established to embed the research and case study. The literature review will be conducted by drawing on sources related to the topic and identifying gaps in the existing literature to develop a theoretical framework. This theoretical framework will further identify key concepts and theories which will guide the analysis and interpretations in the subsequent sections of the dissertation.

An exploratory case study will be undertaken due to the limited research around the selected topic. Although qualitative data analysis is usually applied to the case study methodology, this dissertation will focus on quantitative and qualitative data analysis. This is due to the nature and focus of this dissertation. Primary and secondary data will be used in the analysis. Due to the COVID-19 pandemic, limited fieldwork will be undertaken to collect primary data. The study will, therefore, also rely on secondary data. Structured observation techniques will determine the location and typology of informal dwellings occurring within the study area. The aim is to determine the supply and demand of alternative housing opportunities within the study area and provide insights into housing market segmentation. Additionally, the data analysis will be assessed to determine the number of micro-units that can be accommodated on the erf.

This will be supplemented with secondary data about property valuation obtained from the City of Johannesburg valuation roll. Published reports will also be used to obtain market data which will be used to link a range of rental typologies to monthly rental amounts.

1.9 Limitations

a. In-depth property valuation will not be undertaken; however, the study will rely on municipal valuation data. It is recognised that the municipal valuation may not correspond adequately to the actual market prices or a bank valuation;

b. The study will be limited to Soweto;

c. No site surveys will be undertaken due to the COVID-19 pandemic; however, unregulated housing opportunities and location will be obtained from aerial imagery analysis;

d. The predefined housing sub-markets identified by the Centre for Affordable Housing Finance will be used; and

e. Due to the COVID-19 pandemic, the rental information will not be obtained via site surveys; however, data from micro-financier (TUHF) will be applied in this study.

1.10 Structure of the research report

The research report will be structured into seven chapters.

Chapter 1 will outline the research topic, followed by succinct statements of the research problem, the research questions, and the research proposition. Furthermore, this chapter will outline the aims and objectives of the research.

Chapter 2 focuses on detailed analysis and a critical review of the existing literature about housing delivery in South Africa, the informal market and back yarding in South Africa. This chapter will attempt to identify what current research in this field has revealed.

The research approach, strategy and design will be described in **Chapter 3**, research methodology. Furthermore, the data collection will also be done in line with the approach and strategy.

The case study will be described in **Chapter 4,** together with the data analysis and research findings. This section will focus on the meaning, importance and relevance of the results. An evaluation and explanation will be provided on how the results relate to the literature review undertaken in chapter 2 and the research questions posed.

The conclusion will be undertaken in **Chapter 5**. This chapter aims to articulate how the research questions are clearly and appropriately answered, and the conclusions drawn will be supported by the analysis, findings and discussions. This chapter is followed by a complete list of **References** for the research report and an **Appendix** containing the data analysis.

2 Literature review

2.1 Introduction

The South African government housing subsidy is geared to provide full title (title deeds) to the most vulnerable residents – the poor living in inadequate housing. In past decades those who were unable to enter the formal housing market would obtain a shack in an informal settlement. In recent years, however, a new trend has been emerging. The homeowners of government subsidy schemes rent the space in their backyard and provide alternative means of accommodation.

This research study will aim to answer three main research questions:

a. What is the housing gap given the number of housing units supplied into the study area versus the housing demand;

b. What role do micro-unit backyard developments play in meeting specific housing sub-market needs within Soweto; and

c. How can the micro-unit backyard developments ensure wealth creation and aid homeowners in climbing to the next step on the property ladder?

In doing so, the research will explore recent trends pertaining to the housing demand as well as migration between informal settlements and backyard dwellings and analyse trends concerning landowners/developers accommodating backyard dwellers. Finally, existing academic articles will be reviewed to determine if the commercialisation of backyard dwellings is taking place and the differences between typical backyard dwellings and those of micro-unit developments.

2.2 Informal and subsidised housing

2.2.1 Effects of urbanisation and proliferation of informal settlements

There has been a significant rise in urbanisation since the late 1980s, where more people now live in urban areas rather than the rural areas (Urbanet, 2020). Under the new post-apartheid government regime, people flocked to urban areas searching for better living and working conditions. Migration trends indicate that people flocked to the larger metropolitan areas, especially Johannesburg and Cape Town (Turok & Borel-Saladin, 2014). The rate of urbanisation significantly impacts the city's ability to accommodate the influx of people (Turok & Borel-Saladin, 2014). Firstly, this is evident in providing adequate housing and community

facilities, supporting infrastructure services, limited available budgets to maintain bulk service provision, and shrinking labour markets (Turok & Borel-Saladin, 2014). If urban areas cannot cope with the increased demand created by the influx of people, it can result in unsustainable urbanisation and spatial imbalances. Resulting in the poor pushed out towards the periphery of towns far from employment opportunities and with a lack of basic infrastructure services.

The 1994 White Paper on Housing was prepared and adopted to prioritise the needs of the previously disadvantaged (Jenkins, 1999, Goebel, 2007). Furthermore, Section 26 (1) of the Constitution of the Republic of South Africa states that: "*Everyone has the right to have access to adequate housing*" (Republic of South Africa, 1996, p. 11), and in many instances, this is associated with homeownership (Turok & Borel-Saladin, 2016). The post-apartheid government has been providing full title (title deeds) to the poor since 1994. Housing was provided to the poor to rectify the spatial imbalances of the past. However, the physical outcomes of the apartheid era spatial segregation can still clearly be seen today. It poses significant challenges for overcoming spatial and socio-economic inequality and the effective management of urban areas. It is expected that the poor will benefit from the housing subsidy schemes and be afforded dignified living conditions (Lemanski, 2009). Bradlow et al. (2011) argue that there has been a shift in focus regarding housing policy in South Africa. They argue that the government's focus has shifted from improving local communities to purely focusing on housing delivery (Bradlow, Bolnick, & Shearing, 2011).

Huchzermeyer (2001) criticises the government subsidised schemes regarding their location and financing. Many government subsidised housing developments are located along the periphery of existing towns and are therefore seen as unsustainable as it exacerbates the spatial inequalities created during apartheid. Sustainable urbanisation requires the effective functioning of three aspects: adequate housing and community facilities, access to well-maintained infrastructure and close proximity to job opportunities (Turok & Borel-Saladin, 2014). Many of these government subsidised schemes lack the third ingredient – proximity to job opportunities. Proximity and access to employment opportunities are fundamental to secure a regular income (Turok & Borel-Saladin, 2014) and improve living conditions. Ng and Lo (2015) indicate that rent is higher in closer proximity to the CBD or employment opportunity centres and areas with high accessibility. Those with a low income is located far from economic opportunities using a significant portion of their income to get to work.

Turok and Borel-Saladin (2014) conducted a study to find a correlation / spatial alignment between population growth and economic growth. The results indicated a relatively strong connection between employment and population growth for Johannesburg. In addition, Hammann and Gotz (2018) suggest that townships in Gauteng have become poorer between 2001 and 2011, indicating a pooling of poor people living in townships.

Since 1994, the South African Government has delivered approximately 4.7 million housing units (Centre for Affordable Housing Finance in Africa, 2021). Although many housing units have been provided, there is still a significant housing backlog remains. The current housing backlog (2020) is estimated at 2.6 million housing units (Thukwana, 2020). This backlog is a clear indicator of three critical aspects. Firstly, it indicates the continuation of urbanisation attributed to rural-to-urban migration. Secondly, the housing need in the low-income bracket (those relying on subsidies) persists, or that there is an imbalance between housing supply and demand for some housing submarkets. Lastly, it indicates that housing delivery is a complex system: it has a close relationship with the economy, social institutions, changes to the demographic profile and the natural environment (Turok & Borel-Saladin, 2016).

The urbanisation trends and lack of housing opportunities result in the proliferation of informal settlements, informal dwellings, and backyard dwellings (Gunter, 2014). This aspect of the proliferation of informal settlements has been proven by comparing the studies conducted by Charlotte Lemanski in 2009 with Ashley Gunter in 2014 and subsequent studies undertaken by Hammann and Gotz along with Charlotte Lemanski in 2009. Results indicate that 14.5% of South African households live in informal dwellings (Lemanski, Augmented informality: South Africa's backyard dwellings as a by-product of formal housing policies, 2009), and Ashley Gunter suggests that this figure increased to 16% (Gunter, 2014). Hamman and Gotz sourced satellite imagery from GeoTerraImage (GTI) to identify and classify housing structures within the Gauteng Province. The results indicate that between 2001 and 2016, the informal settlement dwellings increased by 51%, whilst backyard dwellings grew by 205% for the same period (Hamann & Gotz, 2018).

Although great strides have been made to provide full title homeownership to the poor, the delivery of new homes has been slow, and therefore people have been forced to find alternative means of accommodation (Lemanski, 2009). The informal market has shown the agility to adapt to the market demand.

2.2.2 Government policies and human settlement subsidy

The White Paper on Housing 1994 is the cornerstone policy for government-led housing provision in post-apartheid South Africa. The focus and aim of the policy are to prioritise the needs of previously disadvantaged residents by providing full title (Goebel, 2007 and Turok & Borel-Saladin, 2016). The RDP programme was developed to respond to this policy objective, providing 30m² starter-homes. The size and layout of the structures allow beneficiaries to make additions and alterations over time (Gunter 2013; Charlton & Kihato, 2006). The Policy made it clear that the focus has shifted from debating about the delivery of housing units (Huchzermeyer, 2001) as the Government declared they would provide 1 million houses in five years and lead the charge as implementing agent (Goebel, 2007). The housing policy intended to do more than just provide houses but to create integrated and enabling urban areas. However, in many urban areas, this has failed (Charlton & Kihato, 2006). Bradlow, Bolnick & Shearing (2011) argues that there has been a shift in focus regarding housing policy in South Africa. They argue that the government's focus has shifted from improving local communities to purely focusing on housing delivery (Bradlow, Bolnick, & Shearing, 2011).

The RDP programme is an income-related once-off capital subsidy to buy land, obtain tenure security, provide infrastructure services and a top structure for qualifying beneficiaries (those with a monthly income below R3,500) (Charlton & Kihato, 2006). In an attempt to cultivate a sense of ownership amongst the beneficiaries, regulations required an upfront payment of R2,479. If they did not have these funds available, they were required to be involved in the construction process (Charlton & Kihato, 2006).

Over the years, there have been numerous changes to housing policy (Goebel, 2007). According to Charlton & Kihato (2006), there were three policy developments or shifts. Firstly, a state-centred housing delivery programme whereby the government focused on facilitation and the delivery of housing provision was performed by various actors (Charlton & Kihato, 2006). The second shift in housing policy was with regards to social housing. The White Paper on Housing 1994 included rental housing, not social housing, which confused policy discourse (Charlton & Kihato, 2006). In 1999 another policy amendment included 'norms and standards' (Charlton & Kihato, 2006). This policy amendment was done to improve the quality of top structures constructed by contractors. It is argued that this policy shift was done to avoid any association with the incremental upgrading approach of the previous apartheid government (Charlton & Kihato, 2006).

The RDP programme was developed to meet the basic needs of beneficiaries (Charlton & Kihato, 2006). This RDP house is a starter home, and beneficiaries could improve or make additions to the dwelling unit using private capital or loans from the bank. However, it was soon realised that the conventional mortgage loan system is too complex and expensive for those qualifying for the RDP programme (Huchzermeyer, 2001). The failure of the mortgage loan system for the beneficiaries of the government subsidised scheme led to non-bank lenders providing microloans. Microloans were provided to formally employed beneficiaries who fall within the low-income bracket (Huchzermeyer, 2001). Beneficiaries who earned slightly above the subsidy quantum qualified for only a portion of the subsidy, and in many instances, did not qualify for credit and consequently received a smaller house (Huchzermeyer, 2001).

The Finance-Linked Institutional Subsidy Program (FLISP) was introduced in 2006 and was administered by the National Housing Finance Corporation. This program was created to assist households to purchase a mortgaged house, serviced site or building a new home. The program was geared toward assisting households with a monthly income of up to R15,000. Up to 2012, this program was not optimally utilised, and the Department of Human Settlements revived the program and reported that 600,000 loans were granted under the FLISP. However, commercial banks considered this program a failure due to the lower uptake of the FLISP loans (Butcher, 2020).

As stated earlier, the housing policy intended to do more than just provide houses. The intention was to create sustainable urban areas. It is argued that the neo-liberal policies limited funding, and therefore, adequate top structures cannot be provided, and cheaper land towards the periphery of existing towns are acquired by the government (Goebel, 2007). Due to limited fundings, many townships are located towards the periphery of existing towns where land is cheaper (Charlton & Kihato, 2006). As a result, in an attempt to provide housing, the government created dysfunctional settlements via the RDP housing subsidy. This is due to residents of the RDP townships being situated far from employment opportunities and services; it, therefore, becomes expensive for the government to service these areas due to its distance from the existing bulk infrastructure network, increased transportation costs, etc. (Goebel, 2007).

This shifted focus towards sustainable human settlements, and government departments moved from a housing delivery focus towards a sustainable human settlements approach through Breaking New Ground (BNG) (Department of Human Settlements, 2017). The focus of the BNG program is on defined demand, quality, and integration. The BNG programme was

reviewed, and it was found that the focus was still on housing delivery and not sustainable human settlements. Current human settlement projects endeavour to understand community needs via rigorous community engagement (Department of Human Settlements, 2017). The National Upgrading Support Programme (NUSP), Upgrading of Informal Settlements Programme (UISP), Neighbourhood Development Partnership Grant (NDP) and the Urban Settlements Development Grant (USDG) was then established to aid with the incremental development process to create sustainable human settlements (Department of Human Settlements, 2017).

South Africa's housing policy is widely criticised (Charlton & Kihato, 2006) for not adequately addressing the needs of the poor. The housing subsidy is earmarked for those earning an income; however, many potential beneficiaries are disadvantaged because they earn slightly more than the subsidy quantum- but they also do not qualify for credit at commercial banks (Huchzermeyer, 2001). The housing policy has been amended over the years, but despite changes, there is still a disconnect between the impact of the housing policy and poverty alleviation (Charlton & Kihato, 2006). Furthermore, the government needs to intensify and densify areas near economic centres to provide adequate housing in close proximity to employment opportunities (Gunter, 2013). The rising backyard dwellings in townships located closer to employment opportunities illustrate the importance of housing for low-income earners. The housing policy promotes homeownership (Lemanski, Augmented informality: South Africa's backyard dwellings as a by-product of formal housing policies, 2009) and disregards other forms of tenure.

2.2.3 Housing submarkets

Housing is a durable, immobile, very expensive, multifaceted, and modifiable capital asset (Galster, 1996). It is these characteristics of a house that influences one's attitude towards a particular house, a neighbourhood, available mortgage markets and housing policies (Galster, 1996). ~~Therefore, a beautiful house in a good location/neighbourhood will be sought after and supply and demand theory indicate that due to high demand the price of such house will therefore increases.~~ In addition, housing units are heterogeneous in that they differ in character, erf size, the character of the neighbourhood, its relation to public services and its accessibility to the occupants desired destinations (Galster, 1996). It is therefore justifiable to reason that the housing market is not one market but made up of interrelated submarkets (Galster, 1996).

Early literature around housing submarkets was conducted by assuming a single housing market differentiated by the size of the housing unit (Goodman & Thibodeau, 1998). However, the emergence of new methods and techniques to analyse data (i.e., hedonic price and hybrid analytical methods) indicate that factors other than the size of a house determine the housing submarkets (Goodman & Thibodeau, 1998). It is believed housing submarkets aims to improve the foundation for housing policy (Galster, 1996) and accurate segmentation of the housing market will improve the spatial modelling of house prices and improve the assignment of properties to submarkets (Islam & Asami, 2009).

The housing sub-markets in South Africa have also been refined to better illustrate the differentiation within the housing market. However, McGaffin & Kirova (2016) argue that not enough differentiation is given to create the market segments. They state that no to very little differentiation has been done amongst those on the bottom of the housing ladder, yet households within this group vary in age, size, income, etc. and housing models should include factors such as the purchasing power of households, their need as well as their preferences (McGaffin & Kirova, 2016). They further indicate that these factors play a critical role in understanding housing demand which is ultimately required to ensure that the supply of new housing stock matches the demand. Therefore, it can be deduced that the characteristic of the household will influence the demand for specific housing stock, which ultimately lies within one of the housing sub-market tiers. Housing policy in South Africa views the poor as a homogeneous group, and the housing typologies across the different housing subsidy schemes are relatively similar. Furthermore, Turok and Borel-Saladin (2016) indicate that the government subsidised schemes have created a distortion in the housing market and disregard the economic and spatial implications of townships located along the periphery of existing towns (Turok & Borel-Saladin, 2016).

The housing submarkets are more often classified following the various income groups. Any shift in housing market boundaries is predominantly in the naming convention whereby housing submarkets were associated with the income groups (Butcher, 2020). Even though the housing submarkets are no longer named according to the income groups, there is still a correlation between the two in that many of the government subsidised schemes are still aligned to the income groups convention for funding. The CAHF in Africa differentiates the South African housing submarket according to properties' value and classifies them into five tiers. The first tier is for properties worth less than R300,000 and is called ‘the entry market’. The second tier is ‘the affordable market’ with property values ranging between R300,000 and

R600,000. The third tier is ‘the conventional market’ with property values ranging between R600,00 and R900,000. The conventional market is followed by ‘the high-end market’ with properties worth between R900,000 and R1.2 million and lastly, ‘the luxury market’ with property values exceeding R1.2 million (Centre for Affordable Housing Finance in Africa, 2020).

The South African housing market is considered a great investment opportunity; however, very little investment has been observed in the lower end of the housing market (Butcher, 2020). This lack of investment can also largely be attributed to inadequate financing mechanisms and the perceived risk of providing credit to individuals earning between R1,500 and R7,500 (Butcher, 2020). These individuals earn too much to qualify for the government housing subsidy schemes; however, they earn too little or do not have a credit record for a loan from a commercial bank. In addition, the lack of investment in this submarket can be attributed to housing affordability challenges by low-income groups, a direct result of inadequate supply in the affordable market (Centre for Affordable Housing Finance in Africa, 2021). McGaffin & Kirova (2016) indicates that the current housing delivery model is failing due to fiscal constraints (public sector) and not enough housing stock being delivered to cater for the affordable market (private sector) (McGaffin & Kirova, 2016). Nzau & Trillo (2020) support this argument. The findings of their residual land value analysis indicate that incorporating approximately 27.9% of affordable housing with new inclusionary housing developments solely provided by the private sector could reduce the housing backlog. Briley (1999) also argues that the focus for the low-income sector should be on well-located land, which can reduce transport expenditure for these residents. Further studies undertaken by Butcher (2020) links the available capital associated with a property’s address, its potential to gain value and the anticipated risks and returns related to the property’s address. The study revealed the fluidity of the submarkets' boundaries and how different actors (bankers, National Treasury, etc.) view and interpret the limits of those earning between R3,500 and R25,000 (Butcher, 2020).

In order to make the housing market work for the poor of South Africa, one needs to assess the drivers of demand, understand the dynamics of the housing market in order for households to climb the housing ladder, anticipate future demand of different housing types and typologies, and the identification of shortages and oversupply within the housing sub-markets (McGaffin & Kirova, 2016; Butcher, 2020).

This research study will aim to contribute to the existing body of knowledge by determining if backyard micro-unit development is a housing typology geared towards residents who cannot obtain a housing subsidy but cannot afford alternative accommodation in the formal market. The CAHF indicate that very little investment occurs within this submarket; however, this research study will indicate the lucrative investment potential and how this type of housing can meet the housing demand within the study area (Centre for Affordable Housing Finance in Africa, 2021).

2.2.4 Housing demand in the informal sector - entry and affordable submarkets

The literature review undertaken up to this point indicates that more analysis is required around the housing market dynamics. One of the factors identified to make the housing market work for the poor of South Africa is the drivers of demand. This section will take a closer look at the discourse around the effects of policy, urbanisation and housing demand amongst the poorest in South Africa. Therefore, this section will have a stronger focus on informal housing as many urban poor cannot enter the formal property market. Informal housing in this context will include more than just informal settlements and have a range of rental housing options ranging from backyard dwellings, room(s) in a house, sub-divided rooms, etc. (Shapurjee & Charlton, 2013).

The housing affordability and severe supply challenges in South Africa have been exacerbated by urbanisation. The inability to meet the rapid demand has consequently increased the gap between supply and demand, impacting affordability (McGaffin, Spiropoulous, & Boyle, 2019). Furthermore, this housing affordability affects those without employment and reaching into the working class (Turok & Scheba, Solving the affordable housing crisis facing the working poor, 2018). In addition to the housing market dynamics, the gap in supply and demand is worsened by South African housing policy, which is based on the premise of providing full title to qualifying beneficiaries (Morange, 2002; Lemanski, 2009). This results in the proliferation of informal housing in South African cities.

Although there have been various housing policy amendments and refinements to the boundaries of the housing sub-markets, the housing backlog increased by approximately 600,000 units between 1994 and 2011 (Bradlow, Bolnick, & Shearing, 2011). This signifies significant proliferation and augmentation of informal housing (Lemanski, 2009). Furthermore, the housing policy is criticised for its strong focus on full title and not enough in respect of the other housing tenure options, i.e., the rental market, which houses many poor people (Shapurjee

& Charlton, 2013). In 2014, Minister Sisulu, Minister of Human Settlements, announced their target to provide 1.5 million housing opportunities within five years. This target includes 111,000 units in the gap market, and 70,000 units are earmarked for the affordable rental market (Department of Human Settlements, 2014). However, only 4,400 households benefitted from this program in three years (Turok & Scheba, Solving the affordable housing crisis facing the working poor, 2018), making it impossible for the Department to deliver on its target. A study was conducted to determine the change in Johannesburg's informal settlements and backyard dwellings between 2001 and 2016. The analysis indicates that some areas in Johannesburg, characterised by informal settlements, are now replaced by formal dwellings and therefore illustrate the progress made regarding government housing subsidy schemes (Hamann & Gotz, 2018)

In response to the failing attempts by the government, backyard dwellings are increasing in urban areas, especially the townships and micro-developers are emerging by developing micro-units/micro-developments of typologies ranging between 4–10-unit blocks in the backyard of residential erven (McGaffin, Spiropoulous, & Boyle, 2019). It is argued that these backyard micro-developments provide alternative options to those who are either waiting for subsidy schemes or those who are able to pay rent but do not qualify for housing subsidies. Therefore, the micro-unit developments are a step up the housing ladder for many South Africans (Urban LandMark, 2010). In addition, these backyard micro-developments assist in reducing the housing backlog without further fiscal constraints on the government, providing rental accommodation in closer proximity to employment opportunities, the spatial form of the cities are densifying, and existing infrastructure is better utilised (Urban LandMark, 2010).

Various trends are emerging within the informal housing market, especially with regard to backyard dwellings. Housing policy fails to meet market demands, informal settlements are augmenting, and new opportunities in the form of backyard micro-development are established (Lemanski, 2009; Urban LandMark, (2010). Given the increasing role backyard micro-developments play, it is argued that these types of developments should be considered as viable alternative solutions (Urban LandMark, 2010). The rise in backyard micro-developments and household dynamics of those living in informal settlements signifies a reduction in household size, affecting the demand for certain housing typologies (Urban LandMark, 2010).

The Department of Human Settlements had a target to supply 1.5 million housing opportunities into the market; however, only 4,400 households benefitted in three years. This research study

will indicate how many housing units can be supplied into the market and the private sector's ability to reduce the housing backlog significantly.

2.2.5 Evolution of informal housing

Informal housing is not a unique phenomenon in the South African landscape. Informal housing is defined as buildings built outside the regulatory environment by people with limited financial resources (UrbanNext & Asencio, n.d.). The lag between demand, supply and construction, as well as available capital, make it difficult for the formal housing market to provide adequate supply to low-income groups (Turok & Borel-Saladin, 2016; Gunter, 2014) and are therefore forcing many citizens to live in informal settlements and backyard dwellings on the periphery of cities (Lategan & Cilliers, 2013; Gunter, 2014). It is, furthermore, argued that the current housing policy is not geared towards the densification of inner-city areas (Gunter, 2013). The following section will provide an overview of the evolution of informality with a critical focus on the growth of informal settlements, backyard dwellings and any trends observed.

Informal settlements are residential areas illegally occupied with little to no access to infrastructure services, houses comprising informal building materials such as wood, corrugated iron, plastics, and other material found. Therefore, they are not approved by municipal councils or the National Home Builders Registration Council (NHBRC). These settlements are often located vacant land parcels that fall close to jobs but are not suitable for development due to physical or environmental constraints (i.e., along steep slopes or within wetlands) (GSDRC, 2021). Backyard dwellings are also a form of informal dwellings (wendy houses, shacks, etc.) constructed in the backyard of formal residential erven. However, unlike informal settlements, backyard dwellings are a uniquely South African feature (Lemanski, 2009). In both the informal settlements and backyard dwellings, residents are expected to pay rent and is also expected to construct their dwelling (Shapurjee & Charlton, 2013). Informal settlements are predominantly located toward the periphery of established towns, whilst the backyard dwellings are constructed in townships that are located in closer proximity to job opportunities.

The 2006 General Household Survey indicates that 14.5% of South African households reside in informal dwellings and approximately one-fifth live in backyard dwellings (Lemanski, 2009). Studies conducted in 2012 indicate that approximately 16% of households in Johannesburg reside in informal settlements (Gunter, 2014). This signifies growth in informal

housing, and the Gauteng Provincial median incomes between 2001 and 2011 indicate that the residents in townships are becoming poorer (Hamann & Gotz, 2018).

Many residents have benefitted from the government subsidised housing schemes and obtained a house in a township. However, due to the great distance these townships are located from economic opportunities created a new problem. These owners in townships became cash-poor and, although contradicting the national aims of these housing subsidy schemes, became a means to supplement income by letting space in the backyard (Lemanski, 2009). Although earlier studies indicate that residents in informal housing are cash-poor, more recent studies indicate an increased spending power and their ability to grow the informal "commercial" market (Gunter & Massey, 2017).

Comparing the dynamics of the informal market with that of the formal market indicates that the informal market has very similar structures and functions (Gunter, 2014). Gunter characterises the informal market as an "*exploitative neoliberal market*" (Gunter, 2014, p. 99) because the demand and supply are driven by the accessibility of resources and residents who accept below-standard products. Furthermore, as indicated earlier, the lack of supply along the lowest step of the housing ladder encourages informality as the formal housing market is viewed as unattainable. Informal settlements are also able to respond quickly to changing demand and supply due to their informality and unregulated nature (Gunter & Massey, 2017). Despite the governments' incremental approach to the upgrading of informal settlements, the living conditions of these residents are not improving significantly, resulting in greater fiscal pressures (Nzau & Trillo, 2020; Scheba & Turok, 2020).

A new trend emerges with residents in informal settlements decreasing whilst back yarding increases (Turok & Borel-Saladin, 2016). This indicates that the pro-poor prefers backyard accommodation above that of informal settlements. The relationship and dynamics between backyard dwellers and the homeowner in the 1990s lead to backyarders preferring to move to informal settlements (Lemanski, 2009). However, more recent literature indicates a different trend. Nowadays, backyard dwellings are preferred for the following six reasons, namely; backyard dwellings are affordable, many landowners allow flexible payment arrangements, these units have access to infrastructure services (even though it may be an extension from the main house), the backyard dwellings are often in closer proximity to employment opportunities, it provides safer accommodation than the informal settlements, and it is home to many migrants who do not qualify for government housing subsidies (Turok & Borel-Saladin, 2016; Scheba & Turok, 2020).

As a result of these factors, the informal rental housing market has become the fastest-growing market in South Africa (Scheba & Turok, 2020). Furthermore, it has the potential to act as a "quick win" for the government to supply affordable housing units to low-income earners. It creates a significant improvement on the livelihoods of the pro-poor in providing regular income to the homeowner and lower rents than the formal market. Therefore, these backyard dwellings are regarded as a more sustainable approach to human settlement development as it also addresses spatial inequality. This is due to its proximity to economic centres and subsequent employment opportunities, social infrastructure, reduced transport costs, and reduced municipal capital expenditure associated with infrastructure service provision (Urban LandMark, 2010).

The analysis from the study undertaken by Hamann, Mkhize and Gotz (2018) indicates rapid household growth due to urbanisation, which in turn places a greater demand on housing. Furthermore, the backyard dwellings increased at a rate of 205%, whilst the informal settlements grew by 51%, and traditional houses grew by merely 38% for the same period (Hamann & Gotz, 2018). This analysis reinforces the discourse between affordable housing opportunities along the bottom of the housing ladder and strengthens the argument that backyard dwellings are considered a viable housing submarket (Scheba & Turok, 2020). While residents can pay rent, albeit a small amount, there is no available housing stock in the formal market, and people are compelled to live in sub-standard accommodation (Turok & Scheba, 2018). The private sector addresses this lack of supply towards the lower end of the market in the form of backyard micro-unit developments in townships.

2.2.6 Type of micro-unit developers - Enterprise and homeowner

Backyard dwellings are not a new phenomenon. The housing policy failures, rapid urbanisation and lack of supply within certain housing sub-markets create this new phenomenon within this market (McGaffin, Spiropoulous, & Boyle, 2019). During the 1990s, there was a mutually beneficial relationship between the landowner and the backyard dweller. Landowners utilise unoccupied land within their erf to house family members. The backyard dwelling was viewed as a source of income, and the backyard occupier has access to better housing opportunities as well as basic infrastructure services (Lemanski, 2009; Shapurjee & Charlot, 2013).

More recently, the demand for housing encourages landowners to consider and develop small-scale micro-unit developments (McGaffin, Spiropoulous, & Boyle, 2019). Many of these backyard micro-unit developments are still very affordable for tenants; however, the

affordability comes at a price. These units are affordable; yet, they do not comply with building standards and are unregulated; many are self-built by the landowner and built without obtaining approval from the municipal planning tribunal avoiding the costs associated with obtaining approval, such as specialist studies (Scheba & Turok, 2020).

Two different types of micro-unit developers are emerging. Firstly, the homeowner developer develops micro-units in their backyard to supplement their income (McGaffin, Spiropoulous, & Boyle, 2019). Many of these homeowner developers and beneficiaries who live in townships may be unemployed with little to no income and are typically pensioners with no capital to expand and improve existing houses and use the rental income to supplement current income on essential household consumption (McGaffin, Spiropoulous, & Boyle, 2019; Scheba & Turok, 2020). This type of developer typically has an existing house with a bond from a commercial bank and obtains a second mortgage loan to finance their micro-unit development (McGaffin, Spiropoulous, & Boyle, 2019). The second type of developer is an enterprise developer.

Enterprise developers differ vastly from homeowner developers in their demographics, risk appetite and financing strategy. The enterprise developer is younger and therefore able/willing to take on more risk with this type of development. They purchase property for the sole reason to develop micro-units and, thus, do not live on the property.

Furthermore, they have a commercial interest in the property they purchase and use their equity, supplemented with a personal loan from commercial banks, to fund their projects. The income generated from the micro-units is their main source of income (McGaffin, Spiropoulous, & Boyle, 2019; Scheba & Turok, 2020). Many enterprise developers construct their micro-unit developments incrementally. This is done to offset the high construction costs and rent rooms while other units are being constructed (Scheba & Turok, 2020). The rise in enterprise developers is a clear indication that there is commercial opportunity in micro-unit developments. There is sufficient demand in this sub-market, and developers are able to develop at a low cost to provide affordable accommodation to the pro-poor and low-income working class. The following section will expand more on the commercialisation of backyard micro-unit developments.

2.2.7 The commercialisation of backyard dwellings

The informal rental housing market has become the fastest-growing market in South Africa, with properties with additional dwellings constructed growing by 83% between 2002 and 2006

(Urban LandMark, 2010). The lack of affordable accommodation and the untimely delivery of government subsidised housing opportunities has led to the private sector filling the gap. However, it has not been until recently that some significant changes have been observed regarding the commercialisation of the backyard dwelling typology and micro-unit developments. The Cambridge Dictionary defines commercialisation as: 'the organisation of something in a way intended to make a profit' (Cambridge Dictionary, n.d.). This section will review the changing income generated from the 1990s to determine if commercialisation is indeed taking place.

In the 1990s, backyard dwellers paid a minimum rent as homeowners used the income to supplement their income. Backyard dwellers were required to construct their structures, and the backyard dwellers had limited access to basic infrastructure services (Scheba & Turok, 2020). In more recent years, an improvement in the quality of backyard dwellings can be observed, particularly since the rise in the development of backyard micro-units (Scheba & Turok, 2020). Whilst backyard dwellings were constructed with corrugated iron, plastic and wood; the micro-units are built with durable materials, each with an en-suite or shared bathroom facility (Scheba & Turok, 2020). The development costs for micro-unit developments are significantly higher than the backyard shacks that is due to the construction costs for brick-and-mortar.

Monthly rentals vary across South Africa; however, an apparent increase in rental income can be observed. Studies conducted in the early 2000s indicate the monthly rental income ranged between R50 to R100 for a backyard shack in Soweto, whilst rental for formal backyard dwellings ranged between R139 and R150 per month (Crankshaw, Gilbert, & Morris, 2000). Rent in other areas ranged from R147 per month for a small-scale private rental and R291 for a formal dwelling (Urban LandMark, 2010). Rental prices were low since many backyard dwellers were unemployed or received minimum income (Lategan & Cilliers, 2013). The rent in Cape Town's backyard dwellers in RDP townships ranged between R200 and R250, with an additional R50 for electricity and other services; however, the rent is influenced by location, quality of building materials and the backyard dweller's ability to pay rent (Scheba & Turok, 2020). Gunter and Massey (2017) found that the average rental for a 15 square meter one bedroom is approximately R450 per month; however, tenants are often not satisfied with the living conditions. The study found that landlords cannot increase the rental since the tenants are unable to pay an increased rental.

Monthly rental for backyard micro-unit developments is considerably higher than that of backyard shacks. The monthly rent for a 12-15 square meter room (with shared toilet and shower) is approximately R1,500 excluding water and electricity, whilst a tenant would pay approximately R2,200 for an 18 square meter room which includes water and en-suite bathrooms (Scheba & Turok, 2020). Typical rental varies across neighbourhoods, with aesthetics, crime rate, etc., of the neighbourhood which has a significant impact on the rental amount that a landlord can receive (McGaffin, Spiropoulous, & Boyle, 2019).

Another observed distinction between the backyard dwellings and the micro-unit development is the lease agreement (similar to that found in the formal housing market) which can be attributed to the commercialisation of the micro-unit developments and the professionalism of enterprise developers (Scheba & Turok, 2020).

Commercialisation is defined as: “the act of using something to try to make a profit, especially in a way that other people do not approve of” (Oxford Learner's Dictionaries, 2021). The tipping point between owning property to supplementation of income and commercialising the property occurs when capital is involved and when housing is constructed purely to gain a profit (Amis, 1984).

In order to determine if backyard micro-unit developments is a viable business enterprise, developers assess feasibility using the construction cost and anticipated yields. McGaffin, Spiropoulous & Boyle (2019) are some of the few scholars who researched this field. Their analysis found the following: The average cost per micro-unit development (developed by the enterprise developer) is around R120,000 per unit whilst smaller units can be developed for R40,000 to R100,000 per unit (McGaffin, Spiropoulous, & Boyle, 2019). The annual income per unit ranges from R20,000 to R30,000 and therefore has a 20 to 30 per cent yield (McGaffin, Spiropoulous, & Boyle, 2019). Given that loans undertaken by the homeowner developer have a payback period of 2 years from the date of construction (McGaffin, Spiropoulous, & Boyle, 2019) and due to the high demand for these micro-unit developments, very low vacancy rates are experienced (McGaffin, Spiropoulous, & Boyle, 2019).

This analysis indicates that there is commercialisation occurring within this sub-market with relatively good financial performance. Key constraints include increased costs associated with qualified contractors as well as access to affordable finance (McGaffin, Spiropoulous, & Boyle, 2019). This research study will identify the income generated from micro-unit developments

and how this income can empower homeowners to climb the housing ladder. The correlation between rental income and the housing ladder is a significant gap in the existing literature.

2.3 Theoretical Framework

Property owners renting backyard micro-units at either a small scale (to supplement their income) or a large scale (for commercial purposes) must understand the property cycle principles. In addition, for commercial purposes, the property owner also needs to understand the supply and demand of housing stock, the actors involved with property development and property portfolio principles in order to manage their risk effectively.

2.3.1 Property cycle theory

It was stated earlier that the informal housing market mimics that of the formal market; however, there are some significant differences when looking at property development, macro- and micro-economic principles. Most properties are bought to increase in value over time and enable the property owner to borrow against the asset (Levy, 2019). He further indicates that the value of a property is what a buyer is willing to pay for the property. Property values, however, fluctuate according to property cycles which makes it difficult to predict (Viruly, 2018).

Backyard dwellings do not function on their own, albeit informal, backyard dwellings are a very specific segment of the residential property market. The residential property market is classified into various submarkets. These submarkets group housing with similar characteristics/attributes together and is defined as "*asset of dwellings that are reasonably close substitutes of one another, but relatively poor substitutes for dwellings in other submarkets*" (Wu & Sharma, 2012, p. 746). The characteristics that define the housing submarket include the price of the property, location of the property, any structural attributes, and the quality of the neighbourhood it is located in (Wu & Sharma, 2012).

Property cycles are very distinct, and both residential and commercial properties follow cyclical patterns, and there is a link between the property cycles and local and national economic trends. Wheaton provides two definitions for a property cycle "*a more restrictive definition of a real estate cycle involves repeated oscillations of a market, as it continually overshoots and then undershoots its own steady-state*" and "*in short, real estate cycles are defined as some degree of instability in the market whereby a single economic shock leads the*

market to oscillate around its steady state for some number of iterations" (Wheaton, 1999, p. 218).

The property cycle is affected by several exogenous (e.g., macro and micro economic forces) and endogenous (the internal workings of the property market) factors. Therefore, it is essential to understand the property cycle to reduce the risks of purchasing high-value immovable property and assist with decision-making.

The property cycle includes four phases, namely: recovery, expansion, oversupply and contraction, as illustrated in Figure 2. Ideally, one would purchase an income or rental property during the recovery phase to maximise asset growth. At this stage, property prices are relatively low due to the oversupply of stock in the market. The expansion phase follows the recovery phase. During this phase, there is a significant increase in demand for the stock, and as a result, the value of the property increases and peaks at the top of the property cycle. Due to the growth in property value, a significant amount of new property development occurs, and financing for a property is easily accessible. The new property developments result from the growth realised during the expansion phase of the property cycle. At the peak of the expansion phase and due to the amount of new stock entering the market, the market becomes saturated, and demand reduces as a result of the high rental costs. The property cycle spirals downward into the recession phase as demand within the market decreases, property prices decline, and development activity reduces significantly (Investmentpropertiesinfo.com, 2018).

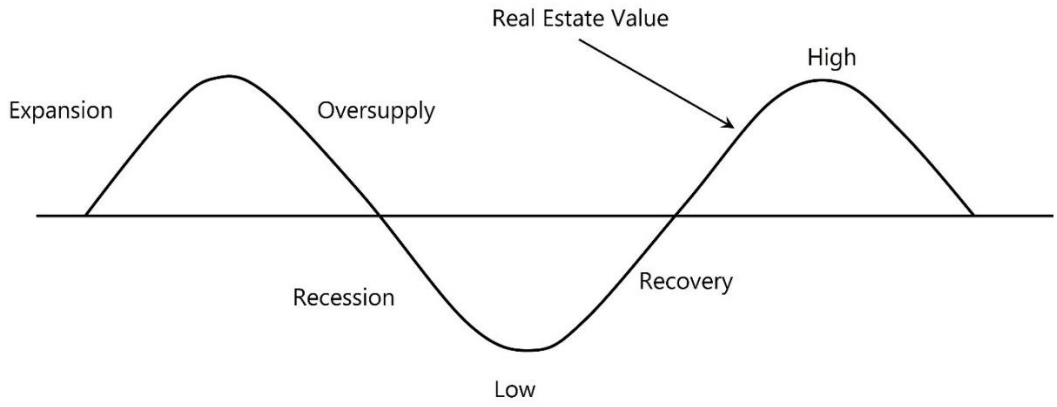

Figure 2: Property cycle

Source: (Investmentpropertiesinfo.com, 2018)

For real estate developers, there are two big questions:

a. What is the best use for any land parcel; and

b. When is the appropriate time to enter the market in order to maximise value?

The property cycle for affordable housing, especially backyard micro-unit developments, may not follow traditional trends seen in the formal property market. This is due to the immense need within this housing submarket. It is anticipated that the recovery phase may be significantly longer, and due to the income profile of these tenants, the property cycle may peak earlier since the tenants would not be able to afford the increased rental.

Therefore, developers need to understand the relationship between phases of the property cycle to enter the property market at the right time with the right type of development and at the appropriate location. Some areas may also be more lenient for certain types of development, and a comprehensive understanding of market conditions will ensure long-term success and growth. Many developers may only focus on a specific market segment, but the property cycle can be applied to all market segments.

2.3.2 Supply and demand

As seen in the description of the property cycle, demand and supply impact a property developer/investors' ability to maximise profit. Housing demand is amongst other affected by the characteristic of the house and neighbourhood, available mortgage markets and housing policies (Galster, 1996). The housing demand increases with an increase in the population. In addition, demand is affected by the households' preferences. A household's income and ability to finance the investment create demand within the different housing market segments. There is usually a lag between housing demand and supply since it is the demand that spur new development. In addition, due to the regulatory processes involved with new developments, it takes a significant amount of time for new stock to enter the market.

The prices of ageing stock may decline to such a level that it becomes affordable for lower-income groups, thereby allowing households to climb the housing ladder. On the other hand, supply is affected by the range of opportunities in the market, development costs, and the value of the property units at completion.

2.3.3 Actors involved with property development

There are several actors involved within the residential real estate market. These include the landowners, developers/contractors, property investors, real estate agents, lawyers/conveyancers, municipal officials, urban planners, architects and civil engineers. Firstly, real estate agents assist property owners to buy, sell or renting their property. The landowner(s) purchases, sell and/or rent a property. The landowner(s) may fund the investment themselves or partner with an external investor/commercial bank. The developers and

contractors are involved with the development and construction of a property, whilst a professional team comprising urban planners, project managers, architects and civil engineers will create the design of the development/house. The municipal officials will review the development application and the lawyers and conveyancers who register new property and any legal matters (Levy, 2019). Each actor, furthermore, has their motivation and decision-making process when it comes to property and property development (Levy, 2019).

2.3.4 Bid-rent-curve

The literature indicated that informal settlements and several government subsidy housing schemes are developed towards the periphery of towns. The informal settlements most often lack basic infrastructure (including transport facilities). The residents of informal settlements are some of the most vulnerable within the community and does not have a regular income to improve their living conditions. Improving their proximity and accessibility to employment opportunities may enable them to secure a regular income and thereby improve their living conditions.

The bid-rent curve provides a theoretical framework that demonstrates the trade-off between the optimal location (of housing) and transport costs (towards employment opportunities). The bid-rent curve is illustrated in Figure 3 below. The rental price is indicated along the y-axis whilst the distance from the city's CBD or employment opportunities are indicated along the x-axis. A higher rent results in housing located in closer proximity to the CBD/employment opportunity centres (a'a') whilst a lower rent results in a distance substantially further away (b'b') therefore, impacting on transportation costs. Transport costs therefore increases the further one moves away from the CBD/employment opportunity centres.

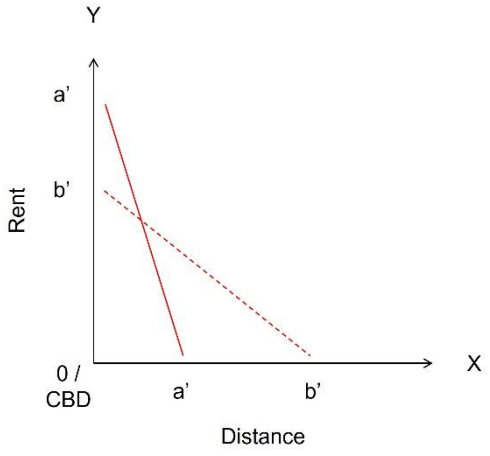

Figure 3: Bid-rent Curve

2.4 Conclusion

The South African housing policy aims to provide South Africa's pro-poor with adequate housing. The provision of housing is a time- and cost-consuming process that can no longer meet the growing demand for affordable housing amongst the pro-poor of South Africa. The research undertaken indicates a need for affordable housing in the "entry market" geared towards those who do not qualify for government housing subsidy since they earn slightly more than the subsidy quantum but do not earn enough to enter the formal housing market.

Many residents who cannot afford the prices of the formal market seek alternative accommodation and resort to living in a shack in an informal settlement. However, with increased consumer expenditure, many residents in informal settlements can now afford to pay rent. As such, many residents relocate from the informal settlements located along the periphery of urban areas to the backyard of townships, causing a decrease in informal settlements. The backyard dwellings in the townships are of better quality, have better access to infrastructure, and are in closer proximity to employment opportunities. Many homeowners in these RDP townships realised the "gap" in the market and started to construct micro-unit developments either in their backyard or purchased property for this type of development.

There are various constraints to the micro-unit developments, especially access to credit. Housing policy and government subsidies should be addressed to create an enabling environment for these micro-developers as they provide a "quick-win" solution to the current housing challenge in South Africa. Housing policy in South Africa views the pro-poor as a homogeneous group, and the housing typologies across the different housing subsidy schemes are relatively similar. A more comprehensive differentiation in housing typologies could go a far way in creating new opportunities for homeowners to move up the housing ladder.

3 Research Methodology

3.1 Introduction

The urban environment is not static. New developments (greenfield and brownfield) occur regularly, which changes the shape and form within cities. Research, especially within the urban environment, is undertaken to understand how, why, and the effects of development on the existing urban environment and how people who use the space interact with it.

This research study aims to determine the role of backyard micro-unit development to supply housing stock into the market. The proposition is that micro-unit developments play a critical role in creating wealth for low-income homeowners in Soweto and ultimately enabling homeowners to climb the housing ladder. The purpose or objectives of the study is to determine the impact of micro-unit developments on the built environment and determine if this housing typology enables homeowners to take a step along the housing ladder. Furthermore, this chapter will review various research methodologies and the research methodologies presented within the body of knowledge and ultimately, the most appropriate methodology to answer the research questions and proposition will be followed.

This study will aim to answer the following research questions:

a. What is the housing gap given the number of housing units supplied into the study area versus the housing demand?;

b. What role does micro-unit developments play to meet specific housing sub-market within Soweto?

c. How can the micro-unit developments ensure wealth creation and aid homeowners in climbing to the next step on the housing ladder?

This research methodology chapter describes the research design used for this study, including:

a. The research methodology applicable to this case study

b. Research design

c. Data collection and research instruments

d. Sampling

e. Research criteria

f. Data analysis methods

g. Limitations and ethical considerations

3.2 Research approach

The aim of conducting research is to study a particular phenomenon using a predetermined methodology that will aid to unpack and understanding the phenomenon. Clifford Woody stated: "*Research comprises of defining and redefining problems, formulating the proposition for suggested solutions, collecting, organising and evaluating data, making deductions and reaching conclusions and further testing the conclusion whether they fit into formulating the hypothesis*" (Bairagi & Munot, 2019, p. 2). Research is undertaken to prove or disprove a proposition and thereby identify the causal relationship between the variable data, or the study can focus on identifying the correlation between different aspects. Research is undertaken to better understand why a particular phenomenon occurs or even to better describe the characteristics of the phenomenon. In some instances, research is undertaken to test the findings of another study. Research is being conducted in a very systematic approach to discover a certain phenomenon. A research methodology aids a researcher to follow a systematic approach to solve the research problem. In addition, certain types of research techniques are applied to specific research methodologies. It is therefore essential to distinguish and align the research methodology and techniques to undertake credible research.

This section of the dissertation will provide a snapshot of various research methodologies and identify the appropriate research approach relevant to this study.

3.2.1 Formulating a methodology

Saunders' research onion (Thesismind, 2019), as illustrated in Figure 4, has been used to determine the appropriate research methodology for this study. As a researcher, one needs to work from the outer layer inwards and view the research from a philosophical level to a more practical nature and allowing the researcher to get a holistic view of the methodology (Crossley & Jansen, 2021). There are six layers to the research onion. The outer layer is the research philosophy, followed by the research approach, research strategy, choice, time horizon and data collection methods at the core (Thesismind, 2019).

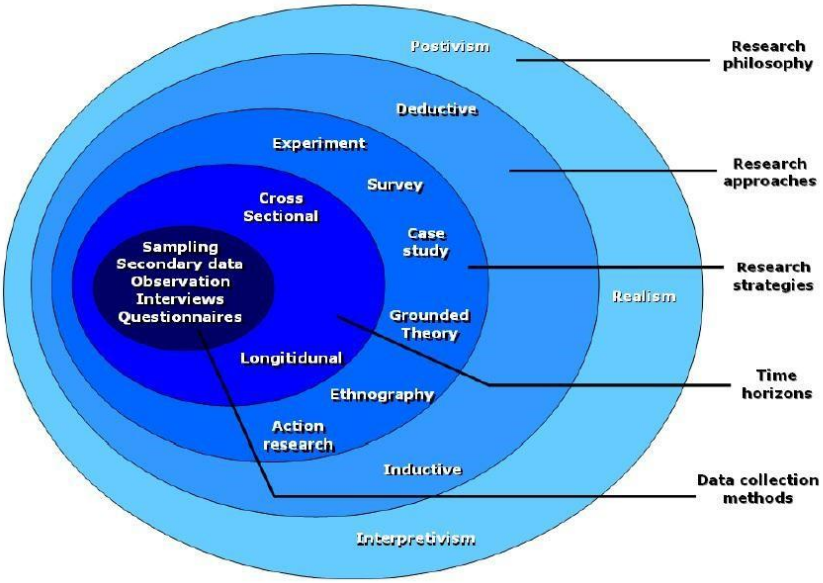

Figure 4: Saunders Research onion

Source: (Thesismind, 2019)

The outer layer illustrates the research philosophy. The research philosophy "*describes the set of beliefs the research is built upon*" (Crossley & Jansen, 2021).

Two philosophies view the research problem in very distinct manners. Firstly, the philosophy of epistemology is described as "*philosophy concerned with the nature and justification of human knowledge*" (Hofer & Pintrich, 1997, p. 88) or in other words, the philosophy of epistemology studies the way people learn, how their beliefs are formed and how this influences their ability to process information. Ontology, on the other hand, is the study of reality and the study of "*what might exist*" (Smith, 2003, p. 155).

A positivist researcher objectively views the research phenomenon and discards any personal opinions and personal views on the subject matter. The positivist researcher relies on empirical research that can be tested and measured. The second research philosophy is realism. In this instance, the researcher views the research phenomenon from a practical point of view, questioning available knowledge and including subjectivity in their reasoning and conclusions. The pragmatist view views the research as very practical and not purely positivist or constructivist views. Thirdly, an interpretivist views the research phenomenon by considering the social and cultural aspects impacting the research phenomenon. The researcher will ingrain himself in the study and observe participants taking part in the study to conclude.

The second layer of the research onion illustrates the research approach. There are two concepts of the research approach. This layer of the research onion will inform the data collection and

analysis. Therefore, it is important to know the aims and limitations of the research study (Thesismind, 2019). The two terms are deductive and inductive. With the deductive approach, the literature will enable the researcher to develop a proposition and use empirical data and statistical testing methods to either prove or disprove the proposition. With the inductive approach, the researcher will generate theories from the observations made during the study. Existing literature on the subject topic follows a deductive research approach.

Research strategies form the third layer of the research onion and indicate how the researcher will collect the data. Several approaches are available to a researcher, but a strategy should be devised based on the data required to answer the research questions. Saunders' research onion indicates six research strategies, namely: experimental, survey, case study, grounded theory, ethnography and action research. Experimental research is often conducted in a laboratory by using scientific methods. Variables are manipulated to determine any relationship between the variables. This approach is undertaken to prove or disprove the proposition. Surveys are used in quantitative research where a sample group is questioned to collect information that will ultimately answer the research question(s). This study is undertaken where the unit of study is a single phenomenon (either a single person, a group or even an event). This approach is used to gain a better understanding of the research phenomenon. Grounded theory moves down the onion towards the interpretivist philosophy. The researcher relies on the data (primarily qualitative) to inform the theory and is often used where very little is known of the research phenomenon. The interpretivist will use the ethnography approach to observe people in their natural habitat, observing their subjective experiences, and the interpretivist will view the research phenomenon from their viewpoint considering their culture, interactions, behaviour, etc. Finally, action research is undertaken in a practical setting and not undertaken in a controlled environment. The researcher will observe the participants of the study to find solutions to specific problems.

Research strategies undertaken within existing literature include household surveys as well as case studies. Turok & Borel-Saldin (2016) undertook household surveys throughout Johannesburg to determine the positive and negative aspects of the backyard structures compared to other forms of housing. This was done to obtain insights into the backyarder's satisfaction with this housing typology. In addition, the survey information provided insights into the role backyard units plays within the housing market. The survey data were supplemented with observations made via photographs of housing typologies in the study area.

Goebel (2007) also used surveys and interviews as his research strategy to determine the significant obstacles to sustainable and affordable housing in South Africa.

Case study research was undertaken using several literature sources including McGaffin, Spiropoulous, & Boyle (2019); Shapurjee & Charlton (2013); Lemanski (2009); Cirolia (2016); Urban LandMark (2010).

The next layer of the research onion is choice. The research choice aids the researcher to choose between quantitative, qualitative or both qualitative and quantitative methods. Using only one data type (quantitative or qualitative) indicates a mono method, whilst with the mixed method, both quantitative and qualitative data types will be used. The multi-method is similar to the mixed method in that the researcher uses both quantitative and qualitative data types; however, it does not combine methodologies. Shapurjee & Charlton (2013) uses semi-structured interviews in their qualitative method, whilst Turok & Borel-Saladin (2016) followed a quantitative method and undertook interviews during their household surveys. Lemanski (2009) used a mixed method.

Time horizons are the second last layer of the research onion. The name precludes this layer's focus and therefore illustrates the time frames at which point(s) data will be collected. There are two options, namely: cross-sectional and longitudinal. Cross-sectional time horizon includes collecting data at a very specific point in time, whilst with the longitudinal time, horizon data will be collected over a period of time, e.g., collecting data over a week or months. Existing literature on the subject topic follows a longitudinal time horizon, primarily where surveys are used to collect data.

The final layer of the research onion is the data collection methods. This last layer provides for the credibility of the research undertaken. During this stage, the researcher will determine what data needs to be collected, data sources, data collection method(s), data sampling, data analysis and any materials required during this process.

Data collection amongst existing literature is very similar. Survey and interviews supplemented with Census data is an established method amongst researchers. There is greater variety when it comes to the sampling methods used. Lemanski (2009) used the random sampling technique whilst Crankshaw, Gilbert & Morris (2000) used the stratified cluster sample method.

The nature of the research will indicate the path the researcher takes through each of the research onion layers. If an interpretivist philosophy is selected, then the path towards the core of the research onion will follow inductive reasoning with action research and longitudinal time

horizon whilst deductive rationale is followed by the positivist who will undertake experiments or survey's and collect data at a very specific period in time. The starting point is to consider the aims and objectives of the research. An early indication of the appropriate research methodology leads to either a positivist or a realist research philosophy. This is based on the need for empirical analysis; however, no scientific testing will be undertaken. Therefore, the research study leans more towards a realist research philosophy.

3.2.2 The research methodology

The research aim is to:

Assess alternative housing opportunities in Soweto to determine the level of income generated can assist low-income households to climb the housing ladder.

The research objectives are:

a. Identify any gaps in the housing ladder.

b. Identify types of informal housing opportunities, location and size of these units in relation to the formal residential building.

c. Determine the impact of micro-units on the character of residential properties – impact on value, the additional income that could be generated, impact on property rates and taxes, alignment with municipal regulations.

Very clear research questions were formulated and relied on statistical data in the form of demographic characteristics, land value, rental income, etc. This study was therefore executed in the context of realist research philosophy. A deductive approach was followed, and the proposition was developed. The research approach was used to test anticipated results and thereby prove or disprove the proposition. In line with the research approach, a case study research strategy was selected using quantitative data at a specific time horizon (cross-sectional time horizon).

3.3 Research design

The research design will focus on providing direction to the research problem. Therefore, this section will provide the plan for data collection and how the analysis will be undertaken in order to provide a compelling argument for the research proposition.

The proposition is as follows: *There is a commercialisation of backyard dwellings occurring in Soweto, and this housing typology is supplying housing stock to a specific housing sub-market and, therefore, supporting homeowners to climb the housing ladder.*

The research approach will focus on backyard dwellings within a specific housing submarket. A mixed research approach will be followed, making use of quantitative and some little qualitative data analysis. Quantitative data will include quantifiable information (e.g., average rents paid for different housing typologies, how often is rent paid, etc.) that can be used in statistical analysis, and mathematical techniques can be used to evaluate the findings. This type of analysis reduces the personal biases of the researcher. It is anticipated that qualitative data will be used to describe the micro-unit housing typology characteristics, where it is located on the properties concerning the main house, etc. For this study, no questionnaires will be undertaken. Observations will be conducted by viewing aerial imagery of the study area as well as obtaining photographs in person. Qualitative data is used to gain an in-depth understanding of the research phenomenon and will therefore supplement the empirical data. This approach signifies a realist approach since quantitative and qualitative data will be applied for analysis and findings.

The research methodology, as discussed above, indicates that a case study will be undertaken. A case study can be defined as "*Case studies, in their true essence, explore and investigate contemporary real-life phenomenon through detailed contextual analysis of a limited number of events or conditions, and their relationships"* (Zainal, 2017, pp. 1,2).

A case study is selected to analyse the research phenomenon to reveal information regarding the housing ladder that researchers and scholars have not adequately addressed. The research phenomenon will be evaluated at a particular point in time. Other research strategies like surveys could have been used. However, experiments rely purely on empirical data and discount any qualitative data, which will enrich the study.

3.4 Data collection and research instruments

Quantitative data will primarily be used supplemented with little qualitative data. Quantitative data will be sourced from several sources, including City of Johannesburg, Statistics South Africa, CAHF, and rental information will be obtained from a micro-financier that provides loans to homeowners. Table 1 indicates data to be collected, the source of the data as well as how it will be used in the research study.

Table 1: Quantitative data sources and their application

Data type	Data source	Application of data
Demographic and income information	Statistics South Africa	Creating a socio-economic profile of homeowners within the study area.
Household budget	Quantec / Zutari project information	Supplement socio-economic profile of the study area.
Income distribution	GeoTerra image / Zutari project information	Supplement socio-economic profile of the study area.
General household survey: Main dwelling type at a provincial level for 2011 and 2019	Statistics South Africa	Determine growth rate of dwelling/house/flat/room in the backyard. This data can also be compared to the informal backyard dwelling for the same period to determine trends in housing typologies.
Housing sub-market	Centre for Affordable Housing Finance	Provides the current housing sub-market and tiers of the housing ladder.
Housing stock Period of ownership Property transfer information	Lightstone Property	Determine the typical housing stock found within the study area, property values, number of property sales per housing stock and lending source.

Data type	Data source	Application of data
Base data Backyard structures	City of Johannesburg City of Johannesburg GV2018 Zutari project information	Base data will be used for mapping purposes. Whilst the backyard structure information will provide a platform of where existing backyard dwellings are located. Provides information about the land supply throughout the study area.
Micro-development rental information per housing typology Demographic information regarding clients	Micro financiers (limited to TUHF)	An in-depth picture of homeowner/enterprise developer will be created, and the current rents, will provide insights into the level of commercialisation occurring. Determine affordability analysis.
Backyard intensity	Google Earth and site visit observations.	Indicates existing backyard units per formal house throughout the study area.
Nominal House Price Growth	FNB data, Business tech 2017	Provides information regarding the residential property market within the study area. Determine the income potential associated with yard space larger than 200m².
Real increase in average residential property value Distribution of residential properties by erf size Land value per area	City of Johannesburg GV2018	
Building applications received	City of Johannesburg	

3.5 Sampling

Sampling is an essential step in the research strategy since it ensures the sample (a segment of the group to conclude about) of the study is an adequate representation of the broader unit (entire group to conclude about) and therefore ensures credible data analysis and conclusion. The sampling techniques are grouped into probability sampling and non-probability sampling techniques. Probability sampling uses a random selection of the unit, and each sample has the same probability of being selected. The sample used for the research study would form an accurate representation of the entire unit. There are five methods of probability sampling, namely: simple random sampling, stratified random sampling, systematic random sampling, clutter (area) random sampling and multi-stage sampling (Alchemer, 2018).

Non-probability sampling, on the other hand, selects the sample based on subjectivity and convenience. Not all the samples have the same probability of being selected to form part of the study (McCombes, 2021). A non-probability sampling includes convenience sampling, voluntary response sampling, purposive sampling and snowball sampling. Non-probability sampling is often used in exploratory and qualitative research, whilst probability sampling is used in quantitative analysis.

The COVID-19 pandemic limits fieldwork as the safety of any field workers undertaking surveys would be a potential risk. However, information was obtained from micro-financiers that is linked to existing market conditions. In this way, no field workers are in jeopardy of contracting the COVID-19 virus.

Probability sampling are used for quantitative studies and is therefore selected as the sampling technique for this study. More specifically, the simple random sampling technique. The researcher will have access to the data pertaining to the study area and can therefore choose at random which entries to include as part of the sample. Furthermore, the researcher formulated a proposition, but currently, limited information exists to support the theory. However, it should be noted that an appropriate sample should be selected for the inferential statistical analysis to be performed. If the sample size is limited to one geographic area or a small portion of the study area, no predictions about other areas will be possible.

3.6 Research criteria

The purpose of the data is first to understand the context of the residents living within the study area considering their race, age, income, housing typology, property value, etc. After that, the

data obtained from TUHF will be used to determine the affordability and analyse the rental market in the study area.

The COVID-19 pandemic has limited fieldwork; therefore, alternative means to obtain information was considered. Micro-financiers are emerging to provide microloans to homeowners who want to build micro-unit apartments in their backyard. Their property development and management information will therefore be regarded as recent and accurate. It should be noted that no personal information (identification numbers, name, street address, etc.) that can link a customer with a specific address will be revealed throughout this study. Quantitative data is used to reduce bias; however, qualitative data will be used to understand the current phenomenon in-depth. This study will explore to what degree the income generated by the micro-unit developments aid the homeowner to improve their financial health to make improvements to their main dwelling, build annexures to their home or buy a new property that is higher on the housing ladder.

3.7 Data analysis methods

The quantitative data analysis will primarily be used to prove or disprove the proposition. Firstly, descriptive statistical analysis will be performed. The mean (indicate the average rent paid by occupants) will be used to gain a view of the data, identify any errors as well as provide insights into the inferential statistical techniques that should be used.

The inferential statistical analysis will be used to make predictions about specific differences concerning the micro-unit developments throughout the study area. Correlation analysis will be performed to determine a correlation between property value and the size of the property, as well as any extensions made. The data will be used to extrapolate and indicate future scenarios of how the rental income affects homeowners' bottom line.

Data validation is an important aspect to ensure the credibility of the research undertaken. Firstly, census data and other information obtained from StatsSA and Quantec are also used in the existing literature. Secondly, the data analysis techniques follow existing literature; data is collected at one point to reduce the mixing of different data sets.

3.8 Limitations

This research study will be limited to a predetermined study area, namely Soweto, as illustrated in Figure 5 below. The rental information will only be collected from one micro-financier, namely TUHF. The rental information is therefore limited by additional sources like other

micro-financiers and private landowners. This was done due to the ongoing COVID-19 pandemic and the need to protect field workers from unnecessary exposure to the virus. The rental data obtained from TUHF may therefore be skewed to one direction; however, it is believed that it would still provide an insightful picture. The 2011 Census data is considered outdated; however, more recent demographic and socio-economic data is limited. Future socio-economic projections made with the 2011 census data may therefore be skewed. The research study will rely on readily available data from trusted sources to undertake the quantitative analysis. Furthermore, the municipal valuations were used and therefore, property values may not correspond adequately to the actual market prices or a bank valuation.

The researcher takes cognisance of the data limitations; however, it is perceived that this study is still appropriate and will add to the body of knowledge, especially regarding the housing ladder.

3.9 Ethical considerations

Private information will be collected from micro-financiers; it is, therefore, essential to safeguard the client information such as identification numbers, name, street address, etc., so they cannot be linked to specific addresses. All names and identification numbers will be discarded or replaced by new variables such as participation number 1, number 2, etc.

The primary use of the data will be used to map different micro-unit development scenarios throughout the study area. The socio-economic information will also be used to create graphs and will inform the StatsSA datasets.

3.10 Conclusion

The research undertaken in this study followed a clear research methodology in order to prove or disprove the proposition. *There is a commercialisation of backyard dwellings occurring in Soweto, and this housing typology supplies housing stock to a specific housing sub-market and, therefore, supports homeowners to climb the housing ladder.*

This research methodology was based on Saunders' research onion (Thesismind, 2019), which starts at the outer layer; working inwards is the research philosophy, the research approach, research strategy, choice, time horizon and data collection. This provides a credible framework for research to be undertaken. A positivist philosophy was selected with a deductive approach. A case study research strategy will be conducted primarily using quantitative data, supported by limited qualitative data at one period in time. Non-probability sampling was used to

determine the data sample size whilst the data analysis methods start with descriptive data analysis, whereafter inferential statistical analysis was performed.

The data collection was primarily done via secondary sources; however, data was collected from credible sources such as Statistics South Africa, CoJ, etc. The data provided by the researcher will provide a clear picture of the socio-demographic profile of residents in the study area, and the analysis will indicate trends emerging as a result of the micro-unit developments. Any personal information of the residents will be treated with respect and will be safeguarded due to careful consideration of the resident's privacy.

The study's main limitation is that rental information is only obtained from one micro-financier, and therefore the sample size does not include rental information from homeowners who use their funds or who received a loan from a commercial bank. It is still believed that the data used in this study was credible and the analysis; therefore, the research adds to the existing body of knowledge.

4 Analysis and findings

4.1 Introduction

The objective of the following section is to use the data collected to create a connection between the literature review and draw conclusions on the research questions. The research questions posed are:

a) Where do the most significant housing supply and demands lie within Soweto.

b) What role do micro-unit backyard developments play to meet specific housing sub-markets within Soweto.

c) How can the micro-unit backyard developments ensure wealth creation and aid homeowners in going to the next step on the housing ladder?

Google Earth imagery was used to identify properties used for the analysis, and a site visit was conducted on 27 October 2021 to ground-truth the analysis. Photographs were taken during the site visit to illustrate the emerging micro-backyards found within the study area.

The first part of the chapter provides a contextual analysis of the township of Soweto located in Johannesburg, South Africa. It aims to paint a picture of the township's current realities in order to understand the analysis undertaken in the latter parts of the chapter.

4.2 The Study Area

4.2.1 Study area delineation

The township of Soweto is located towards the southwest of Johannesburg, Gauteng Province of South Africa. Soweto is located in the central-eastern part of Region D of the City of Johannesburg. This western periphery forms the furthest boundary of the City of Johannesburg. On the eastern border, the region is separated from Johannesburg South by the Western Bypass of the N1, and to the south lies Region G (which is home to Lenasia, Ennerdale and Orange Farm). Soweto is a large neighbourhood, and the study area as illustrated in Figure 5, was reduced to the main roads namely the Klipspruit Valley Road (eastern boundary), Koma Street (southern boundary), Koma Street and Elias Motsoaledi Road (western boundary) and the M70 (northern boundary). It is noted that the StatsSA data (Sub-Place and Ward data) used may not fully align to the study area boundary.

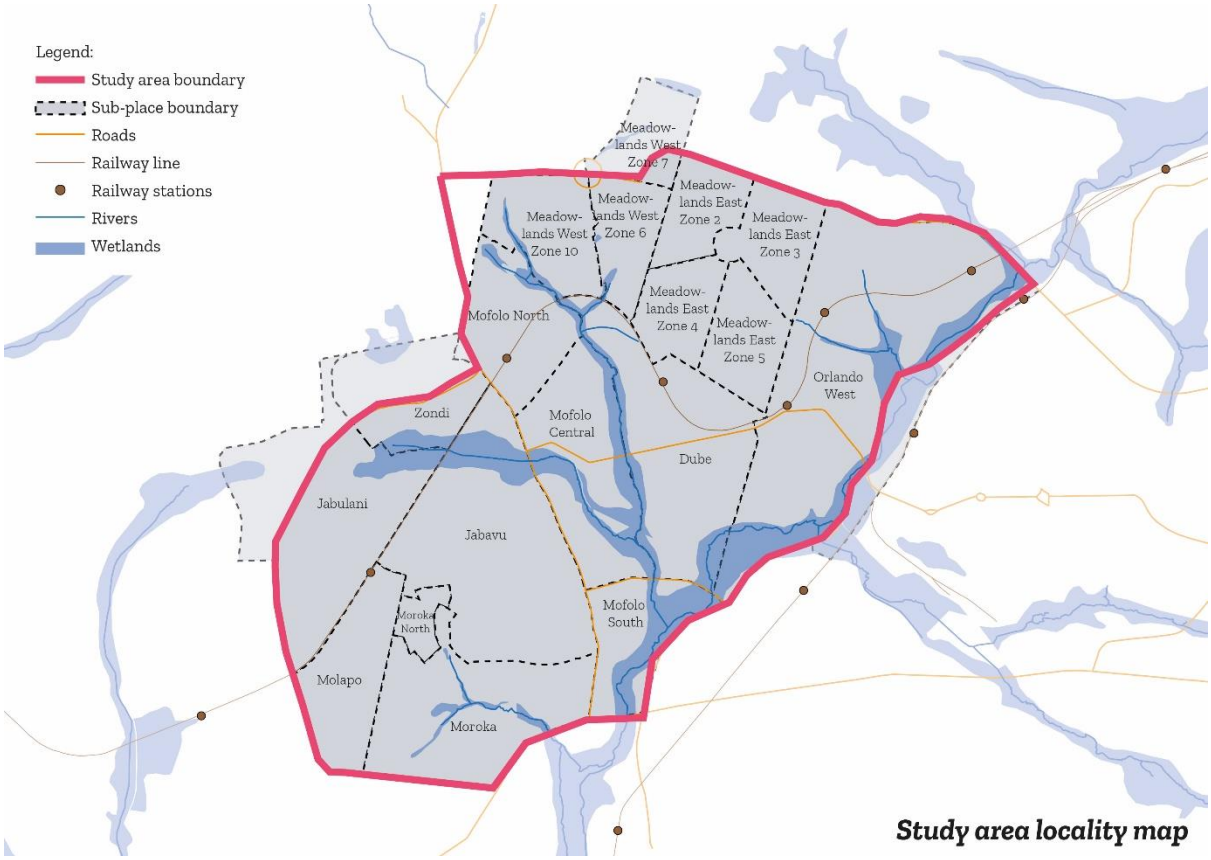

Figure 5: Study area locality map

Source: (Van Eeden, 2021)

4.2.2 Overview and background of Soweto

The suburb is rich in history, which came about from significant struggles since its formation in the 1930s (South African History Online, 2021). The township's name is an acronym derived from its location within the Johannesburg Metropolitan area; "South-Western Township" (South African History Online, 2021). The township was established due to the gold found in the nearby area in 1885 (Soweto.co.za, n.d.). Over time, Soweto has become the largest township in South Africa, characterised by a concentration of predominantly black people.

The people residing in Soweto experienced significant oppression during the apartheid-era regime. One main event was the Soweto Rebellion in 1976 when the community protested against adopting the Afrikaans language in their schools (Britannica, The Editors of Encyclopaedia, 2020). Soweto was officially incorporated into the City of Johannesburg in 2000 (City of Johannesburg, 2018), and in 2010, Soweto hosted the FIFA Soccer World Cup final (South African History Online, 2021).

4.3 Determining the housing demand

The literature review indicated several aspects pertaining to the housing supply and demand. Firstly, there is an imbalance between the housing supply and demand of some of the housing submarkets. Secondly, Gunter (2014) indicate that the lack of housing supply catering for the low-income earners cause people to accept low-standard products (informal dwellings). Thirdly, Butcher (2020) identified the lack of investment in the lower end of the housing market. Butcher (2020) furthermore indicated that this is due to the challenging financing mechanisms and the lack of housing supplied into this submarket results in housing affordability challenges. Lastly, McGaffin and Kirova (2016) indicate that one needs to consider the population's age, size, income, and purchasing power to appropriately understand the housing demand dynamics.

Therefore, this section will consider the factors (i.e., population, households, household age structure and household income levels) directly associated with the socio-economic conditions within the study area to determine the housing demand. In addition to answering the research questions, the outcome of the housing supply and demand analysis will attempt to shed light on the above.

4.3.1 Population and household profile

As illustrated in Figure 6, the total population in the study area increased by 24,109 between 2011 and 2020 (City of Johannesburg, 2017).

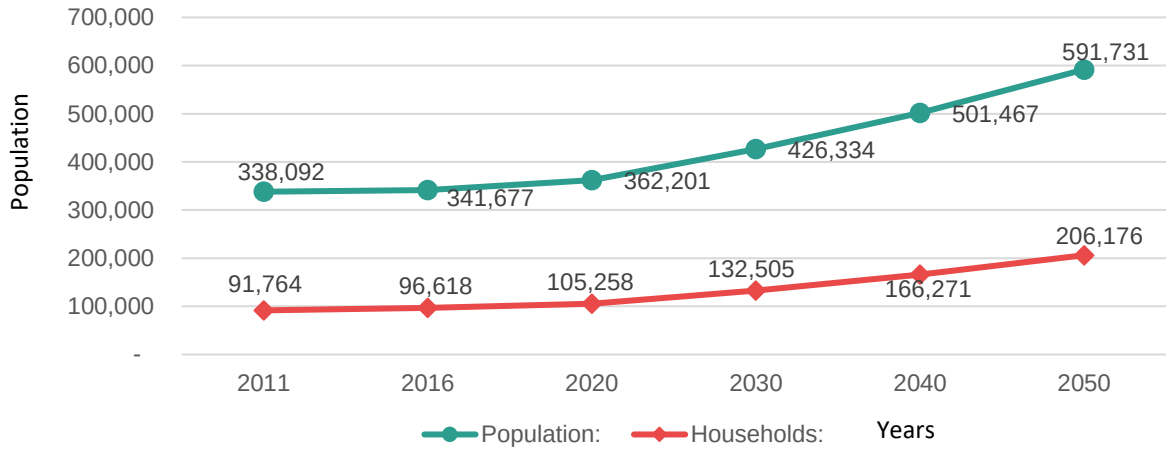

Figure 6: Study area population and household growth 2011 – 2050

Source: (City of Johannesburg, 2017) and (StatsSA, 2011)

The average household size reduced between 2011 and 2020 from 3.7 to 3.4, with slightly more females (50.1%) than males (49.9%) residing within the study area (StatsSA, 2011). Most

people residing within the study area is classified as Black African (99.4% of 2011 population), and the primary language spoken is isiZulu (41.1%), followed by Setswana (15.2%) and Sesotho (13.7%) (StatsSA, 2011).

4.3.2 Age structure of the study area

The 2011 age grouping indicate that the majority (71.0%) of the population is within working age, aged between 15 and 64 (StatsSA, 2011). Nearly a quarter of the population (24.2%) is defined as young aged up to 14 years, and the remaining 4.8% of the population is elderly, aged 65 and older (StatsSA, 2011).

The 2016 Community Survey information indicates that both the young and elderly population increased, whilst the working-age declined (StatsSA, 2016). Although the elderly (4.8%) of the 2011 population may not be a significant amount, the population is ageing which impacts one's ability to secure a loan. The age between 2011 and 2050 was determined based on the percentage difference between 2011 and 2016, illustrated in Figure 7 below. The findings of the age structure projection are limited since the only reliable data dates back to the 2011 Census. The 2016 Community Survey information was included; however, this data is a small sample survey and, therefore, does not accurately describe the full study area data.

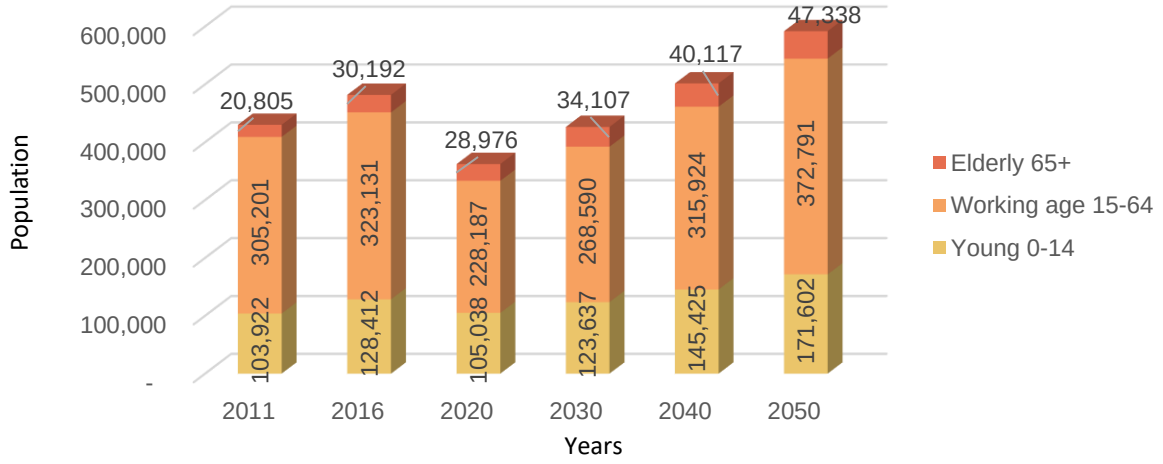

Figure 7: Study area age structure growth 2011 - 2050

Source: (StatsSA, 2011) and (StatsSA, 2016)

4.3.3 Household income levels and employment indicators of the study area

The household income levels play a critical role in determining the housing supply and demand. This is due to the typical housing typology, erf size and disposable income towards accommodation that differs between the low-, middle- and high-income levels. The household

income levels are associated with the household's monthly income. Households in the low-income earn up to R4,800 per month, the middle-income earns between R4,801 and R38,400, and the high-income earns more than R38,401 per month. The percentage growth for the low-income category indicates a slight decline from 62.5% in 2016 to 57.0% in 2050, whilst the middle-income group indicates a slight increase from 29.5% to 31.4%, and the high-income group indicates the greatest increase of 8.0% to 11% for the same period (City of Johannesburg, 2017). The average growth between 2020 and 2050 is low-income, 59.5%, middle-income 30.9% and high-income 9.4%. In real terms, the low-income is anticipated to grow by 60,146 households between 2011 and 2050, the middle-income group is anticipated to grow by 37,667 and the high-income group is anticipated to grow by 15,361 for the same period. The household income levels between 2011 and 2050 are illustrated in Figure 8 below.

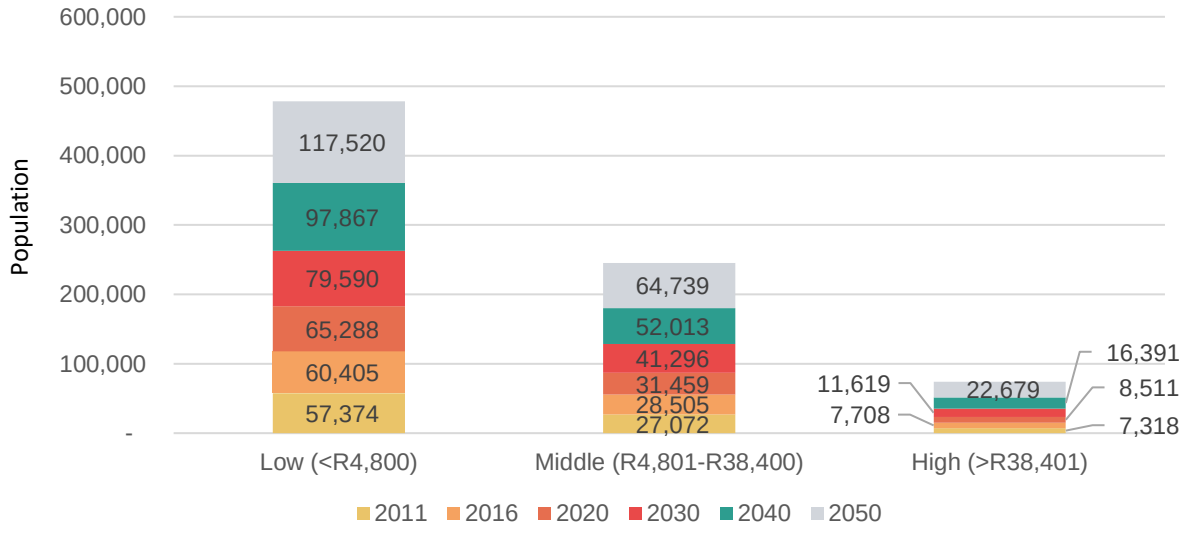

Figure 8: Study area household income levels 2011 - 2050

Source: (City of Johannesburg, 2017)

The 2011 employment indicators indicate that most of the population is employed in the formal sector (80.3%), whilst merely 9.1% is employed in the informal sector (StatsSA, 2011). The unemployment data indicates that 28.4% of the total residents are employed, whilst 17.8% are unemployed, and 53.8% are not economically active.

The average monthly disposable income per household within the study area is approximately R12,000 (City of Johannesburg, 2017). A high percentage of the income is spent on non-durable goods (44%), as illustrated in Figure 9 (Quatec EasyData, 2020). Notably, in real terms, disposable income decreased by approximately 11% between 2008 and 2018. Households may reconsider their employment opportunities should the income generated from the backyard

micro-unit developments be in line with the average monthly disposable income of R12,000 per month. In addition, households may continue working and supplement their income and thereby increase their disposable income. Higher disposable income enables households to improve their living conditions, buy a property in a higher submarket or re-pay any loans in a shorter timeframe.

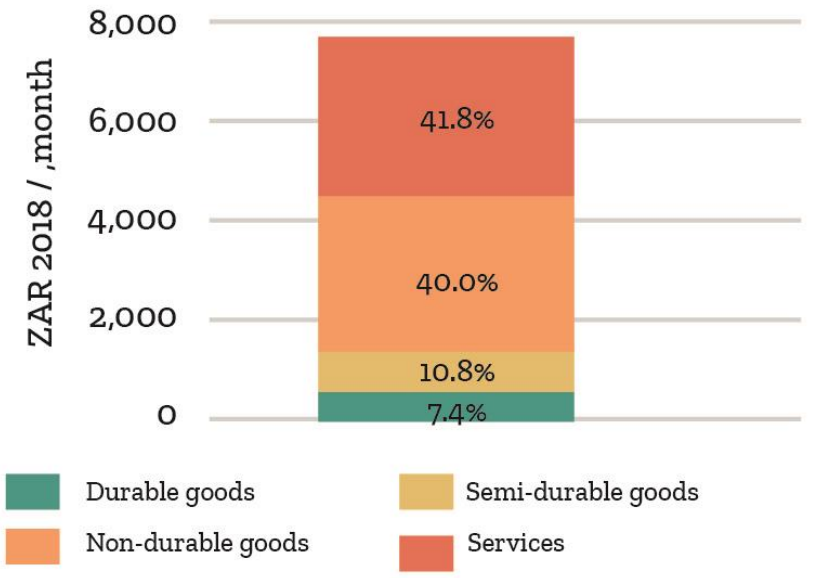

Figure 9: Monthly spending by households

Source: (Quatec EasyData, 2020)

4.3.4 Dwelling type and tenure of the study area

The dwelling type and tenure form the foundation for calculating the housing backlog, which will be undertaken in the following chapter. Statistics South Africa divides the housing dwelling type into two categories, namely adequate housing and inadequate housing. StatsSA include the following housing typologies as adequate housing: House or brick/concrete block structure on a separate stand or yard or a farm, flat or apartment in an apartment/flat block, cluster house in a complex, townhouse (semi-detached house in a complex), semi-detached house, house/flat/room in backyard and a room/flat let on a property or larger dwelling/servant's quarters/granny flat. The inadequate housing comprises of housing typologies, namely: traditional dwelling/hut/structure constructed with traditional materials, informal dwelling (shack, in backyard), informal dwelling (shack, not in backyard, e.g. in an informal/squatter settlement, or on a farm) and caravan/tent (StatsSA, 2011).

The predominant dwelling type found within the study area is an adequate/formal housing/dwelling comprising 78.9% of dwellings (Statistics South Africa, 2021). Merely 9.7%

of households reside in inadequate housing, resulting in approximately 9,460 households, as illustrated in Figure 10 (Statistics South Africa, 2021). If there is no improvement in the dwelling type, by 2050 approximately 21,255 households will reside in inadequate dwellings.

The tenure status indicates that 6.1% of households own their home but still pay towards a bond, and 36.6% have paid off their mortgage. Rental housing comprises 40.3%, indicating that this is a popular form of tenure. The analysis will indicate the impact (if any) full tenure/owned and paid off has on a household's ability to climb the housing ladder.

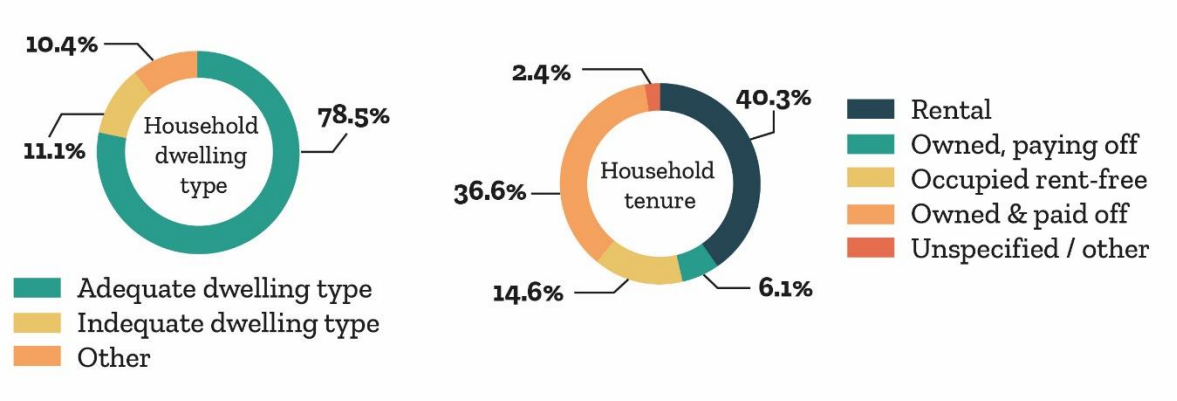

Figure 10: Household dwelling type and tenure (2011) for the study area

Source: (Statistics South Africa, 2021)

4.3.5 Demand calculation

The housing demand within the study area calculation is illustrated in Table 2 below. It is anticipated that the number of households will increase by 3,364 households per annum. In addition, a 1.33 factor is added to the annual household growth to compensate for (children living with parents) the communal use of a dwelling associated with one family. Data shows that more than one household is sharing a house due to the cost of living and housing stock availability. Therefore, the total annual household growth is 4,474. It is determined that the greatest demand is within the low-income and middle-income groups.

Table 2: Housing demand per annum

Housing demand per annum based on population growth	
Household growth 2020 to 2050	100,918
Annual household growth 2020 to 2050	3,364
Household demand factor @1.33	4,474
Household demand per income group	
Low-income demand	2,662
Middle-income	1,384
High-income	422

4.4 Determining the housing supply

The residential property market in Soweto is defined as "affordable" due to the average property value being R399,000 per property. The residential property market is heterogeneous, with properties located in Jabavu valued in 2018 at R250,000 and properties situated in Moroka valued at R520,000. Between 2013 and 2018, the properties within the study area have experienced a real increase of 10%; however, this appreciation varies across neighbourhoods, as illustrated by the grand total in Figure 11 below (City of Johannesburg, 2018).

Properties located along the northern boundary and towards the west tend to have a higher property value (>R1,750 per m²), and Jabavu has the lowest property values (<R1,000 per m²)

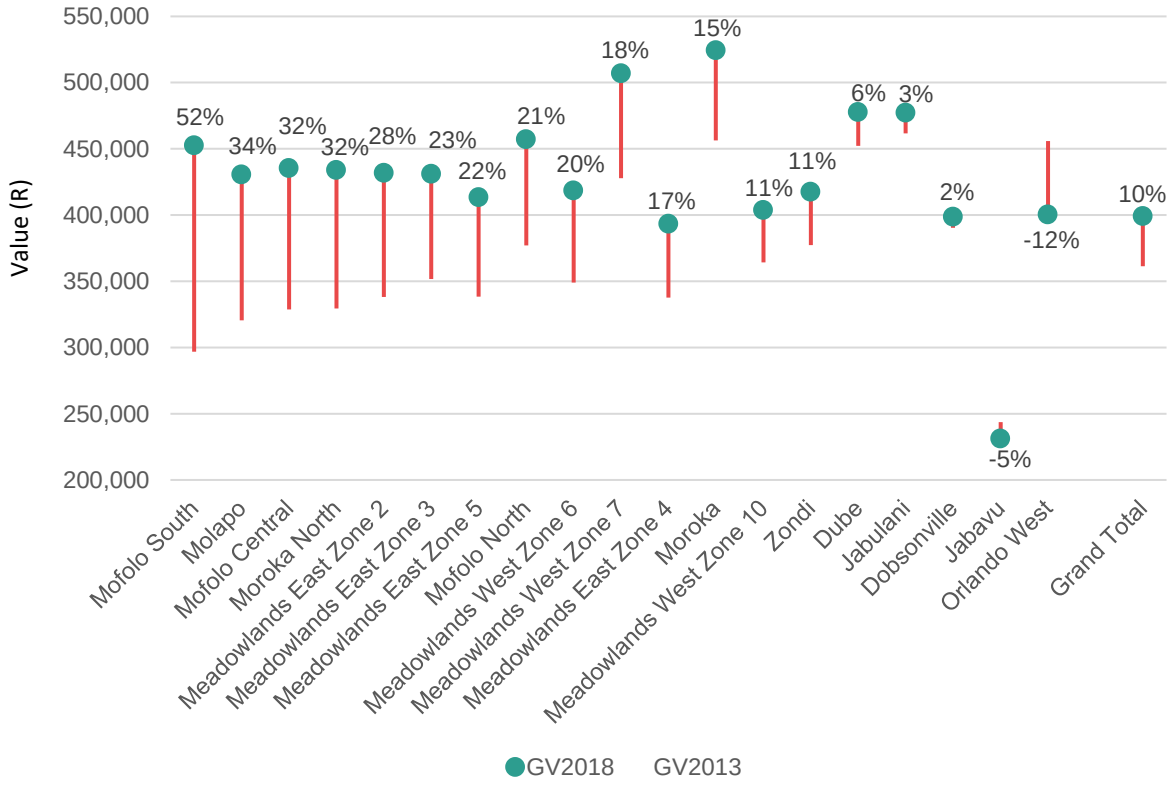

Figure 11: Real increase in average residential property values (2013-2018) within the study area

Source: (City of Johannesburg, 2018)

Building activity within the study area is driven by re-investment with limited greenfield development opportunities. Building plans passed, and completed indicates investment and development activity. Between 2009 and 2019, a total of 2,590 building plans were received in relation to building activity within the study area. Approximately 90% or 2,383 applications received were for additions to the existing buildings, whilst 183 were for the construction of

new buildings. No evident pattern exists with regards to building activity. However, Jabavu, Moroka and Moroka North received much more building plans than the other settlements. An average of 235 building plans has been received per annum.

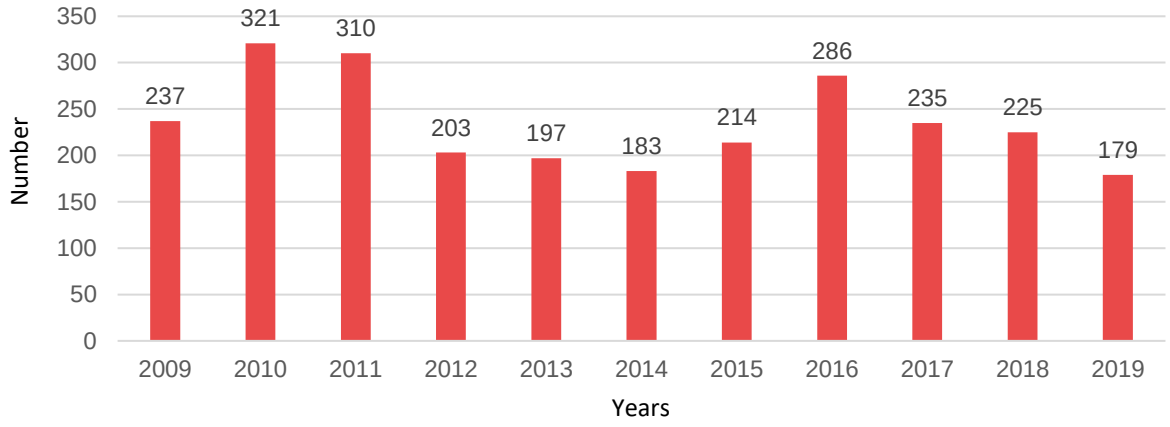

Figure 12: Residential building plan applications received (2009 - 2019) of the study area

Source: (City of Johannesburg, 2019)

The list of data has been refined to illustrate only the new buildings and additions to focus only on building plans that will create additional houses and rooms. The data was subsequently filtered according to property value, and the average number of building plans per annum was determined, as illustrated in Table 3. There are 15 entries where the property value was not indicated. Compared to the total number of entries, it is believed that these missing values would not have a significant impact on the results.

Table 3: Housing supply per income group within the study area

Housing supply	
Building plans low income (average per annum)	70
Building plans medium income (average per annum)	164
Building plans high income (average per annum)	38
*no property values	15

Source: (City of Johannesburg, 2019)

4.4.1 Total housing demand and supply

The total housing demand within the study area is 4,195 per annum or 2,592 housing units per annum for the low-income group, 1,220 housing units per annum for the middle-income group and 384 housing units per annum for the high-income group. The significant gap between housing supply and demand indicates the unavailability of housing stock specifically for the urban poor. In addition, the literature review indicates the slow pace of the government's

provision of subsidised housing stock, which leads to increasing demand and an increase in the cost of housing. This lack of investment can be attributed to the households' disposable income compared to construction costs.

4.5 The role of micro-unit development in wealth creation

The literature indicates several trends with regard to the commercialisation of backyard dwellings. Turok and Scheba (2018) indicate a demand for housing stock specifically catered to low-income residents but cannot enter the formal rental market. The Urban LandMark (2010) iterated that micro-unit developments could potentially provide alternative housing opportunities to the poor and thereby reduce the housing backlog. Furthermore, Scheba and Turok (2020) found that these micro-unit developments provide better quality living environments than the backyard shacks. McGaffin, Spiropoulous and Boyle (2019) found that micro-unit developments comprise of four-to-ten-unit apartments. Scheba and Turok (2020) indicate the 12 to 15 square meter micro-unit apartment rent for approximately R1,500 per month, and the 18 square meter units rent for approximately R2,200, both excluding water and electricity.

The following analysis will first determine how many micro-unit apartments can typically be developed considering the erf sizes in the study area. Secondly, the wealth creation for homeowners will be determined, and subsequently, if this income can support homeowners step up the housing ladder. Finally, the total number of units across the study area will be determined.

4.5.1 Residential property market

The study area is mostly developed with very limited greenfield development opportunities. Merely 6% of zoned land is classified as vacant. Figure 13 illustrates the residential properties within the study area. The housing stock within the study area comprises 38,400 free standing residential properties, 40,500 backyard dwellings and approximately 2,500 hostel dwellings, 1,400 flats/apartments and 800 informal dwellings in the informal settlements. The houses are predominantly single story. The household density map illustrated in Figure 14 indicates that the highest household densities are located along the northern boundary, including Orlando, Meadowlands West Zone 10, Meadowlands West Zone 6, Meadowlands East Zone 2 and Meadowlands East Zone 4.

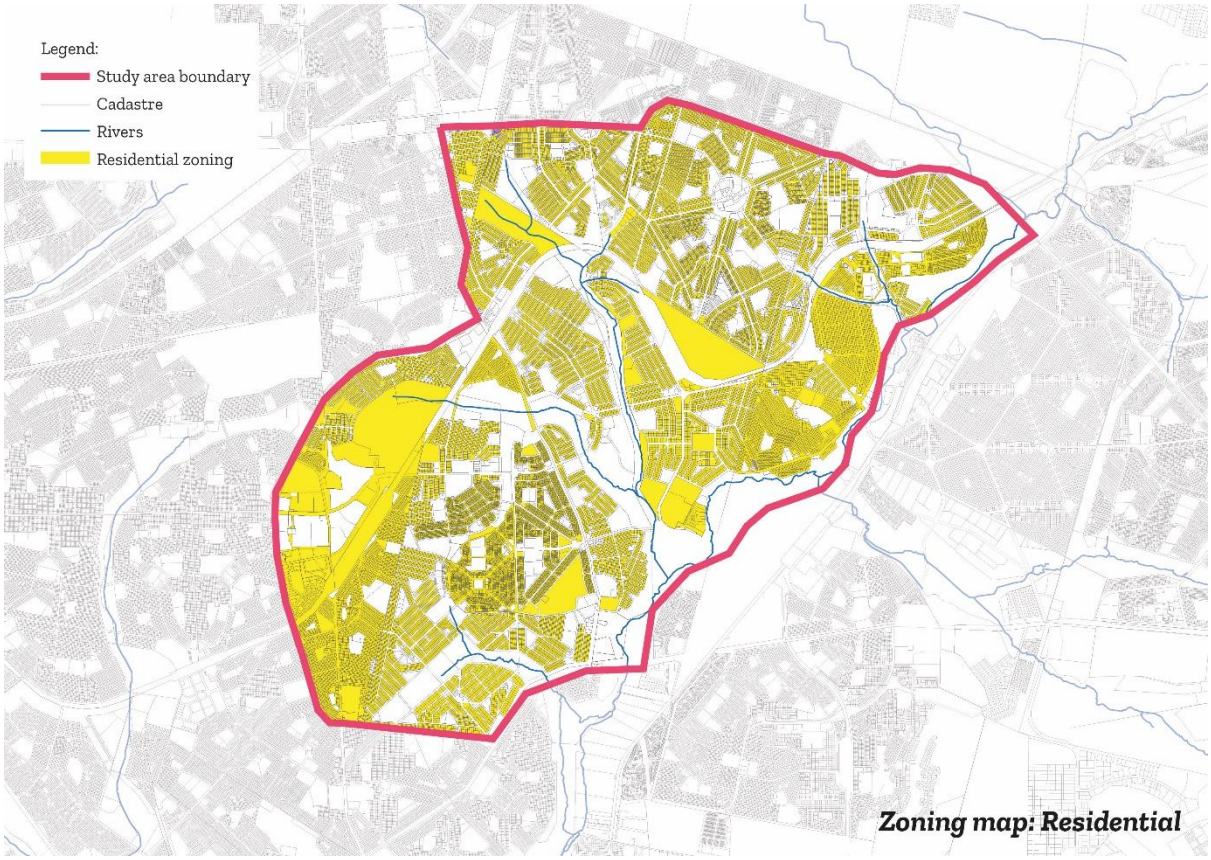

Figure 13: Zoning map (residential properties)

Source: (City of Johannesburg, 2021)

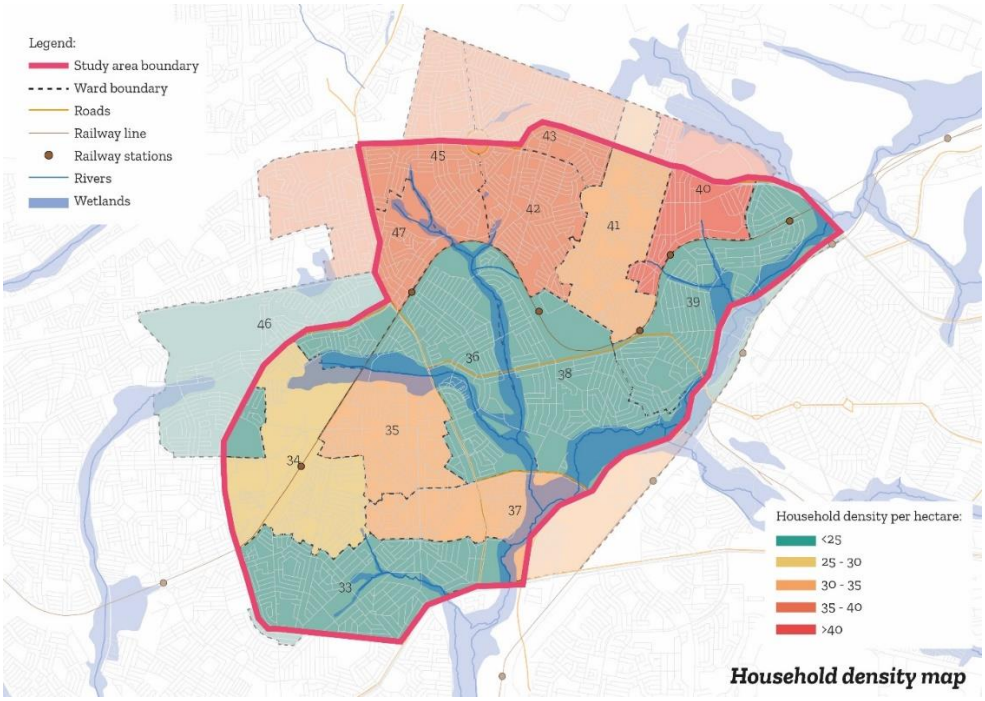

Figure 14: Household density map

Source: (City of Johannesburg, 2021)

Figure 15: Typical housing typologies

Source: (Van Eeden, 2021)

Figure 16: Double story houses

Source: (Van Eeden, 2021)

The rental market within the study area is a significant driver for household wealth. According to GTI (2019), an estimated 40,500 backyard structures exist within the study area. Google Earth imagery was used at three locations to determine the number of backyard/informal structures in relation to the main house. The number of backyard/informal structures in relation

to the main house varies throughout the study area. However, based on the areas reviewed, on average, 3-5 backyard/informal structures are found per main house, as illustrated in Figure 17.

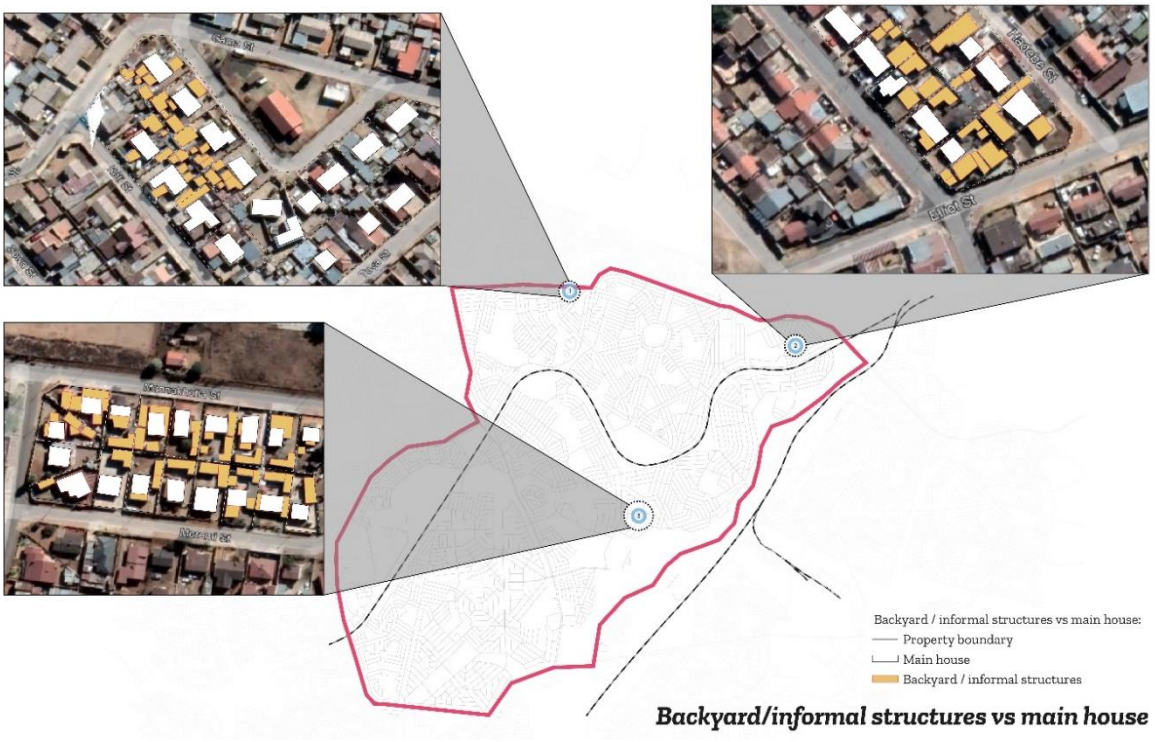

Figure 17: Backyard units per formal house

Source: Google Earth and (Van Eeden, 2021)

Figure 18: Backyard structures

Source: (Van Eeden, 2021)

Figure 19: Micro-unit development by TUHF

Source: (Van Eeden, 2021)

4.5.2 Number of units to be accommodated on properties

The majority (53%) of properties range between 200-300m², followed by properties smaller than 200m² and property sizes ranging between 300-400m². These erf sizes are typical of those provided by the Government subsidy schemes.

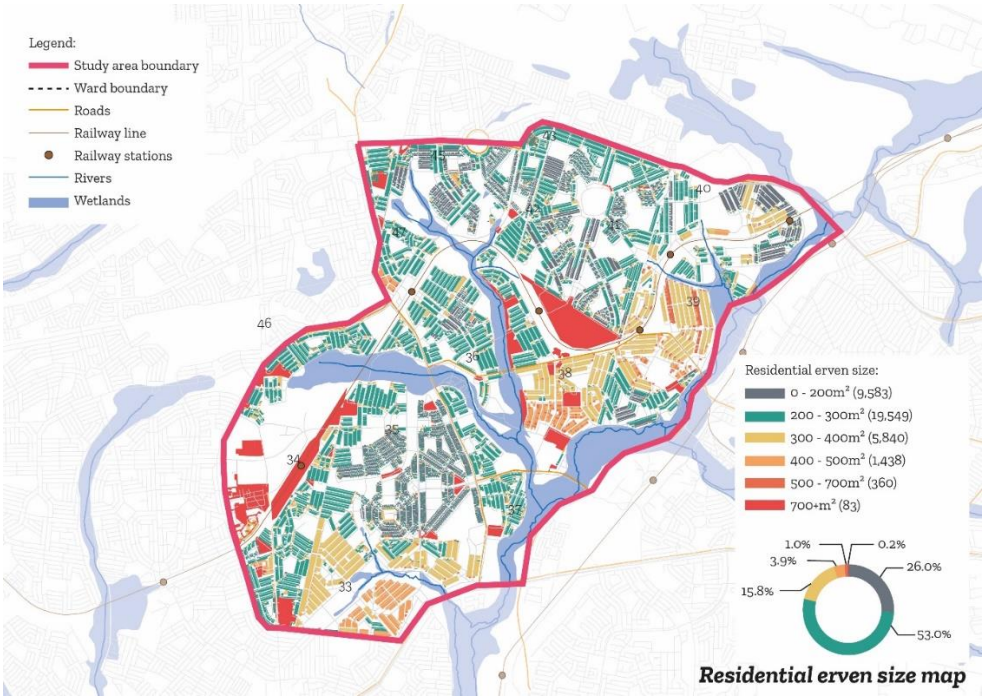

Figure 20: Distribution of residential properties by erf size

Source: (City of Johannesburg, 2021)

One property in each of the property size classes was identified via Google Earth and was used to determine if micro-unit developments can be accommodated on the property. Refer to Appendix C Scenario analysis for detailed illustrations. The 200 square meter properties currently accommodate an existing house measuring approximately 61 square meters located towards the front of the property. This leaves the back of the property for development. With a one-meter building line, two 18 square meter micro-units can be accommodated, or four if the homeowner builds a double story, as illustrated in the example provided in Figure 21. This methodology was applied to each of the property size classes, and Table 4 indicates the results. The number of backyard micro-unit developments were calculated based on the general trend found within Soweto, where in general, only ground and first-floor units are developed.

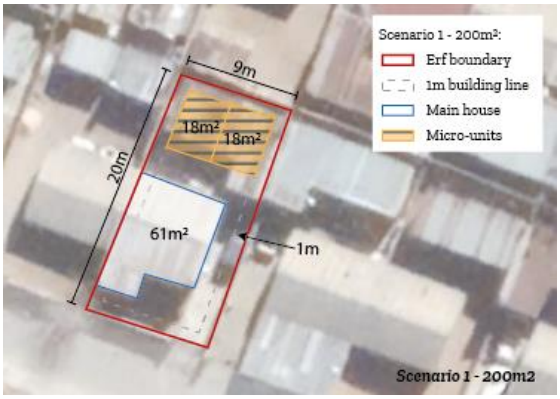

Figure 21: Example of the scenario analysis (Scenario 1)

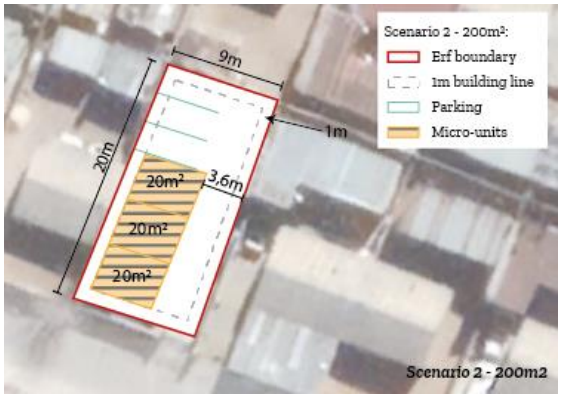

Figure 22: Example of the scenario analysis (Scenario 2)

Source: (Van Eeden, 2021)

Table 4: Number of micro-unit apartments per erf size classification – Scenario 1

Property size	Ground floor units	Buildings with two floors (ground floor plus one)
200 - 300	2	4
300 - 400	3	6
400 - 500	7	14
500 - 700	6	12

The above scenario (scenario 1) as illustrated in Table 4, refers to the homeowner developer who would remain living in the main house. However, the enterprise developer (scenario 2) would optimise the erf size and demolish the main house to build the maximum number of micro-unit developments. The number of micro-units that can be developed in this second scenario is illustrated below in Table 5.

Table 5: Number of micro-unit apartments per erf size classification - Scenario 2

Property size	Ground floor units	Buildings with two floors (ground floor plus one)
200 - 300	3	6
300 - 400	5	10
400 - 500	7	14
500 - 700	9	18

4.5.3 Wealth creation - Scenario 1

The following section will determine if wealth is created for the homeowners given the number of micro-units that can be developed on properties under scenario 1 (number of properties illustrated in Table 4).

4.5.3.1 Rental income

The rental income is illustrated below in Table 6. The typical rent per month is based on the literature findings and discussions with TUHF (a micro-financial currently operating within the Greater Soweto). Using the data obtained from TUHF is a limitation of the analysis; however, it does indicate market-related rental. The rental income calculation does not consider debt servicing or rates. The analysis indicates that the monthly minimum and maximum rental income for scenario 1 ranges between R3,200 and R31,360. The total number of units that can potentially be developed on properties 400m² and 500m² is more than those ranging between 500m² and 700m². This could be attributed to the site configuration and location of the main dwelling.

Table 6: Rental income - Scenario 1

Property size	No. units	Typical rent/month	Gross rental income per month	(Less) operating costs @ 20%	NOI
200 - 300	2	2,000	R 4,000	R 800	R 3,200
	4	2,500	R 10,000	R 2,000	R 8,000
300 - 400	3	2,000	R 6,000	R 1,200	R 4,800
	6	2,500	R 15,000	R 3,000	R 12,000
400 - 500	7	2,500	R 17,500	R 3,500	R 14,000
	14	2,800	R 39,200	R 7,840	R 31,360
500 - 700	6	2,500	R 15,000	R 3,000	R 12,000
	12	2,800	R 33,600	R 6,720	R 26,880

The average monthly disposable income for residents within the study area is R12,000. When homeowners develop six or more units, they earn equal and more than their current income. Therefore, the backyard micro-unit developments have a significant impact on the monthly household income. Moreover, the analysis indicates that there is a significant opportunity for micro-backyard developers to fill the gap in the market.

4.5.3.2 Wealth creation and the housing ladder

The first step to determine if the income from micro-unit developments would aid homeowners to climb the housing ladder (or qualifying bond based on the income generated from the backyard micro-unit development) is to determine their housing affordability based on the income achieved from this investment.

Commercial banks determine the household's affordability based on 30% of their disposable income. Subsequently, their affordability is calculated with an 11 per cent interest rate and a bond repayment period of 20-years. Table 7 below indicates the affordability calculator for properties ranging between 200 and 300m² as well as 300 and 400m². The affordability calculator was created for both the minimum (ground floor units) and maximum (buildings with two floors) number of units that can be developed. This table effectively illustrates the bond the homeowner qualifies for based on the income generated from their property.

Table 7: Example of the affordability calculator

Affordability calculator example				
	200 - 300		300 - 400	
	Minimum units	Maximum units	Minimum units	Maximum units
Rental income	R3,200	R8,000	R4,800	R12,000
30% of disposable income	R960	R2,400	R1,440	R3,600
Interest rate	11%	11%	11%	11%
Repayment terms (years)	20	20	20	20
Qualifying affordability	R93,006.28	R232,515.69	R139,509.42	R348,773.54

The tenure status indicated that 36.6 per cent of homeowners have full title or paid off their bond (StatsSA, 2011). Table 8 below illustrate the housing affordability and the impact when the bond is paid in full. The household's affordability is significantly higher by incorporating their property value.

Table 8: Scenario 1 - Housing affordability

Property size	Housing affordability	Average property value	Housing affordability (including existing property value)
200 - 300	R93,006	R431,734	R524,740
	R232,516	R431,734	R664,250
300 - 400	R139,509	R431,734	R571,243
	R348,774	R431,734	R780,508
400 - 500	R406,902	R418,559	R825,461
	R911,462	R418,559	R1,330,021
500 - 700	R348,774	R431,734	R780,508
	R781,253	R431,734	R1,212,987

All residential properties (where the bond is not yet paid off) are currently in the affordable market, valued between R300,000 and R600,000. The outcome of scenario 1 in the instance where homeowners are still paying off their bond (Table 9) is as follows: firstly, if homeowners develop up to three units, they qualify for a lower bond than their current affordable market. If they develop up to 10 units, they qualify for another property within the affordable market; however, if they are able to develop 12 or more units, they qualify for a property in a higher submarket.

Table 9: Housing affordability when the bond is not yet paid off and position along the housing ladder – Scenario 1

Property size	No. units	Bond not yet paid off		Existing submarket	Step up housing ladder
		Housing affordability	Qualifying submarket		
200 - 300	2	R93,006	Entry market	Affordable market	No
	4	R232,516	Entry market		No
300 - 400	3	R139,509	Entry market		No
	6	R348,774	Affordable market		No
400 - 500	7	R406,902	Affordable market		No
	14	R911,462	High-end market		Yes
500 - 700	6	R348,774	Affordable market		No
	12	R781,253	Conventional market		Yes

The analysis is significantly different when homeowners have paid off their bond and can include it as collateral for another bond, as illustrated in Figure 23 below. Homeowners who develop up to three units remain in their current affordable market; however, four or more units allow them to climb the housing ladder. Should homeowners be able to develop 12 or more units, they can jump from the affordable market with properties valued between R300,000 and R600,000 to the luxury market with properties valued at more than R1,200,000.

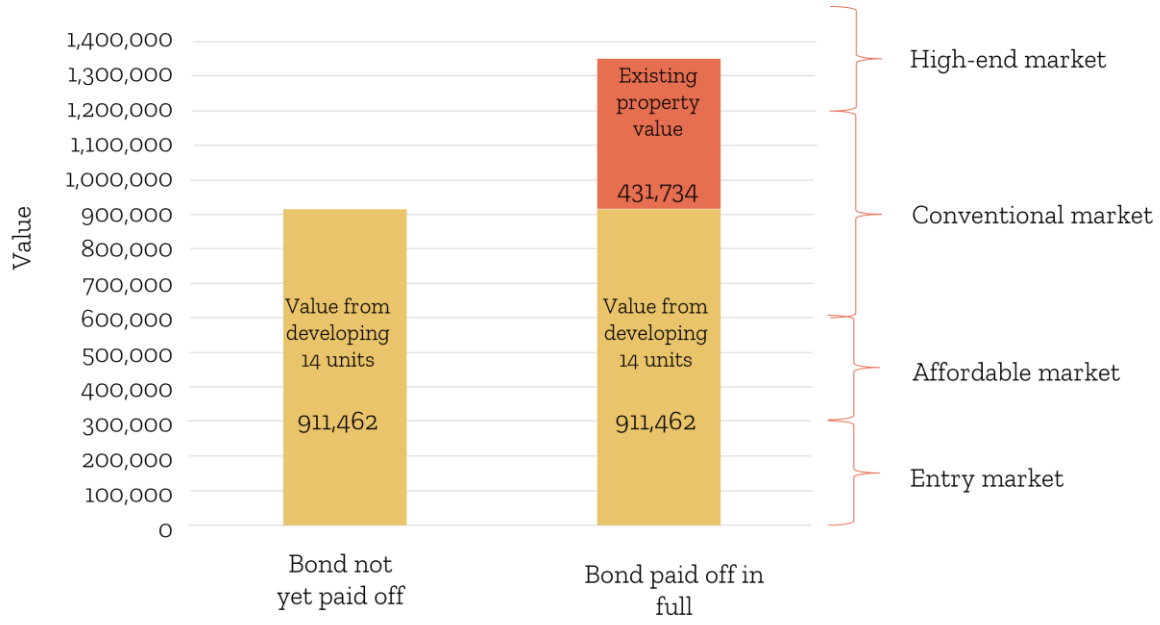

Figure 23: Difference in wealth creation due to bond paid in full

Table 10: Housing affordability when the bond is paid off and position along the housing ladder – Scenario 1

Property size	No. units	Bond paid off (Based on avg. property value)		Existing submarket	Step up housing ladder
		Housing affordability	Qualifying submarket		
200 - 300	2	R524,740	Affordable market	Affordable market	No
	4	R664,250	Conventional market		Yes
300 - 400	3	R571,243	Affordable market		No
	6	R780,508	Conventional market		Yes
400 - 500	7	R825,461	Conventional market		Yes
	14	R1,330,021	Luxury market		Yes
500 - 700	6	R780,508	Conventional market		Yes
	12	R1,212,987	Luxury market		Yes

4.5.4 Wealth creation - Scenario 2

The following section will determine if wealth is created for the homeowners given the number of micro-units that can be developed on properties under scenario 2 (number of properties illustrated in Table 5).

4.5.4.1 Rental income

The rental income for scenario 2 is illustrated below in Table 11. Similarly, to scenario 1, the typical rent per month is based on the literature findings and discussions with TUHF. For scenario 2, however, the developer maximises the development and the monthly minimum and maximum rental income ranges between R4,800 and R40,320.

Table 11: Net operating income - Scenario 2

Property size	No. units	Typical rent/annum	Gross rental income per month	(Less) maintenance @20%	NOI
200 - 300	3	2,000	R 6,000	R 1,200	R 4,800
	6	2,500	R 15,000	R 3,000	R 12,000
300 - 400	5	2,000	R 10,000	R 2,000	R 8,000
	10	2,500	R 25,000	R 5,000	R 20,000
400 - 500	7	2,500	R 17,500	R 3,500	R 14,000
	14	2,800	R 39,200	R 7,840	R 31,360
500 - 700	9	2,500	R 22,500	R 4,500	R 18,000
	18	2,800	R 50,400	R 10,080	R 40,320

4.5.4.2 Wealth creation and the housing ladder

Like Scenario 1, the first step to determine if the income from micro-unit developments would aid homeowners to climb the housing ladder (or qualifying bond based on the income generated from the backyard micro-unit development) is to determine their housing affordability based on the income achieved from this investment.

The household's affordability is significantly higher by incorporating their property value, as illustrated in Table 12.

Table 12: Scenario 2 - Housing affordability

Property size	Housing affordability	Average property value	Housing affordability (including existing property value)
200 - 300	R139,509	R431,734	R571,243
	R348,774	R431,734	R780,508
300 - 400	R232,516	R431,734	R664,250
	R581,289	R431,734	R1,013,023
400 - 500	R406,902	R418,559	R825,461
	R911,462	R418,559	R1,330,021
500 - 700	R523,160	R431,734	R954,894
	R1,171,879	R431,734	R1,603,613

All residential properties are currently in the affordable market, valued between R300,000 and R600,000.

The outcome of scenario 2, as illustrated in Table 13 in the instance where homeowners are still paying off their bond, is as follows: Firstly, when homeowners develop up to five units, they qualify for a lower bond than their current affordable market. Homeowners remain in the affordable market by developing between six and ten units; however, they move to a higher housing submarket with more than ten units.

Table 13: Housing affordability when the bond is not yet paid off and position along the housing ladder – Scenario 2

Property size	No. units	Bond not yet paid off		Existing submarket	Step up housing ladder
		Housing affordability	Qualifying submarket		
200 - 300	2	R139,509	Entry market	Affordable market	No
	4	R348,774	Affordable market		No
300 - 400	3	R232,516	Entry market		No
	6	R581,289	Affordable market		No
400 - 500	7	R406,902	Affordable market		No
	14	R911,462	High-end market		Yes
500 - 700	6	R523,160	Affordable market		No
	12	R1,171,879	High-end market		Yes

Again, the analysis is very different when homeowners have paid off their bonds. Homeowners who develop up to three units remain in the same housing submarket; however, developing up to seven units allows them to move to the conventional market, up to 10 units allow them to step up to the high-end market and more. More than ten units allow homeowners to climb from the affordable housing market to the luxury submarket.

Table 14: Housing affordability when the bond is paid off and position along the housing ladder – Scenario 2

Property size	No. units	Bond paid off (Based on avg. property value)		Existing submarket	Step up housing ladder
		Housing affordability	Qualifying submarket		
200 - 300	2	R571,243	Affordable market	Affordable market	No
	4	R780,508	Conventional market		Yes
300 - 400	3	R664,250	Conventional market		Yes

	6	R1,013,023	High-end market		Yes
400 - 500	7	R825,461	Conventional market		Yes
	14	R1,330,021	Luxury market		Yes
500 - 700	6	R954,894	High-end market		Yes
	12	R1,603,613	Luxury market		Yes

4.5.5 Study area full built out

The total housing demand within the study for the low- and middle-income groups is 3,812 units per annum. If all the homeowners build the minimum units on their properties, a total of 68,844 housing opportunities could be generated and 137,688 if the maximum housing opportunities are built. In order to satisfy the annual demand, only 5.5 per cent of homeowners need to build the minimum units, as illustrated in Table 15.

Table 15: Study area full built out opportunity

Erf sizes	Total erven	Min micro-units	Max units	Min housing opportunities	Max housing opportunities	5.5% developed	
200-300	19,549	2	4	39,098	78,196	2,189	4,379
300-400	5,840	3	6	17,520	35,040	964	1,927
400-500	1,438	7	14	10,066	20,132	554	1,107
500-700	360	6	12	2,160	4,320	119	238
Total				**68,844**	**137,688**	**3,826**	**7,651**

4.6 Findings

Several findings can be deduced from the analysis. Firstly, to date, the government focused on subsidised housing, yet the number of people earning more than the subsidy quantum is increasing, leaving a significant portion of the population unable to access better housing opportunities. The analysis indicates that the backyard micro-unit developments mimic the formal market regarding rent collection, maintenance to units, and formal contractual agreements. The backyard micro-unit provides better tenure security and infrastructure services since tenants have formal contractual agreements. Furthermore, these backyard micro-unit developments are built with brick-and-mortar and provide better housing opportunities. In addition, the study area is located in closer proximity to employment opportunities than the informal settlements located towards the periphery of Johannesburg. Growing commercialisation in the informal rental market is observed. This is due to the increasing need

for affordable accommodation. In addition, the relatively low median income of residents within the study area impacts their ability to enter into the property development space (little to no effective demand).

The analysis reveals that homeowners climb the housing ladder with four or more units, but only if they have full title. Micro-unit developments with 12 or more units enable homeowners to climb the housing ladder without including the property value, which comes by having full title/title deed. The title deed, therefore, plays a critical role in empowering residents. The income generated from the micro-unit developments will enable homeowners who can build 12 or more units on moving from the affordable submarket to the luxury submarket.

The analysis indicates a demand for 2,662 and 1,384 units per annum for low-income and middle-income groups. If 5.5% of homeowners in the study area built the minimum number of units, enough housing stock would be added to the market to meet this annual demand. This study can be duplicated in other areas with a high housing demand in the low- and middle-income groups.

4.7 Future research directions

Further research should be undertaken to compare the NOI obtained from the micro-unit developments and the income received from formal employment opportunities. Investors will be attracted if the income generated from the micro-unit developments would be similar or higher than formal employment opportunities. More analysis is required around the housing market dynamics, as discussed in Section 2.2.4. Lastly, further research should be conducted to expedite full title to homeowners.

5 Conclusion

5.1 Introduction

This final chapter concludes the dissertation by reflecting on how the literature and analysis either support or disprove the research questions and respond to the research proposition. Chapter 1 provided background to the study, whilst in Chapter 2, existing literature was reviewed to identify what current research in this field has revealed and subsequently, to identify any gaps in the existing literature. Chapter 3 describe the research methodology and data collection methods used to undertake data analysis in Chapter 4.

5.2 Research aims and objectives

This research aims to assess backyard micro-unit development in Soweto as a plausible solution to the housing demand within the study area. Furthermore, it aims to determine if the income generated from the backyard micro-unit developments can enable homeowners to climb the housing ladder.

The analysis indicates that backyard micro-unit development can provide more housing units per annum than the annual demand. In addition, the rental income (net) that can be generated from 6 backyard micro-units equals the average median income of residents. In addition, when four or more units are developed where homeowners have full title, they are able to move up the housing ladder

5.3 Synopsis of research study

A visible change in settlement patterns can be observed over the past few decades. Whereas many South African lower income citizens had access mostly to informal settlements with inadequate living conditions as one of few options, many now have the option to live in formal or informal backyard structures. Over the past few years, a new trend emerged in the form of backyard micro-unit developments. Micro-unit backyard structures are developed in homeowners' backyard as a supplementary income, and these units provide better accommodation than those found in informal settlements.

The South African government has been tasked to provide housing to the poor; however, due to rising levels of urbanisation and a growing lower income group, the government has fallen behind and cannot supply enough housing stock into the market. This occurs even though several subsidy vehicles (RDP, FLISP and UISP) are available. These housing subsidy schemes allow South African citizens to apply for a housing subsidy, subject to qualifying criteria.

However, many residents in the low- and middle-income groups earn more than the subsidy criteria. The problem arises because, although these residents earn an income, it is too much to qualify for a housing subsidy, but it is not enough to enter the formal housing market. Subsequently, these households are "forced" to obtain housing in the informal market. There are, therefore, alternative housing options that can be deployed to reduce informal housing. Furthermore, this market provides employment opportunities for developers who focus specifically on backyard micro-unit development.

5.4 Evaluation of research questions

This dissertation was undertaken to provide insights into the following three research questions:

1. What is the housing gap given the number of housing units supplied into the study area versus the housing demand?
2. What role does micro-unit backyard developments play to meet specific housing sub-market within Soweto? and
3. How can the micro-unit backyard developments encourage wealth creation and aid homeowners in going to the next step on the property ladder?

5.4.1 Research question 1

The first research question is articulated as follows:

"What is the housing gap given the number of housing units supplied into the study area versus the housing demand?"

The housing supply and demand were determined by assessing the annual housing supply and demand within Soweto's various income groups, including low-, middle- and high-income households. The analysis indicates the study area has a total demand of 4,468 units or 2,662 units for the low-income, 1,384 units for the middle-income and 422 units for the high-income groups. The building plans received were assessed, and an annual average of 235 housing units was supplied into the market resulting in a total shortfall (demand) of 4,195 units per annum throughout the study area.

5.4.2 Research question 2

The second research question is articulated as follows:

"What role does micro-unit backyard developments play to meet specific housing sub-market within Soweto?"

The second research question focuses on the role of micro-unit developments in meeting the demand as identified in research question one. In other words, determining how many micro-unit developments can be developed throughout the study area. The study considered two scenarios. Firstly, how many units can be developed if the homeowner continues to reside in the existing house and secondly, how many units can be developed if the homeowner demolishes the main dwelling to maximise the development potential. The analysis indicates that the annual housing demand will be met if only 5.5% of homeowners develop ground-floor units. The research concludes that there is a significant opportunity for micro- backyard developers to fill this market gap.

5.4.3 Research question 3

The final research question is articulated as follows:

"How can the micro-unit backyard developments encourage wealth creation and aid homeowners in going to the next step on the property ladder?"

This research question focused on the income generated from the backyard micro-unit developments and whether the income can aid homeowners to climb the housing ladder.

The calculated NOI ranges between R3,200 and R31,360 based on scenario 1 (the number of units that can be developed if the existing house remains on the property), and the NOI ranges between R4,800 and R40,320 for scenario 2 (the number of units that can be developed if the main house is demolished in order to maximise the development potential). There is, therefore, a significant opportunity for upward mobility in income. The analysis further indicates that homeowners who are still paying off their bond need to develop 12 or more units to climb the housing ladder, and once their bond is paid off, they need to develop four units to climb the housing ladder. This indicates the value a title deed plays to ensure wealth creation and enable residents to improve their quality of life. Moreover, under certain circumstances, homeowners are even able to climb from the affordable market to the luxury market (top of the housing ladder).

5.5 Evaluation of the research proposition

The research proposition, as depicted in Chapter 1, are as follows:

The failure of government subsidy schemes has led to a gap in the housing ladder. Backyard micro-unit developments provide a critical entry point into the formal housing market.

The research undertaken in this dissertation revealed that governments are unable to provide sufficient housing stock into the market. However, alternative housing typologies, like backyard micro-unit developments, are able to meet the housing demand and provide an income that, in many instances, is greater than the average monthly disposable income of households. In addition, the income generated from the backyard micro-unit developments enable homeowners to climb the housing ladder from the affordable sub-market to the conventional-, high-end- and luxury sub-markets. This dissertation, therefore, confirms that from a financial perspective, backyard micro-unit developers provide a critical entry point into the formal housing market while at the same time providing an opportunity for existing owners to enhance their property generated wealth.

5.6 Suggestions for further research

Areas for further research have been identified and will strengthen the proposition made in this dissertation:

- Draw a comparison between the NOI obtained from micro-unit developments and income received from formal employment opportunities.
- Additional studies into the dynamics of the housing market.
- Further research should be undertaken to identify methods to expedite full title for homeowners;
- Government subsidies are provided to government-led developments, however, the backyard micro-unit developments can provide more housing opportunities. Further research should be undertaken to determine what financial and regulatory support the government can provide to further enable micro-unit development.

5.7 Conclusion

This chapter summarises the research questions, aims and objectives and whether these were met.

In conclusion, the research undertaken was aimed at the specific research questions, and the outcome of the analysis supports each of the research questions. Furthermore, the research undertaken provides evidence of how micro-unit developments provide a critical entry point

into the formal housing market through wealth creation that enables homeowners to climb the housing ladder.

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APPENDIX A
ETHICS CLEARANCE

ETHICS APPLICATION FORM

Please Note:
Any person planning to undertake research in the Faculty of Engineering and the Built Environment (EBE) at the University of Cape Town is required to complete this form **before** collecting or analysing data. The objective of submitting this application *prior* to embarking on research is to ensure that the highest ethical standards in research, conducted under the auspices of the EBE Faculty, are met. Please ensure that you have read, and understood the **EBE Ethics in Research Handbook** (available from the UCT EBE, Research Ethics website) prior to completing this application form: http://www.ebe.uct.ac.za/ebe/research/ethics1

APPLICANT'S DETAILS		
Name of principal researcher, student or external applicant		Marile van Eeden
Department		Construction Economics and Management
Preferred email address of applicant:		marile.vaneeden@zutari.com
If Student	Your Degree: e.g., MSc, PhD, etc.	MSc Property Studies
	Credit Value of Research: e.g., 60/120/180/360 etc.	60
	Name of Supervisor (if supervised):	Francois Viruly
If this is a researchcontract, indicate the source of funding/sponsorship		Yes
Project Title		A Case study to determine if micro-unit developments create another step along the housing ladder for low-income homeowners in Soweto

I hereby undertake to carry out my research in such a way that:

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

APPLICATION BY	Full name	Signature	Date
Principal Researcher/ Student/External applicant	Marile van Eeden		08/10/21
SUPPORTED BY	Full name	Signature	Date
Supervisor (where applicable)	Francois Viruly		13/10/2021

APPROVED BY	Full name	Signature	Date
HOD (or delegated nominee) Final authority for all applicants who have answered NO to all questions in Section 1; and for all Undergraduate research (Including Honours).	Dr. Frank K. Ametefe		2021/10/20
Chair: Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the questions in Section 1.			

APPENDIX B

CERTIFICATE OF ENGLISH EDITING

DESIGNED FOR YOU! Especially edited for You!
P.O. Box 33604, Glenstantia, 0010
082 332 0888 / trudi@proof-reader.co.za

Certificate of English Editing

This is to certify that the manuscript:

A case study to determine if micro-unit developments create another step along the housing ladder for low-income homeowners in Soweto

By the author:

Marilé van Eeden

Has been edited for accuracy, grammar, spelling, sentence structure and language usage.

Date Issued:

6 December 2021

Issued by:

Trudi Joynt

APPENDIX C
DATA TABLES

The raw data and analysis pertaining to this dissertation has been uploaded to Google Drive found **here**.

APPENDIX D
SCENARIO ANALYSIS

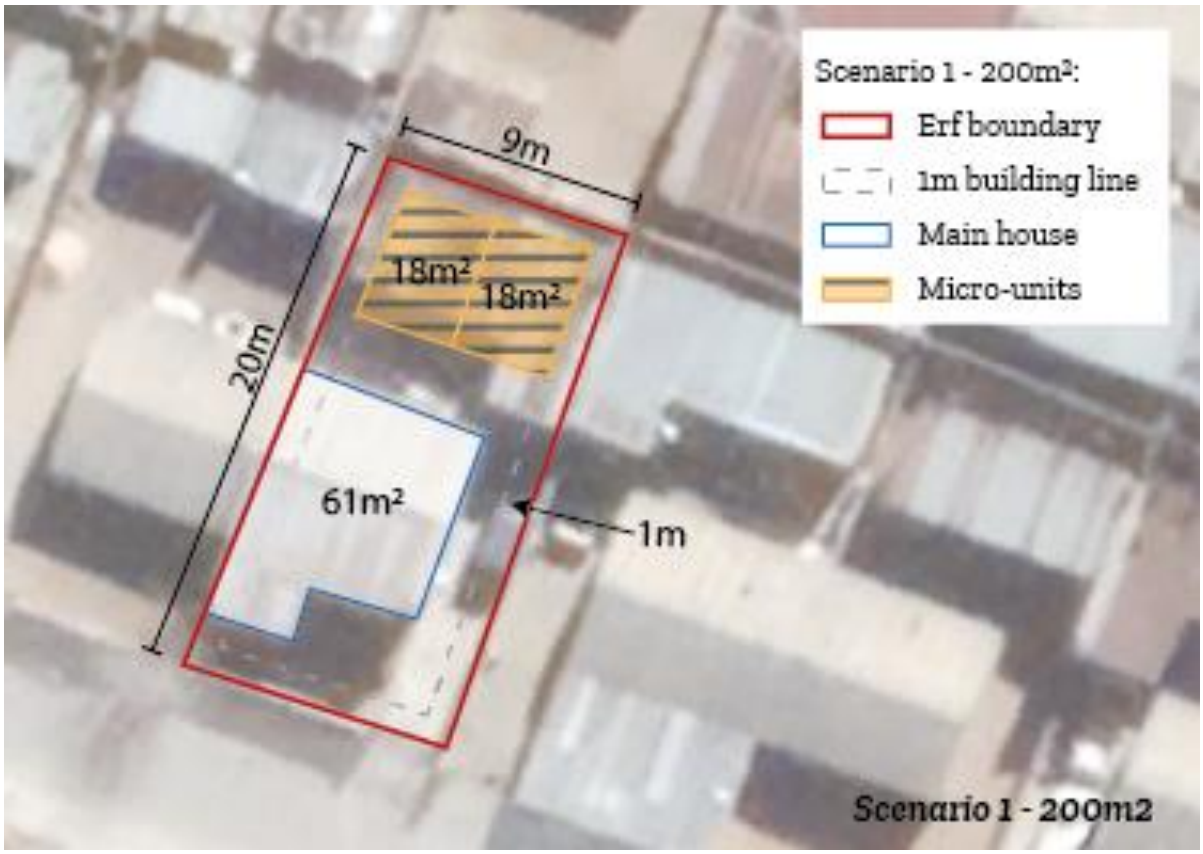

Figure 24: Scenario 1 - 200m²

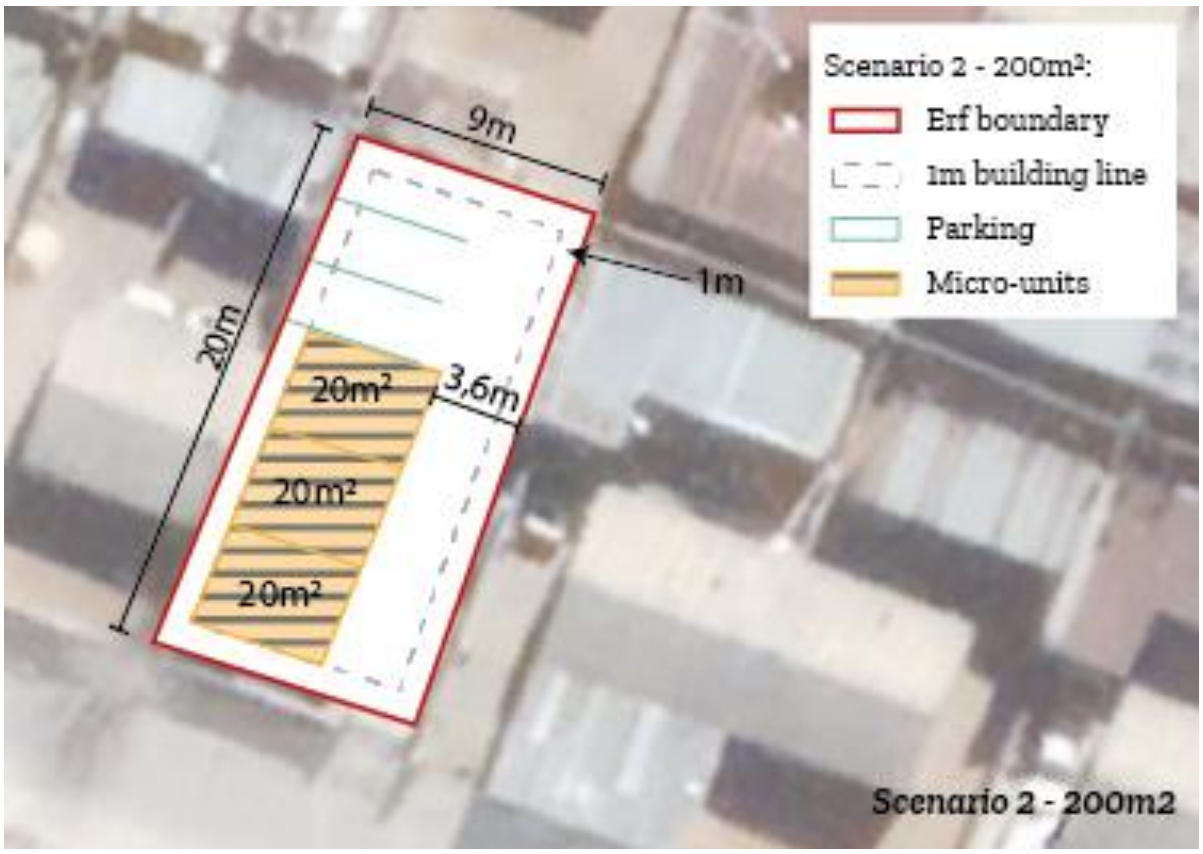

Figure 25: Scenario 2 - 200m²

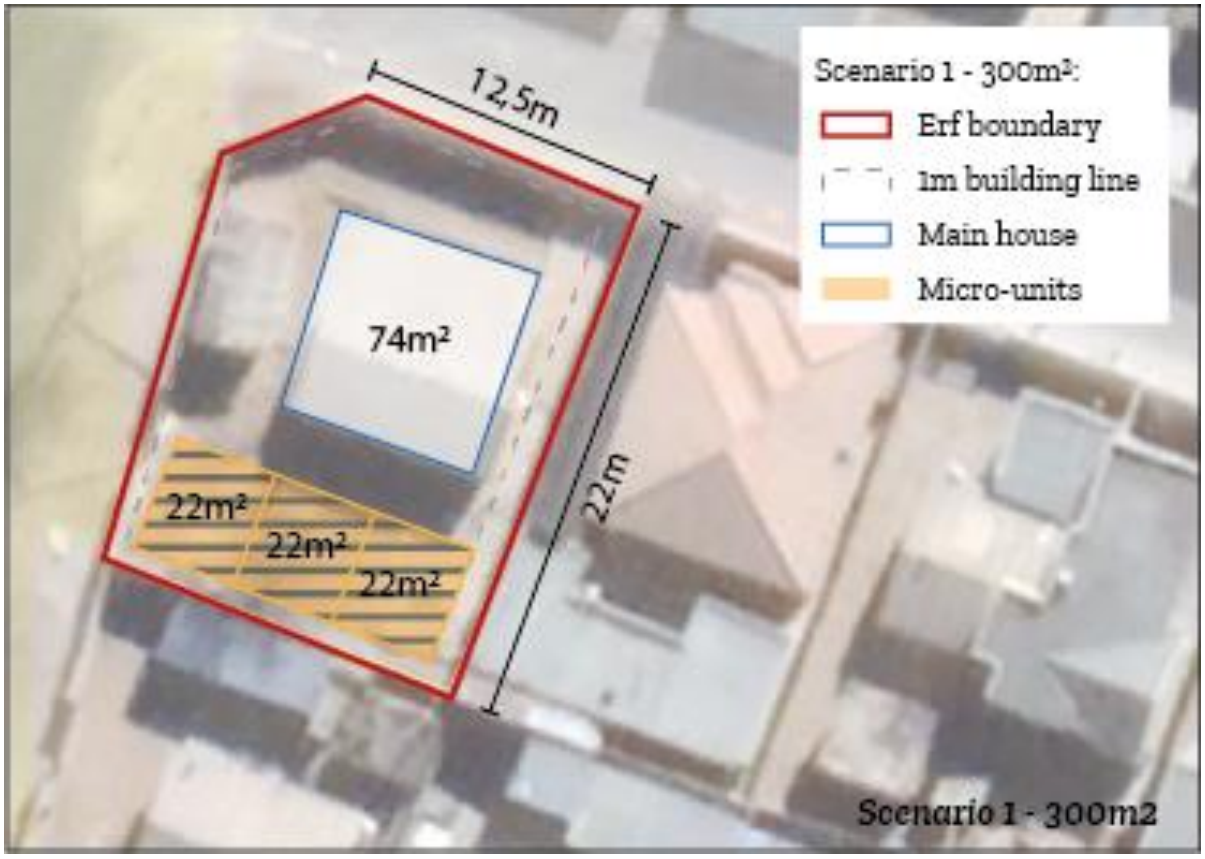

Figure 26: Scenario 1 - 300m²

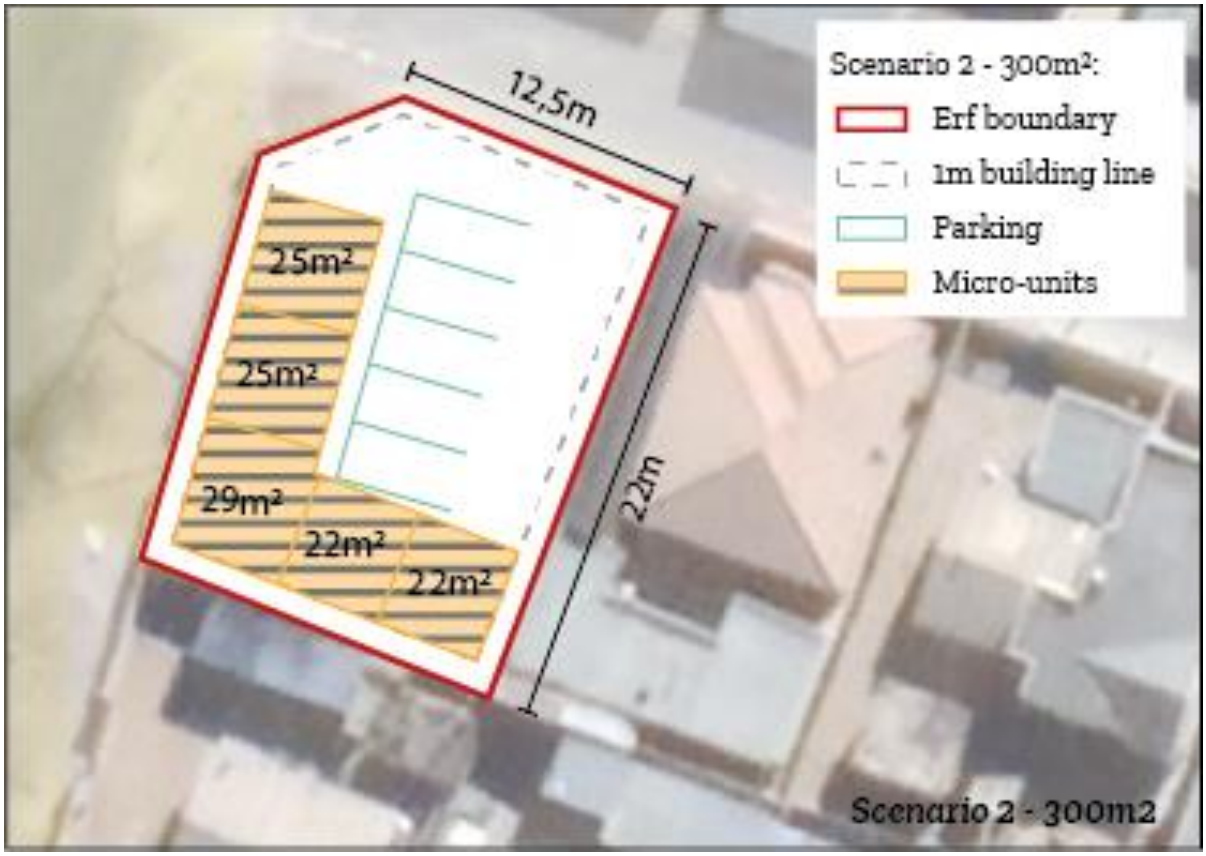

Figure 27: Scenario 2 - 300m²

Figure 28: Scenario 1 - 400m²

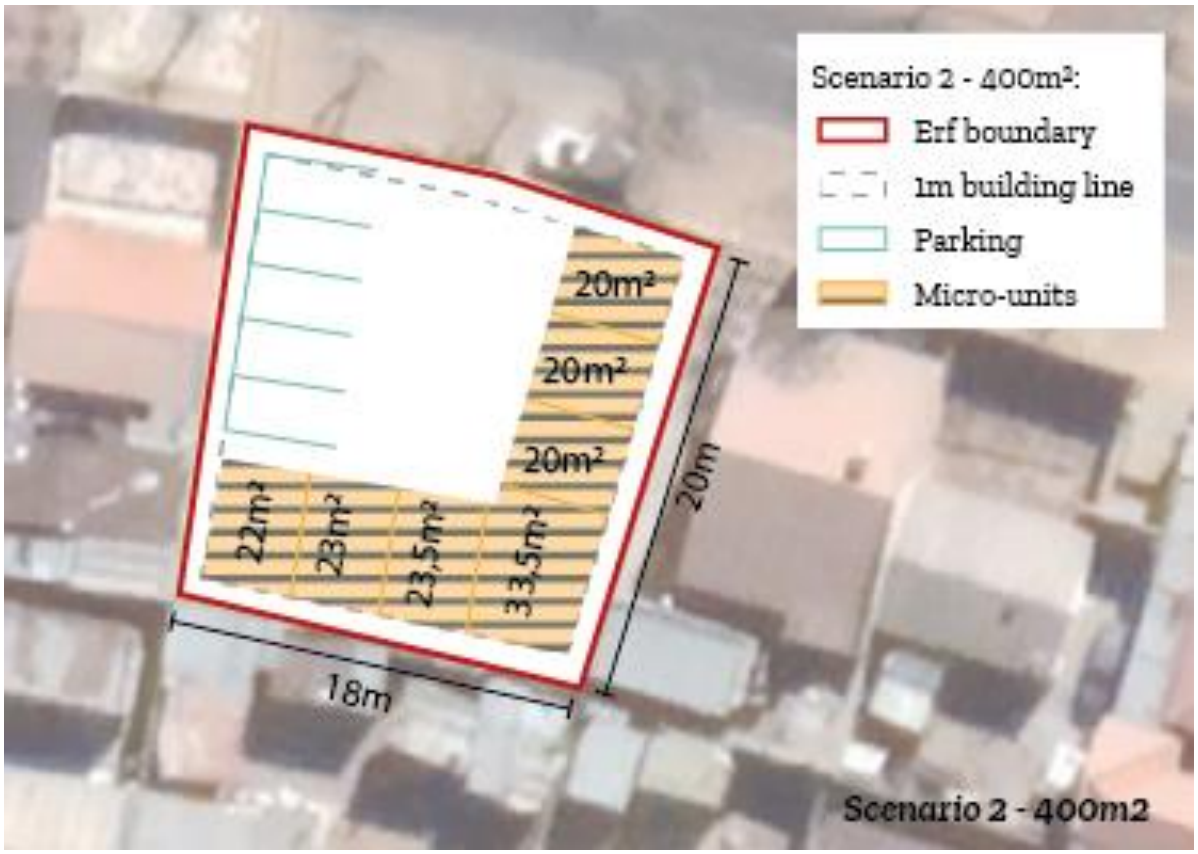

Figure 29: Scenario 2 - 400m²

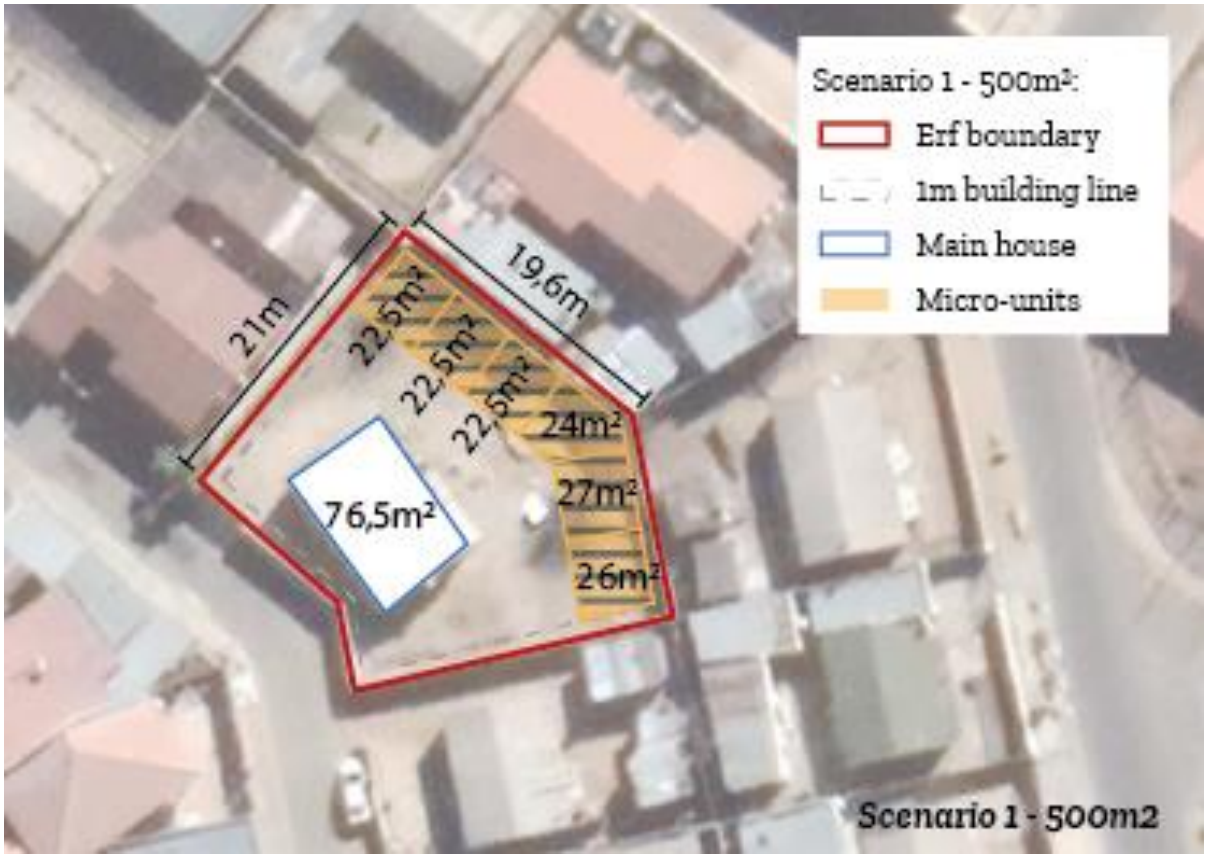

Figure 30: Scenario 1 - 500m²

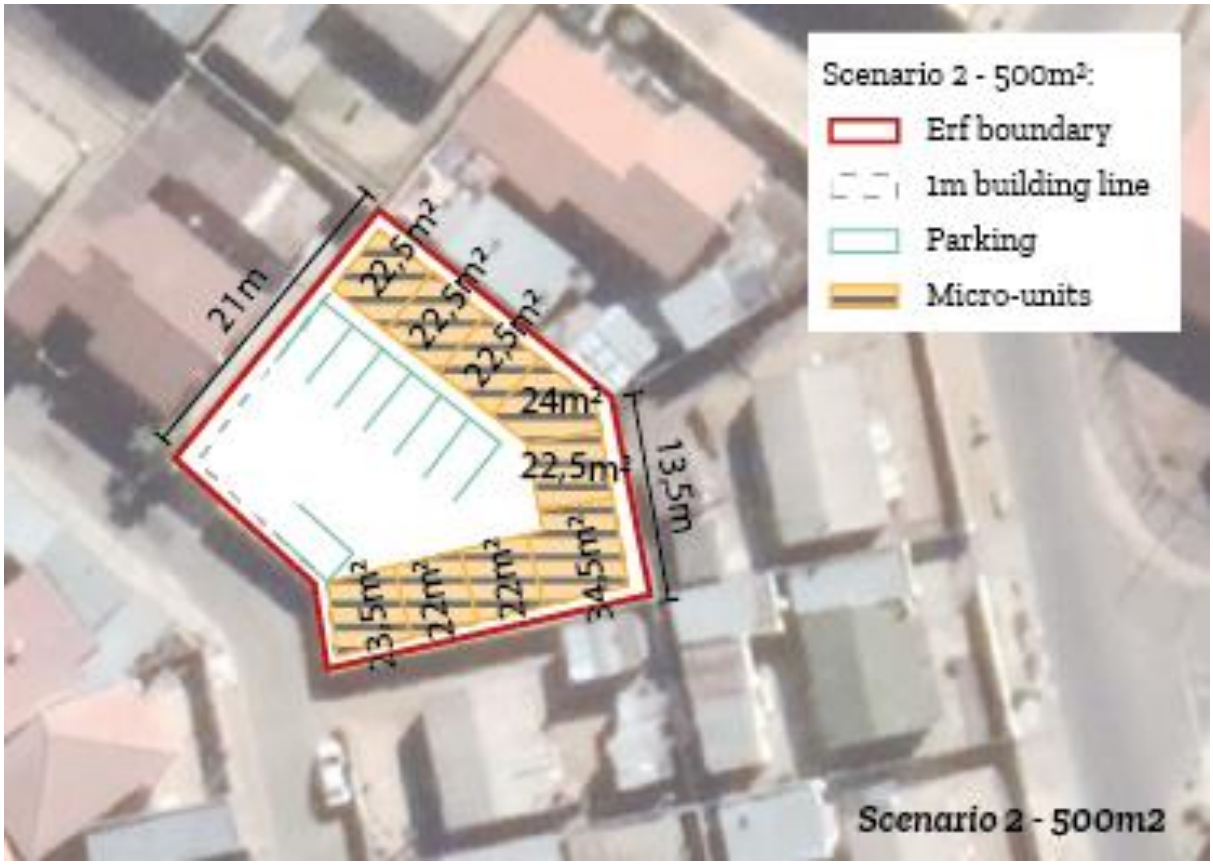

Figure 31: Scenario 2 - 500m²