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EFFECTS OF MIXED INCOME HOUSING ON NEIGHBOURHOOD HOUSE PRICES AND INVESTMENT GUIDELINES FOR FUTURE INCLUSIVE DEVELOPMENTS IN SOUTH AFRICA

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A thesis submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, Johannesburg in fulfilment of the requirements for the degree of Doctor of Philosophy (PhD).

DECLARATION

I, Prisca Simbanegavi, declare that this thesis is my own, unaided work. It is submitted for the Degree of Doctor of Philosophy in Real Estate at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other university.

_____

Prisca Simbanegavi

_____Day of_____Year_____

ABSTRACT

While Mixed Income Housing (MIH) enables inclusivity in the globalized world, opposition known as NIMBY ('Not In My Back Yard') seem to counter such change in land-use as it is purported to increase home ownership 'risks' for reasons associated with loss of value to property, increased crime, and overcrowding on services and amenities. The courts delay the approval processes for such change in land-use, which becomes cumbersome and risky for investors and reduces the much needed investment funds into housing. The study provides five key direct investment guidelines to reduce the high NIMBY opposition levels in future MIH developments, which are perhaps not entirely justified, given the 'minimal' effect (0.41%) found for Cosmo City MIH. The first guideline is that policy development into law is not necessary, as linking bulk infrastructure and land cost to affordable housing units acts as a negotiation tool sufficient to enforce reasonable amounts of low-income housing units into MIH developments. The second guideline is that, a privately oriented collaboration between government and private sector enables MIH developments to attract the much needed funding towards housing. This enables the private sector to build better quality housing that maintains investment value in the future and yields a financial return required in the private investment performance benchmarks. The third guideline is that self-serving developments with well-developed infrastructure, transport linkages, and social amenities on greenfield sites, enable long-term focus on investment returns, value capture, continuity, and sustainability within residential markets. The fourth investment guideline is that an MIH development should focus on mixing households according to income levels through different typologies rather than race, religion or culture in the form of 'silo' mixing. The fifth investment guideline requires asset and property management strategy orientation to the private sector as this enables competitive resource allocation, green building technology, and better revenue collection methods as a basis for successful future MIH developments.

Key Words: Hedonic Modelling, Inclusive Housing, Investment risk and Theory, Location Theory, Mixed Income Housing, NIMBY Effects, Poverty Amelioration

DEDICATION

If heaven had doors and keys, I would knock to see how grown Nokutenda girl is! To her, I dedicate this PhD for the life we shared before the Most High called her. Gone too soon, we always say! It was her time! The PhD journey got double heavy with the loss of my daughter who drowned in my home swimming pool on 15 November 2015. I share the pain with all parents who have lost their children in freak accidents.

Remembering Nokutenda-Lala Simbanegavi

Your earthly birthday was 10/03/2011
Now your heavenly birthday is 15th of November 2015.
On number 15, you had to go, so you went!
In just 5 minutes you slipped away quietly -
It was your time to be quiet!
We do not lie, it is difficult!
If we had moved…, if we did …if only I …oh, the thoughts!

I do not mind dreaming about you Noku-!
I will see you in other girls as they live!
As they dance, I will see you too, Noku!
As they walk, I will see you too, Nokutenda
My love for you has endeared me to do well for your sake
Those other children can have a chance
Have you checked… is there no one like Jesus for me?
We pray you are an Angel right away!
Therefore, you can carry over Philippians 1:21
"For me to live is Christ, to die is gain"
In God's time, we will surely meet again
To be happy ever after!

To her dearest soul, my daughter Nokutenda Simbanegavi, I dedicate this PhD thesis!

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I express my profound gratitude to the Faculty of the Built Environment at University of the Witwatersrand in South Africa. The School of Construction Economics and Management provided a PhD study position as an Associate Lecturer without which this study would not have been completed. I am forever indebted to the Head of School, Professor David Root, who helped with valuable discussions and corrections required. He supported me in attending academic, industry, and government conferences, which gave me platforms to improve on this PhD research. These include most African Real Estate Society (AfRES) conferences, MSCI conferences, American Real Estate Society doctoral sessions, and National Human Settlements Conferences. I am grateful to Professor Samuel Azasu as the Post Graduate Coordinator at the time of my enrolment. Most importantly, I deeply thank and acknowledge my supervisor, Dr Kolawole Ijasan, for his constructive criticisms and unwavering support throughout this journey. His supervision style is one which I have valued a lot. He is always accessible and prepared to help in a consistent manner. I am very grateful to Dr Tumellano Sebehela and Blessing Kamudyariwa for shouldering my workload for Real Estate Finance and Property Management courses while I worked on my thesis. My friend, Shynet Chivasa helped me with hedonic methodology regarding STATA software. Most importantly, I thank, Mr. Adediran Adetunji, an RICS colleague for insightful discussions on the practical side of residential markets. I am also grateful to Mr. D. Chikanda for bringing in some important perspectives on land and housing.

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My family members stood by me. They supported my sleepless nights and time commitments. I thank my husband, Dr. W. Simbanegavi, for standing by me in all the times I spent working on my thesis. A brother, Mr. Godwishes Simbanegavi, deserves special hands-up for all brain storming of ideas in the initial stages of this study. His efforts and advice made it possible. My children, Tendai, Tanaka, and Nokutenda, gave me a reason and willpower to multi-task. My sister Hazel Mugani brought a different perspective on housing and poverty as a community problem. Patience Govati and Sithembile Mutseta gave me emotional support without which the thesis could have been a heavy journey. Their motherly smiles and engagements made it possible to carry on. To Happiness and Felistas Simbanegavi, thank you for the fresh and renewed hope that you gave me through words of encouragement.

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LIST OF ACRONYMS

1. **ANC**: African National Congress
2. **AMCHUD:** Africa Ministerial Conference on Housing and Urban Development
3. **BNG:** Breaking New Ground
4. **CAHF:** Centre For Affordable Housing Finance
5. **CBD**: Central Business District
6. **COJ:** City of Johannesburg
7. **CF:** Clinton Foundation
8. **CLTD:** Center for Learning Training and Development
9. **CNR :** Centre for Neighborhood Research
10. **CRU:** Community Residential Units
11. **CPDSHS:** Comprehensive Plan for the Development of Sustainable Human Settlements
12. **CSIR:** Council for Scientific and Industrial Research
13. **DFID:** Department for International Development
14. **EPWP:** Expanded Public Works Programme
15. **EHP:** Emergency Housing Programme
16. **ERF:** Plot Area/Stand Size
17. **FLISP**: Finance Linked Individual Subsidy Programme
18. **FDIs:** Foreign Direct Investments (FDIs)
19. **GPF**: Gauteng Partnership Fund
20. **HPM**: Hedonic Price Model
21. **HPR:** Housing Needs Register
22. **IDP**: Integrated Development Plan
23. **IHP:** Inclusionary Housing Policy
24. **IHS**: International Housing Solutions
25. **IRDP**: Integrated Residential Development Plan
26. **IFC:** International Finance Corporation

27. **ISUP:** Informal Settlements Upgrading Programme
28. **ISHSP:** Integrated Sustainable Human Settlements Policy
29. **IUDS:** Integrated Urban Development Strategy
30. **LULU:** Locally Unwanted Land Uses
31. **MDGs**: Millennium Development Goals
32. **MIH:** Mixed Income Housing
33. **NHFC:** National Housing Finance Corporation
34. **NGT:** Nedbank Green Trust
35. **NIMBY:** Not In My Back Yard
36. **OLS**: Ordinary Least Squares
37. **PPP:** Public Private Partnership
38. **RCG:** Restructuring Capital Grant
39. **RDP:** Reconstruction and Development Programme
40. **TODs:** Transport Oriented Developments
41. **SAPOA:** South African Property Owners Association
42. **SAWHF:** SA Workforce Housing Fund
43. **SHI:** Social Housing Institute
44. **SHRA**: Social Housing Regulatory Authority
45. **SMMEs:** Small Medium and Micro Enterprises
46. **SOHCO:** Social Housing Company
47. **SACPN:** South African Commercial Property News
48. **UN**: United Nations
49. **UNECA:** United Nations Economic Commission for Africa
50. **UNDP**: United Nations Development Programme
51. **USDGs**: Urban Sustainable Development Goals
52. **UMG:** Urban Management Grants
53. **USDG:** Urban Settlements Development Grant
54. **WWF:** World Wide Fund

NOMENCLATURE AND DISCLAIMER

1. The word ‘guideline’ is used as a noun to refer to procedures of action designed to achieve a long-term goal.
2. ‘Affordable housing gap market’ includes households that are too affluent to qualify for RDP housing but do not meet threshold requirements to qualify for mortgage loans. The affordable housing gap market is currently those who earn between R3, 501 and R15, 000 per month.
3. FLISP: Finance Linked Individual Subsidy Programme. The FLISP model enables qualifying households to acquire a first-time home by providing a once-off subsidy amount between R10, 000 and R87, 000, depending on the individual’s monthly income (Bah et al. 2018).
4. A regression coefficient refers to the implicit price of the hedonic housing regression model.
5. Inclusionary housing policy is a programme that requires and incentivises private developers to dedicate a certain percentage of new housing developments to low income and middle-income households at affordable housing cost (Vester, 2009).
6. ‘Economic Hubs’ is a term used in South Africa to refer to well-developed locations with business activities and consequently, high employment levels.
7. The concept of ‘mixed income housing’ is to a larger extent a cautious government-driven effort to construct multi-family houses for mixed income households as a way of reducing concentrated poverty and encouraging integration (Brophy and Smith, 1997).
8. Sustainability refers to the continuation of MIH in the mixed income form that it is intended to house people of different income groups.
9. The word ‘disadvantaged’ people in South Africa refers to the majority of poor people who happen to be mostly black.

10. The word ‘advantaged’ people is not intended to denote any supremacy in any way but to refer to affluent people who benefited from the apartheid regime and who mostly are white.
11. A ‘greenfield’ site is an area of land that has never been built upon.
12. A ‘brownfield’ site land is an area of land previously used or built upon.
13. A ‘former township’ in South Africa is an area where black people were forced to live during the apartheid period.
14. A ‘node’ is used to follow NVivo software structure, which refers to distinguishable themes as generally agreed in most qualitative research books.
15. Inclusive growth is a concept that advances equitable opportunities for economic participants during economic growth with benefits accruing to every class of society.
16. Servcon Housing Solutions (Pty) Ltd (Servcon).

CHAPTER 1: INTRODUCTION

1.1 Context of Study and Research Problem

Before South Africa attained democracy in 1994, colonialism and apartheid had shaped the distribution and ownership of land and housing and the manner in which the discriminatory policies ultimately distorted South Africa's residential markets by racially segregating neighbourhoods is clearly annotated in literature. South Africa's apartheid legacy and the segregation of the past have led to discriminatory policies and the misallocation of resources in the housing sector (Geyer and Faizel, 2016; Van Der Berg, 2014; Moss et al. 2013; Ajayi, 2012). In South Africa, housing shortages can be traced back to the historical legislation through which land deprivation was orchestrated. Adding to the discrimination problem, South Africa's population of approximately 55 million people has an increasing need for affordable urban housing due to an unprecedented population growth, and increasing urbanization rates that continue to exacerbate the housing shortage. The only problem that is also found throughout the world is that subsidies are usually affected by bottlenecks that make them inaccessible (DFID, 2010).

Overall, the housing shortage in many countries including South Africa has persisted, and worsened due to global financial crises, increasing severity of disasters, political and religious unrest, migration, population increases, and increases in urbanisation rates. Projections by the World Bank (2014) indicate that the Sub-Saharan Africa region leads other regions in urban population living in informal settlements (slums) from 1990 to 2030 and the trend is actually rising. This is compared to other regions which include the Middle East & North Africa, Latin America & Caribbean, South Asia, and East Asia & Pacific where the numbers have been decreasing, with the lowest number in Europe and Central Asia as shown in Figure 1.1.

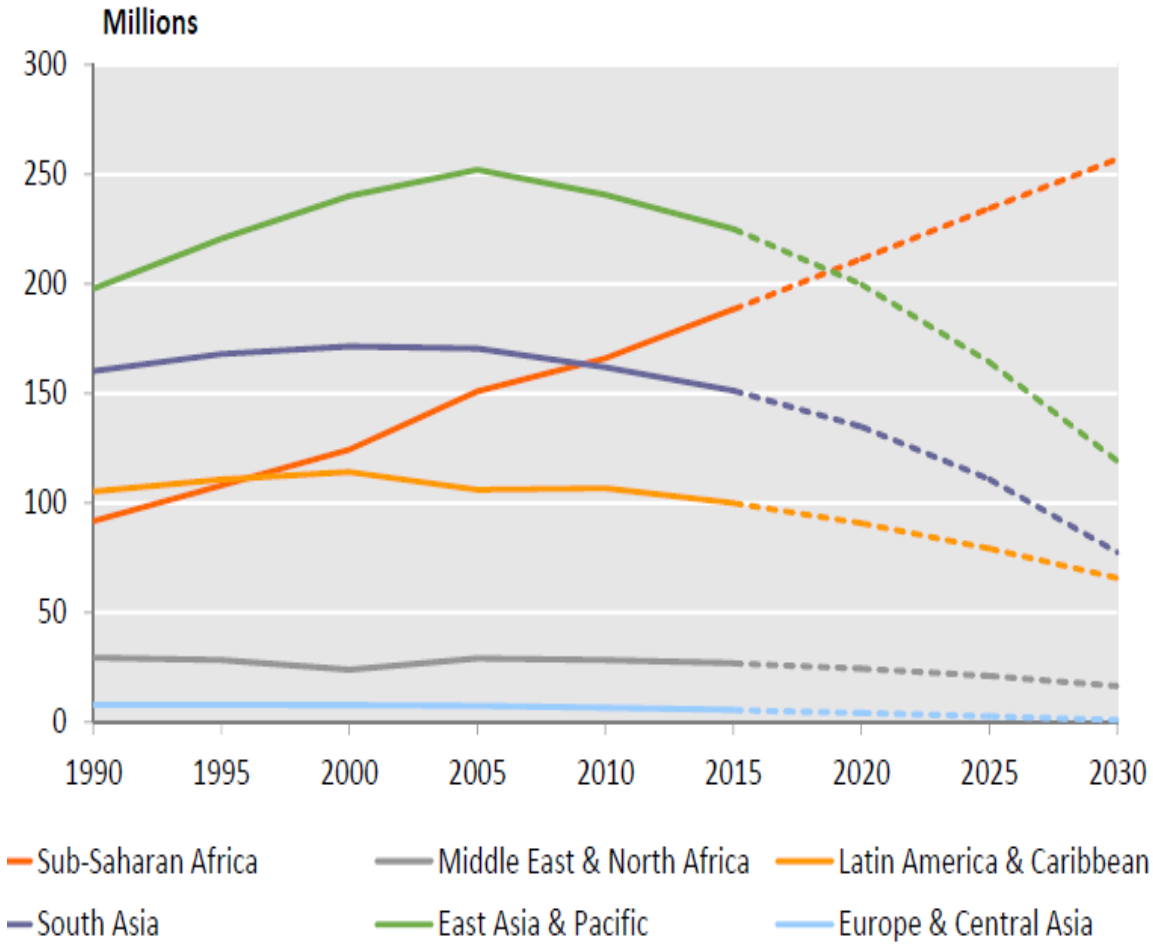


Figure 1.1**:** Population Living in **S**lums by Region (1990 to 2030)
Source: World Bank, 2014

Informal settlements are an indication of the gravity of the housing shortage in some parts of the world. The world's largest slums are situated in Khayelitsha in Cape Town in South Africa with 400,000 people, Kibera in Nairobi Kenya with 700,000 people, Dharavi in Mumbai India with 1,000,000 people, Neza in Mexico with 1,200,000 people, and Orangi Town in Karachi, Pakistan with 2,400,000 people (UN-HABITAT, 2014). These residential areas are characterized by sub-standard housing for low-

income earners where abject poverty is the order of the day notwithstanding the 1976 Vancouver Declaration on Human Settlements that recognizes housing as a basic human right and the Sustainable Development Goal (SDG) 11 of making cities and human settlements inclusive, safe, resilient and sustainable (Brennan, 1993, United Nation, 2019). The legacy of South Africa through its discriminatory past requires mixed tenure developments to be established going forward to reflect inclusive housing.

The concept of Mixed-Income Housing (MIH) is, therefore, embedded in efforts to reduce informal settlements, to reverse the inequalities of the apartheid regime, which can be traced back to the legislative actions through which land deprivation was orchestrated. MIH developments are placed in the hands of private developers and loss of government control on social housing can have negative effects on the supply of housing (Jones et al. 2012). Social housing plays an important role in integrating people of different ethnicity (Roux, 2007). However, Galster et al. (2012) shows that there is no consensus in academic literature on whether IHP is the best way through which the deconcentration of poverty and racial integration can be achieved, and sustained.

For the purposes of deconcentrating the poverty that is experienced in low income housing, an inclusionary housing policy is manifest in MIH developments which redresses apartheid discrimination in its residential markets. The current residential markets hinder integration, transformation, and equality in the newly democratic South Africa (SALGA, 2014). However, the development of MIH developments is marred by cases of amplified ‘Not In My Backyard’ (NIMBY) protests for reasons associated with loss of property value, increased crime, and overcrowding with regard to services and amenities. Globally, most governments are making great strides in trying to promote inclusionary housing. These efforts are, however, faced with high levels of NIMBY resistance. In South Africa, SAPOA (2018) predicts that the ‘financial feasibility’ of private developers in providing affordable housing units will drive

inclusionary housing in South Africa. On the other hand, it is undeniable that it remains the duty of national and local housing authorities to provide housing to low-income households. Thus, the economic and social effects of housing policies, initiatives, and programmes need careful assessment (National Housing Law Project *et al*. 2002). It is important that residential markets function properly in the context of policies, initiatives, and programmes being applied at present in the provision of housing in South Africa.

Government has invested a significant amount of funds towards inclusive housing as a way to mitigate the impacts of poverty. In the February 2014, it allocated a grant of R814 million to urban private investment development (National Treasury of South Africa, 2014). Aided by financial liberalization, South Africa is more involved in the provision of housing at national level (Gupta and Ndahiriwe, 2010). In 2004, the Bankers Association South Africa (BASA) pledged to invest R42 billion towards affordable housing by 2008. In this regard, there has been notable involvement of the private sector in solving housing shortages (National Treasury of South Africa, ibid). CAHF, 2017 (cited in Nurick et al. 2018) estimated a housing deficit of approximately 3 million. This number has actually increased by about 100,000 units a year (Goko, 2013). This shows how South Africa needs to come to grips with responsible investments in housing.

To promote MIH investments, government's eagerness to join hands with the private sector is evident in a statement to the Johannesburg Stock Exchange (JSE). The then Minister of Human Settlements encouraged JSE listed corporations to invest in housing (Human Settlements, 2012). Despite the substantial investments made by both public and the private sectors, housing debates still range from housing shortage, housing policy and future improvements needed to make residential markets a viable investment asset class that maintains value in the future (Fama and Schwert, 1977; Gruis and Nieboer, 2011). The 2016 government budget allocation to human

settlements and municipal infrastructure increased by 6.7% from R178.2 billion in the 2015 financial year to R182.6 billion (National Treasury of South Africa, 2016). By 2014, about R45 billion had been spent on the development of inclusive housing in Gauteng province alone (National Treasury of South Africa, 2014)

It is, therefore, logical to expect that such investments in a neighbourhood would have a positive effect on the existing housing market, yet there is a notable increase of NIMBY protests against mixed income housing (UNDP, 2010). In 2014, total mortgage balances reduced drastically from the highs of 27.6 % in 2004 to a lowly 4.3 % year-on-year percentage change as shown in Figure 1.2.

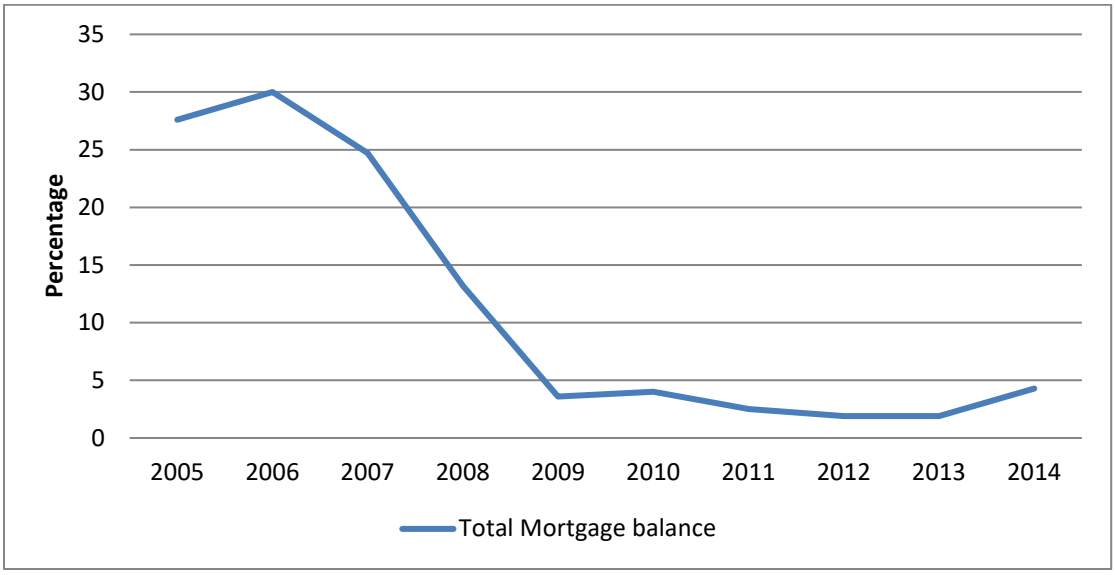


Figure 1.2: Mortgage Trends in South Africa for the Year 2005-2014

Source: Own Compilation using SARB data

There is a progressive shift in the way residential markets have developed globally; from distinctive low, medium, and high-income sub-markets towards Mixed Income Housing (MIH), which is a mixture of the three sub-markets (social rental housing, bonded housing, and the market rate housing). An MIH development is defined as a deliberate government effort to construct multifamily developments. This development

has the mixing of income groups as a fundamental part of its financial and operating plans which translates into mixing the poor and the rich (Smit and Purchase, 2006 in Klug et al. 2013). There is also evidence that better-off residents acted as role models who help poorer residents in finding better employment opportunities or raise expectations of attainment (Barker et al. 2008). Thus the argument is that households within an MI development should be local residents with a wide range of incomes and that such initiatives must be designed for those who fit into the surrounding neighbourhoods, who work and are already 'accepted' in the neighborhood (van Gent and Musterd, 2013; Jupp et al. 1999; Brophy and Smith, 1997). However, literature shows that there is no clarity regarding MIHs in terms of scale, intent, income mix, tenure type, or design (Crook et al. 2016; Bertumen et al. 2013; Ellickson, 2010; Levy et al. 2010). The concept of Mixed Income Housing (MIH) in South Africa is thus embedded in efforts to reverse the disparities of the apartheid regime.

However, there exists NIMBY 'Not In My Back Yard' opposition, whereby such change in land-use is purported to increase 'risks' of home ownership for reasons such as loss of value to property, increased crime, and overcrowding on services and amenities. This makes the approval processes for MIH developments highly contested and obstructed through the courts. This NIMBY opposition delays the housing supply processes, as it becomes very cumbersome and risky for stakeholders. Thus, NIMBY protest is a global problem as it elevates investment risks in the residential markets. 'Investment risk' can be defined as the possibility of losing the invested value relative to the expected return on any particular investment hence the higher the risk, the better should be the return. As investors view such controversies, they reduce the much needed investment funds into residential markets thereby slowing down progress towards affordable, inclusive, and sustainable human settlements.

To build MIH developments, approval processes are highly contested and obstructed through the courts because of what is widely known as the Not in My Backyard

(NIMBY) syndrome (Klug *et al.* 2013). Fischel (2001) identified NIMBY as anything that opposes land-use change in a way that increases risks of home ownership, as it is not easy to diversify homeownership risks. Fischel (*ibid)* sees NIMBY as a rational response to the uninsured risks of homeownership. These risks are most feared by homeowners as they cause devaluation of prices as land use changes. This is a situation where pressure groups oppose MIH developments for the associated problems, such as loss of property value, crime, and crowding on services and amenities (Ellickson, 2010; Galster *et al.* 2012). Goo (2017), adds other problems associated with inner city concentrated housing such as lower attainment of education levels, higher participation in criminal activities, teenage pregnancies, isolation from better paying employment. Zhang et al. (2018) observes that NIMBY indicates the necessity of public participation in urban development.

Overall, literature indicates that NIMBY is a highly contested issue in MIH developments, making residential markets a playground for inclusive housing policies and some intended and unintended externalities. Policies that change residential markets become vital in guiding the journey through urban poverty amelioration and racial integration. South Africa, like many other countries, has used Inclusionary Housing Policy (IHP) as a distinctive urban policy to do away with the discriminative spatial planning of the apartheid era. The result of such policies has created neighbourhoods with mixed typology housing development that include low, medium, and high-income housing.

So far, developers are not required to comply regarding inclusion of some affordable units in a development. Nonetheless, investors in residential markets always assess risk associated with MIH developments before they develop them. Through investment decision models, investors are able to carry out the definitive assessment of such risk from a probability sensitivity analysis when countries decide on legislating IHP rather than leaving this as policy. Mixed income housing developments have become

common in most countries, including the United States of America (USA), certain European countries, and South Africa.

The nature of research in South Africa has largely been descriptive desk studies (Onatu, 2012; Prinsloo, 2008; Smit and Purchase, 2006; Smith et al. 1988), the results of which regarding key investment guidelines on MIH development are limited . The review of literature shows that the negative perceptions in South Africa, which often lead to NIMBY, are largely based on heuristic judgements, with little solid evidence of the purported negative effect of MIH developments on house prices. The dearth of rigorous studies in this regard reveals a research gap in examining the effect of an MIH development on house prices and this has a bearing on the viability and sustainability of MIH developments. While MIHs are common in other countries, MIH developments in South Africa are still in their infancy stage due to the country's political past. In South Africa, it is unknown how current mixed income housing can be modified to reduce NIMBY protests in a way that makes MIH developments viable and sustainable, thereby stimulating and enhancing private sector investments.

1.2 The Problem Statement

NIMBY opposition to MIH developments delays the development process, which reduces investment funds into such housing developments and individual units as it becomes cumbersome and risky for stakeholders. Despite the need for South Africa to refine housing policy in ways that encourage spatial transformation and the preponderance of NIMBY protests, country specific studies on Mixed Income Housing (MIH) are non-existent in developing countries. The NIMBY phenomenon persists and at times, ends in courts of law (Klug et al. 2013). This is due to the perceived property price-lowering effect of such developments on neighbourhood house prices, a risk that is uninsurable to a homeowner. There is a gap in knowledge regarding MIH developments' actual effects on house prices, given the negative perceptions

surrounding the development of MIH. South Africa lags behind in providing robust analysis towards this effect yet most cities experience housing shortages and 'service delivery protests' in the case of South Africa. These protests cause insurmountable pressure on both government and the private sector to find practical solutions that can minimize NIMBY opposition in future MIH developments.

1.3 Justification of Study and Research Gap

Most research on NIMBY opposition is found in the USA and Europe (van Gent and Musterd, 2013; McConnell and Wiley, 2010; Calavita and Mallach, 2010; Van Ham and Manley, 2009; Voicu and Been, 2008 and Pollakowski et al. 2005). More questions than answers have been raised in literature regarding the basis and rationale for mixing people in a mixed income housing development, as highlighted by Galster *et al.* (2012:9) which questions the criteria for the optimal mixing of people through asking, "What is the amount of mixing in question? Which amounts, of which groups, comprise the ideal mix, or are minimally required to produce the desired outcomes? In the concept of scale, over what level(s) of geography should the relevant mix be measured? Does mixing at different spatial scales involve different causal processes and yield different outcomes?" Thus, the criteria for MIH developments is still an unsettled issue. As might be expected, a degree of dissent exists, which questions the documented virtues of MIH developments and whether those with higher incomes do in fact support those that are less fortunate in MIH neighbourhoods (Graham *et al.* 2009; Galster *et al*. 2010; Barker *et al.* 2008). Thus, it is necessary to put more effort into determining the guidelines that make mixing households possible via an indirect route of reducing the sources of 'direct' investment risk in MIH developments, which makes such developments viable and sustainable. 'Direct' investment in property implies ownership of the physical property.

Overall, a review of extant literature shows no empirical evidence in evaluating MIH developments' effects in areas where these models have been implemented in South Africa or how an MIH programme can be improved to reduce NIMBY opposition. The Department of Housing and Urban Development (HUD, 2003, p. 7) suggests, "Minimizing political opposition to NIMBY is possible through house price studies in the form of scientific measurement of the economic, social, and political benefits of mixed-income housing, as the issue remains an ongoing debate." This shows that there is no consensus in literature on how MIH developments can successfully be implemented, despite the concept being an old phenomenon.

1.4 Aim of Study

The study aims to investigate whether residential markets in South Africa indeed have a problem that manifests itself through high levels of NIMBY opposition when mixed income housing developments are being built as inclusive housing and what can be done to improve on such developments in the future.

1.5 Primary Research Question

Is there a substantial NIMBY effect on neighbourhood house prices emanating from mixed income housing developments resulting from inclusionary housing policy and how can the effects be minimised in order for residential markets to maintain value in the future?

1.6 Literature Questions

1. What does the evolution of housing policy and delivery approaches reveal in terms of mixed income housing developments?
2. How does a typical MIH entail in South Africa?
3. What are NIMBY effects and how are they measured?

1.7 Empirical Questions

1. Is the NIMBY effect of an MIH on house prices in South Africa substantial?

a. What is the effect of an MIH development on neighborhood house prices?

b. What is the critical distance point where an MIH has a zero effect on neighborhood house prices?

c. Does the NIMBY effect vary with the quality of the receiving neighborhood?

2. What are the key investment guidelines necessary for the implementation of a viable mixed income housing development in South Africa?

a. Should the development of mixed income housing be legislated?

b. What is the most viable and sustainable housing delivery model for MIH developments?

c. What is the best location and design of MIH development (quality, size, and uniformity?

d. What is the best way of mixing regarding composition of race, social economic status (income as proxy) of households?

e. Is there a better asset and property management strategy to achieve MIH sustainability?

1.8 Hypotheses

- **Hypothesis A1**

  Cosmo City MIH depressed house prices in its neighbourhood between 1995- 2016.

- **Hypothesis A2**

  There is no critical distance of ‘zero MIH NIMBY effect’

- **Hypothesis A3**

  The MIH NIMBY effects are dependent on the quality of a neighbourhood.

- **Hypothesis B.1**

  There is no need to legislate the development of mixed income housing.

- **Hypothesis B.2**

  A collaborative housing delivery mechanism improves the investment value of such developments.

- **Hypothesis B.3**

  Greenfield location of MIH developments creates planning gain, which brings suitable opportunities for improved design, quality, size, and uniformity of an MIH development. This makes such houses good investment assets as planning gains set in through development of infrastructure to support new developments.

- **Hypothesis B.4**

  It is possible to mix people of different backgrounds within MIHs regardless of race or social economic status following the multi-typology housing units within MIHs. This increases housing density, which is much needed for social/rental markets.

- **Hypothesis B.5**

  A private-market oriented asset and property management strategy has potential to achieve MIH viability and sustainability.

1.9 Research Objectives

Following the research questions above, this section presents the objectives of the research as follows:

1. To find out how housing policies and approaches have progressed in other countries in order to draw lessons for South Africa
2. To describe and contextualize a compelling case study in South Africa
3. To measure MIH NIMBY effects on the neighbourhood house prices of a case study through sub-objectives (a, b, c)

a. To investigate the effect of Cosmo City MIH on neighborhood house prices through Hedonic Price Modelling

b. To investigate if there is a critical ‘zero MIH NIMBY effect’ distance point.

c. To investigate if the NIMBY effects vary with the quality of the receiving neighborhood

4. To establish viable implementation investment guidelines for mixed income housing developments using interview data

a. To investigate whether inclusionary housing policy should develop into law or should remain policy
b. To examine the most viable and sustainable delivery model for MIH developments
c. To determine improved location and design of MIH development (quality, size and uniformity)
d. To determine the degree of mixing regarding race and social economic status (using income as proxy) of households
e. To determine an optimum asset and property management strategy for MIH developments to enhance the sustainability of MIH developments

1.10 Assumptions Guiding this Research

- Cosmo City MIH development case study affected all house prices in the hedonic data set.
- Investment theory provides sufficient basis through which guidelines necessary for improving MIH developments can be determined.
- The same guidelines are necessary regardless of the location of MIH developments in South Africa.

1.11 Research Propositions

Well-developed mixed income housing reduces the associated NIMBY and direct investment risk in ways that make such developments viable and sustainable in terms of maintaining value in the future. This may result into increases in housing supply, helping to address the dearth of housing for a particular demographic in South Africa.

1.12 Organization of the Research

The study is made up of eight chapters. The first chapter introduces the whole study in the form of context of the study, the research problem, objectives, results, and contribution of the study. In order to draw lessons on MIH developments for South Africa, Chapter 2 reviews literature and documents on how other countries have devised and implemented housing programmes and policies, through the evolution of housing policy. Chapter 3 develops two conceptual frameworks guiding the investigation on the MIH NIMBY effects on house prices and the necessary guidelines on how investment risk can be reduced with the aim of improving future developments in South Africa. Chapters 4 discusses the research design through Sections A (quantitative) and B (qualitative) Chapter 5 gives a comprehensive description of Cosmo City MIH in order to understand the current nature of MIHs in South Africa. This helped in formulating hypotheses tested in the studies carried out. Analysis of how a case study of Cosmo City MIH influenced its neighbourhood house prices is covered in Chapter 6, while Chapter 7 analyses findings on the qualitative research. Given results and findings from chapters 6 and 7, Chapter 8 provides wide-ranging conclusions, investment guidelines and suggestions for further studies as clearly shown in Table 1.3.

Table 1.3: Thesis Summary

Ch 1	**INTRODUCTION** • Summary of research, methodology, study results • Guidelines necessary to improve the implementation of MIH
Ch 2	**HOUSING POLICIES, PROGRAMS & INITIATIVES REVIEW** • The progression of housing policy • Debates, contradictions and agreements
Ch 3	**CONCEPTUAL FRAMEWORK FOR MIH NIMBY EFFECTS: SECTION A** • Theories and Previous studies **CONCEPTUAL FRAMEWORK FOR REDUCING MIH INVESTMENT RISK** • Theoretical review & empirical review
Ch 4	**RESEARCH DESIGN** **QUANTITATIVE METHODOLOGY: SECTION A** • Cosmo City MIH case study hedonic data **QUALITATIVE METHODOLOGY: SECTION B** • Guidelines to improve MIHs in South Africa • Site visit, documents and interview data
Ch 5	**COSMO CITY CASE STUDY DESCRIPTION**
Ch 6	**ANALYSES, RESULTS & DISCUSSIONS FROM HEDONIC MODELLING**
Ch 7	**ANALYSES, FINDINGS & DISCUSSIONS FROM QUALITATIVE RESEARCH**
Ch 8	**GENERAL CONCLUSIONS & RECOMMENDATIONS** • Summary of results, conclusions & recommendations • Contribution to knowledge and industry • Research limitations and further work

Source: Own compilation

CHAPTER 2: THE EVOLUTION OF HOUSING POLICY

2.1 Introduction

The study identifies eras during which housing policies emerged to shape contemporary housing policies, extending Burns and Grebler, (1977). The five eras identified clearly show the similar paths taken by many countries regarding land ownership, the justification and need for social housing, the power of capital in globalized markets and the need for inclusive housing (summarised in Figures 2.4 and 2.5). Thus, the chapter discusses the evolution of housing policies through five eras

a. The Feudal Aristocracy era
b. The Industrialisation era
c. The World War I and 11 era
d. Post World War: Governance and Rebuilding era
e. Democratic era: Globalization and Inclusive Housing era

The evolution shows that societies have always had people living separately depending on land ownership where those who own the land have been influential in creating policies that protect private rights. On the other hand, the poor landless peasants became the social class that requires government provision policies. Thus, housing policy is shaped by changes in political systems which are either left wing (social democratic) or right wing (conservative). Within the parameters of these political systems, social democratic governments are inclined to housing policies that support social housing markets, whereby governments are the proponents and subsidizers of social housing, including rental housing. Conservative governments, on the other hand, support housing policies that are pro-private markets and they are proponents of home-ownership without much government subsidization.

2.2 The Feudal Aristocracy Era (Pre 1700)

Through the stone and middle ages, the economies of this world were predominantly agrarian based, ruled by feudal aristocracy which based its power on land ownership, thereby creating economies that *separate* the rich and the poor divided as lords and peasants (Swenarton, 1981). The 'landed' aristocrats (approximately 1% of the population) owned the majority of land and wealth (Marcuse, 1986). While Europe was building empires, prominent empires in Africa also emerged which include the Kush in Sudan, Egyptian empire, Carthage in Tunisia, the Kingdom of Aksum in Eretrea and Northern Ethiopia, Mali, and Great Zimbabwe.

This marks the origins of inequalities present in modern day economies regarding land ownership and housing policies that support the masses or a few individuals (Bertocchi, 2006). These inequalities were instituted by the law of inheritance whereby primogeniture dictated the right of succession to the first born child and intestate passed on to the eldest son (Bertocchi, *ibid*). This formed the basis of inequalities found in modern-day economies whereby the owners of land were the masters while the majority of people were slaves by default. Apart from this era existing in Europe, Africa also had its production based on dynasties similar to empires in Europe, supporting the agrarian way of life which required manpower to farm the land. The replacement of powered machinery gave rise to the industrial revolution from approximately the beginning of the 18th century.

2.3 Imperialism and the Scramble for Africa (1881-Democracy)

Imperialism is a policy whereby a country extends its power and influence over other countries, typically using military force. The nature and force of this policy also brought slavery and colonialism from the middle of the 15th century in African

countries which were also ruled dynastically. The arrangements orchestrated the deprivation of urban land, and housing from indigenous people, a system that originated from the aristocratic supremacy of those who own land and the means of production. It is as a consequence of displacement and subjugation that government policy guidelines intended to address concentrated urban poverty do use terms such as racism, discrimination, and ethnicity in many countries. This is because inclusive policies can help reshape better growth patterns, as well as revitalize and retrofit dilapidated areas (Barnett, 2017). Hendler (1991) discussed a significant shortage of affordable housing, specifically for black African working class people in South Africa. Added to this is the influence of population increases in many countries, with Nigeria and China taking the lead in the increase (UN-HABITAT, 2014). Apartheid in South Africa made residential markets inefficient, creating a housing shortage of about 2.1 million houses (approximately 12.5 million people by 2011) (Human Settlements, 2016). Thompson (2001) clearly shows how under apartheid pieces of legislation were used to deprive black people in South Africa of land.

After the Anglo-Boer, war had ended in 1902, and the Treaty of Vereeniging in 1910, the first prominent piece of land legislation was the 1913 Native Land Act 27, which classified all people into racial group areas. Through this act, Africans were banned from owning most of the land as it was reserved for the white race and known as ‘territories’ or colonies, while the black race was consigned to rural lands, which were called ‘homelands’. The territories, which were assigned to Whites, were the Cape Colony, Natal, Transvaal, and the Orange Free State. Over time, African labourers were required for mining and farming in these territories. This phenomenon made the rural-urban income differentials attractive and forced black South Africans to move into the territories in search of better opportunities (Maasdorp, 1975).

However, this deprivation created a major housing shortage in the territories. Later, in the early 1920s, the Housing Act 32 (1920) and the Natives Urban Areas Act 35 (1923)

created living spaces for black Africans, Coloureds, Indians, and White races in the urban areas. After the 1948 election, the National Party, following the example of the British and the Trek Boers before them, decided to severely curb the movement of Africans in the urban regions. Subsequently, the Group Areas Act 41 (1950) physically separated people into different racial residential areas. Thus, through the Group Areas Act and the Population Registration Act of 1950, land became the restricted possession of the white racial group. Property transactions were not permitted for Africans who were, from thereon, deemed 'disqualified persons'. Without the ability to own or rent property, informal settlements sprang up as the only accommodation available to Africans from the homelands. Figure 2.1 shows some informal settlements where many people live without access to basic amenities, and infrastructure.

Due to lack of education and a lack of skills, these settlements became hubs of unemployment in South African urban areas (Seekings *et al.* 1998). These settlements still harbour concentrated poverty, lacking physical infrastructure, and social amenities. Thus, for a long time apartheid made South African residential markets inefficient, and created a housing shortage of about 2.1 million houses (for approximately 12.5 million people) by 2011. Beginning in 1994, the new democratic South African government began to redress this problem through constitutional changes, and policies, as it was a key election promise by the now governing African National Congress (ANC) (Dhladhla, 2014). Thus literature clearly annotates how apartheid policies ultimately still define South Africa's residential markets (Ajayi, 2012).

Lack of access to land, especially serviced land for housing, is one of the major problems faced by many African cities (UN-HABITAT, 2014 and Thellane, 2008). This is because many African countries, such as in South Africa, Zimbabwe, Ghana, and Nigeria still have traditional land tenure. The severe shortage of well-located, serviced land for housing has worsened with urbanization. Zimbabwe provided

serviced plots for housing from the late 1970s until the 1990s. This effort, however, missed some low-income target groups owing to the high eligibility standards, which the government required for both infrastructure and housing (Rakodi and Withers, 1995, Gous, 2018).



Figure 2.1: Typical Informal Settlements in South Africa
Source: Gous, 2018

Beyond slavery, colonialism, and apartheid there are other problems and challenges that detract from housing provision. Brennan *et al.* (2007) are of the view that to improve housing, countries have to change in terms of approaches to honesty, efficient civil service, efficient tax systems, and intoleration to corruption. Tipple (1994) cites the need for a functional stability between market forces and government regulation, as market forces are efficient but sometimes market failures exist in such unequal countries. Mooya (2010) cites the lack of title deeds as a hindering factor to home-

ownership which largely requires collateral for mortgage financing. Mostafa *et al.* (2006) find that a market-oriented housing in China reduced homeownership after the abolishment of a welfare oriented housing allocation systems in 1999, a view contrasted by Xiao *et al*. (2016). Many argue that the lives of those in low-income households' could be simplified and improved by issuing them with property titles. While this method is workable, the advantages of legalization are frequently overstated, as postulated by De Soto (2000). His argument is that legal title does not automatically stimulate private sector lending to the poor. It does not accelerate housing improvement, nor does it automatically result in appropriate services.

Legal title is only one part of a much wider set of housing needs. However, title deeds can protect the value of assets of the communities that own them against the more destructive effects of freer markets on susceptible communities, social assets, and the physical environment (Polanyi, 2001). Thus, Polanyi (2001) recognized early on that housing provision could not be left wholly in the hands of the private sector. However, Kleit and Page (2015) found that most public housing institutions are keen to cut dependency on government-based funding for their mandates to reduce the housing shortage, and poverty.

The other priority is to prevent illegal developments emerging as part of urban development. The argument is that providing the poor with title deeds channels more lending to the poor. De Soto's (2000) influential ideology on titled land at the lowest levels of household income has attracted followers in the literature owing to his position on the power of land titles to reduce poverty in urban markets. Nonetheless, private sector financial mechanisms have rarely been effective in reaching poor households. According to the World Bank (2016), few banks are prepared to lend to the poor and even the micro-finance sector seems reluctant to lend to low cost housing. As a result, housing loan facilities are predominantly given to middle and high-income

individuals instead of the poor who need them the most (National Department of Human Settlements, 2004, and Mooya, 2010).

Housing policies that reduce corruption in most African countries play an important role in creating appropriate accommodation for the disadvantaged as corruption diverts the benefits away from the intended urban poor. To try to reach the intended beneficiaries, the World Bank and other development agencies encouraged the upgrading of 'slums' in the 1970s and 1980s. In many developing countries, the majority of national housing policies and guidelines, alongside wider market liberalization processes, have seen a paradigm shift towards the privatization of government-owned 'public' housing, together with various legal reforms that abolish rental protection. This has ultimately decreased affordable rental housing options in many African countries. The irony is that while public provision has reduced, there has been minimal private low-cost housing production to fill this gap. However, housing that is affordable for low and even middle-income households is rarely profitable for the private sector. This curtails housing supply in developing countries.

2.4 The Industrialization Era

The use of powered machines gave rise to industrial revolution from circa 1700. This meant that capital overtook land which had previously been the only factor of production (Swenarton, 1981). However, mass production in manufacturing industries meant that people (workers or labour) lived in cramped and dilapidated conditions. In this era slum conditions threatened the health of people (Swenarton, 1981). It was in this era that rich merchants began to challenge the aristocratic powers, demanding freedom from feudal control and the end of agrarian elitism over democratic capitalism (Bertocchi, 2006: pp 23). Capital belonged to the right wing bourgeoisie classes which believed in slave relationships whereby people were only viewed as workers whose job was to provide labour to capital as factors of production (Doepke and Zilibotti, 2005).

This era predated modern day capitalism as landed aristocrats maintained power through armed forces for protection where the industrial revolution had little power to stop the aristocrats securing political power (Dewald, 1996 in Bertocchi, 2006) During this era, the divide between the aristocrats and the peasants grew and more affluent households benefited from better lifestyles with luxurious housing supported by servants. The disadvantaged lived in neglected, overcrowded substandard housing. There was, indeed, a marked contrast between this substandard housing and the houses of aristocrats (Bertocchi, 2006).

2.5 World War Era (Post 1914)

As the era of industrial revolution matured, another revolution began to unfold (World War 1 and 1I) whereby empires clashed in 1914. Subsequent to WW1, empires were left in ruins where migrants in search of peace moved across the world. World War 11 lasted from 1939 to 1945 when great powers formed two opposing alliances. This war was the deadliest conflict in history, with most deaths occurring in the Soviet Union and China. The war pitted the axis powers of Germany, Italy, and Japan against the allies, France, Great Britain, the United States, the Soviet Union, and China. The holocaust occurred during this conflict, as did the only known use of nuclear weapons. In terms of housing, in its aftermath, people lived in crowded housing, often eight people sharing a room because of displacement caused by the war (Ellickson, 2016). The exigencies of these protracted global wars did much to dismantle the divisive nature of hierarchical class-structures and nation states owed unprecedented debts to their proletariats. This marked the beginning of state-owned housing or council houses, built through better planning efforts such as the Housing and Town Planning Act in 1919 in the UK. This type of initiative was a response to the parlous pre-war housing conditions which led to and the spread of such diseases as TB, infant mortality, overcrowding, household pests, and wider planning issues (Stewart, 2019).

2.6 Post World War – Era of Reconstruction

After the war, demand for affordable housing grew and made public housing projects a necessity in most European countries. In fact, after the wars, most countries accepted public intervention beyond regulatory measure (Burns and Grebler, 1977). In the USA, and most European countries the orientation of housing policy in terms of public (social) or private housing (homeownership) after World Wars I and II was pre-determined according to which political party was in power. Indeed, studies in countries such as Austria, the Netherlands, the UK, and the USA show that there is a clear relationship between government political orientation, and housing policies.

Gowan and Cooper (2018) explains how in Austria, the Social Democratic Workers directed housing policy to support the rented social housing market, away from the home-ownership model of private markets, and managed to provide affordable housing to low and middle-income people. The success story of housing in Austria is linked to municipal housing that is pursued as a policy goal where three in five residents live in houses owned, built, or managed by the municipal government.

According to Gowan and Cooper, (*ibid*) Government used the arms of the constitution (constitutional reforms), which imposed laws such as the progressive tax, the luxury housing tax on apartments and houses, and vacant land tax, which helped the government to purchase land and its removal from the speculative market, and supplying building materials and loans. Thus, not only was social housing built in this way, but also theaters, concert halls, and recreational facilities. One of the success factors of social housing in Vienna, the capital of Austria, is that very good quality social housing was built as mixed income developments, reinforced by the pillars of social housing that include the four elements of good design, strict construction cost controls, energy efficiency, and environmental requirements. Thus, it is clear that the Austrian government’s efforts also extended to the rehabilitation of urban

environments. Social housing in Austria was delivered through municipalities (the largest property owners) and the Not for Profit Association (NFPA), which is required to reinvest profits in social housing.

Apart from Austria, another good example is the Netherlands where government has remained committed to welfare housing policies, although in its quest to make affordable housing sustainable it has tested market-oriented delivery systems. According to Hoekstra (2016), the share of social housing is high in Netherlands, which is 50% of all housing. Dutch social housing is managed by Housing Associations (HA), which are defined as private organizations with a public task. The Dutch government financed housing associations by means of subsidies in order to meet a housing shortage, especially in the wake of WW 11, up to the 1980s. Since 1995, the housing associations gained financial independence from government, and their debts were written off against future government subsidies. This financial liberalization led to a more market oriented delivery of housing, which supported home-ownership (Aalbers *et al.* 2017). More municipal housing companies were transformed into ordinary housing associations.

Qian et al (2019) explain that in Netherlands, the aim of the government was to finance housing through the private market, after which the private sector gained control, and the government stopped financing HAs. Thus, government concentrated on regulating the provision of the social components since HAs now were market oriented. Through the Social House-Building Guarantee Fund, HAs were enabled to borrow from the capital markets at lower interest rates since the loans were guaranteed. In order to be self-sufficient and financially viable HAs performed urban regeneration, social programmes, and public-purpose buildings. They became active in property development and management, developing the market for rental houses, and building expensive houses for higher income generators (Qian *et al. ibid*). Thus, the income generated by the HAs through buying and selling expensive homes was sufficient to

cover investments in new affordable housing, refurbishments, and neighbourhood regeneration, as well as community investment (Aalbers *et al.* 2017). Thus, for a while, HAs functioned without any direct government grant, and benefited from the Social House Building Guarantee Fund, which had low interest rates for the needed capital (Aalbers *et al. ibid*). As previously found by Hoekstra, (2016), financial returns for HAs in Netherlands improved because of the low interest rates and the increases in house prices, which assisted HAs in extending their activities in social housing, and inclusionary housing policies. However, this success did not continue as mismanagement and fraud were discovered, causing internal political strife (Hoekstra, *ibid*). HAs had also complicated matters by embarking on risky investments through derivative investments when the global economic meltdown of 2008 supervened (Aalbers *et al.* 2017). Government stopped grants to HAs when it faced a financial crisis. The experiences of the Netherlands' housing policy shift from welfare to private oriented markets has brought better perspectives to bear on the use of housing equity tax systems, where central and local housing is refocused on social housing solutions for middle and low-income groups to achieve inclusive, and competitive societies (Elsinga, 2017).

In the UK, Labour versus Conservative governments shaped housing policies in favour of the private oriented market. Before World War I, the common tenure in the UK had been private renting delivered through private enterprises. The post-war left-wing Labour government delivered high quality flats through local authorities known as council housing, using subsidies from central government. Council building further increased after World War II through the 'homes fit for heroes' Social Housing (SH) programme (Swenarton, 1981). This drive extended to slum clearance and urban regeneration efforts, such that SH eventually superseded private renting in the 1970s, which had been the main form of tenure in Victorian times (Tunstall and Pleace, 2018). However, the delivery of social housing through municipalities faced problems associated with corruption, and low quality housing (Tunstall and Pleace, *ibid*). It seem

that the conservative political right wing then was able to appeal to voters through ‘rent to buy’ campaigns, which effected policies for home ownership. The policies meant that more public land was released, planning restrictions were eased, and this stimulated the building of new housing (Swenarton, *ibid*). UK policies leveraged private finance for the provision of affordable housing as a set of measures in response to economic and political imperatives, and opportunities (Stephens, 2005 in Berry *et al.* 2006). According to Berry and Hay (2014), these imperatives will always re-balance.

This effort achieved significant results because of effective planning, and led to the use of private investments and the implementation of rules, which allow for cross subsidization in financing housing developments that are in a mixed use setting (Malizia, 2014; Berry *et al.* 2006). The policy unlocked land for HAs and other social housing providers to use. Local authorities were the custodians of social housing until 2011 when HAs superseded them in this function through the cumulative impact of stock transfers. The UK has since minimized social housing in favour of private renting, which encourages home-ownership and investor ‘buy-to-rent’ markets. Thus, low-income housing in the UK is no longer public oriented but rather more private market oriented.

In the USA, housing policies shifted between the Democratic Party (DP) and the Republican Party (RP).The DP represents a more liberal outlook, which supports government-housing subsidies, than the RP, which supports market-oriented policies. Gowan and Cooper (2018) found that America faces a major shortage of affordable housing, since 50% of all renters pay more than 30% of their income on rent. Gowan and Cooper (2018) suggests that the private market focused policies in a way that caused this problem. Since the 1960s, the US Federal policy has shifted from public housing to Public Private Arrangements in which private companies, both non-profit and profit enterprises, build and manage social welfare housing. These housing PP

programmes achieved the intended goals. However, inefficient underwriting, weak management, and economic hard times, have precipitated real deterioration which in turn has badly buffeted many of these projects. Housing advocates produced programmes and procedures to rescue troubled projects by strengthening their finances and conveying them to responsible parties (Vale and Freeman, 2012). The 1980s saw the end of housing subsidies, thereby redirecting the low-income housing into expensive private market housing. Mixed-income projects such as Stuyvesant Town and Cooper Village in the state of New York are examples of social housing, which were converted to market housing programmes. In most cities, residential rentals far exceed the median income, thus placing home-ownership beyond the reach of the poor, as the household incomes are not adequate to pay for rent.

The delivery of social housing in the USA is more active in the market sector, which is characterized by high prices that poor people cannot afford, than in the social sector. This means the law of demand and supply, too, affects social housing, where property increases in price as the stock decreases. While the American housing policies are market oriented, the social market has been provided for through direct subsidies, tax breaks, and voucher systems. The shortcoming that the US does have is that it provides finances for affordable housing without further regulation, monitoring, or controls which leaves the developed housing in the full control of the private market, which actually makes supposed affordable housing units unaffordable. This has reduced the supply of housing in the USA (Gowan and Cooper, 2018). There was also no evidence that such a mixed housing typology had enhanced social capital although it appeared to have relatively improved the well-being of some residents (Barker *et al.* 2008).

Ellickson (2009, p. 34) also contends that “inclusionary housing policies, such as the federal programs in the US, are mediocre in the sense that the resources devoted to them could be far better allocated otherwise.” The main reason why inclusionary housing is supported is for political ‘gain’ as it reflects well on governance (Barker *et*

al. 2008; Delorenzi, 2006). In fact, Ellickson (2009) argues that MIH developments do contribute to the high cost of housing in the areas they are built due to gentrification, which leaves poor households unable to afford the housing. He instead argues for a government voucher system, where individual households are supported into affordable housing, claiming that such a system that can disperse people across all housing markets (Ellickson, *ibid*). Thus, the more genuine reason for supporting MIH developments lie in financial interests and anti-market ideologies pushed by social housing advocates and their associated organizations.

2.6.1 The End of Apartheid in South Africa

The end of apartheid in 1994 brought the public sector closer to fulfilling housing as a human right through various programmes. On the other hand, gated residential developments continued to grow. Figure 2.2 shows gated communities have increased in the greater Johannesburg area, especially in Johannesburg City (Landman and Bardenhorst, 2012). In this globalized world, inclusive cities in the form of MIH developments are better than gated communities as such developments provide investible quality housing (Osman *et al.* 2011).

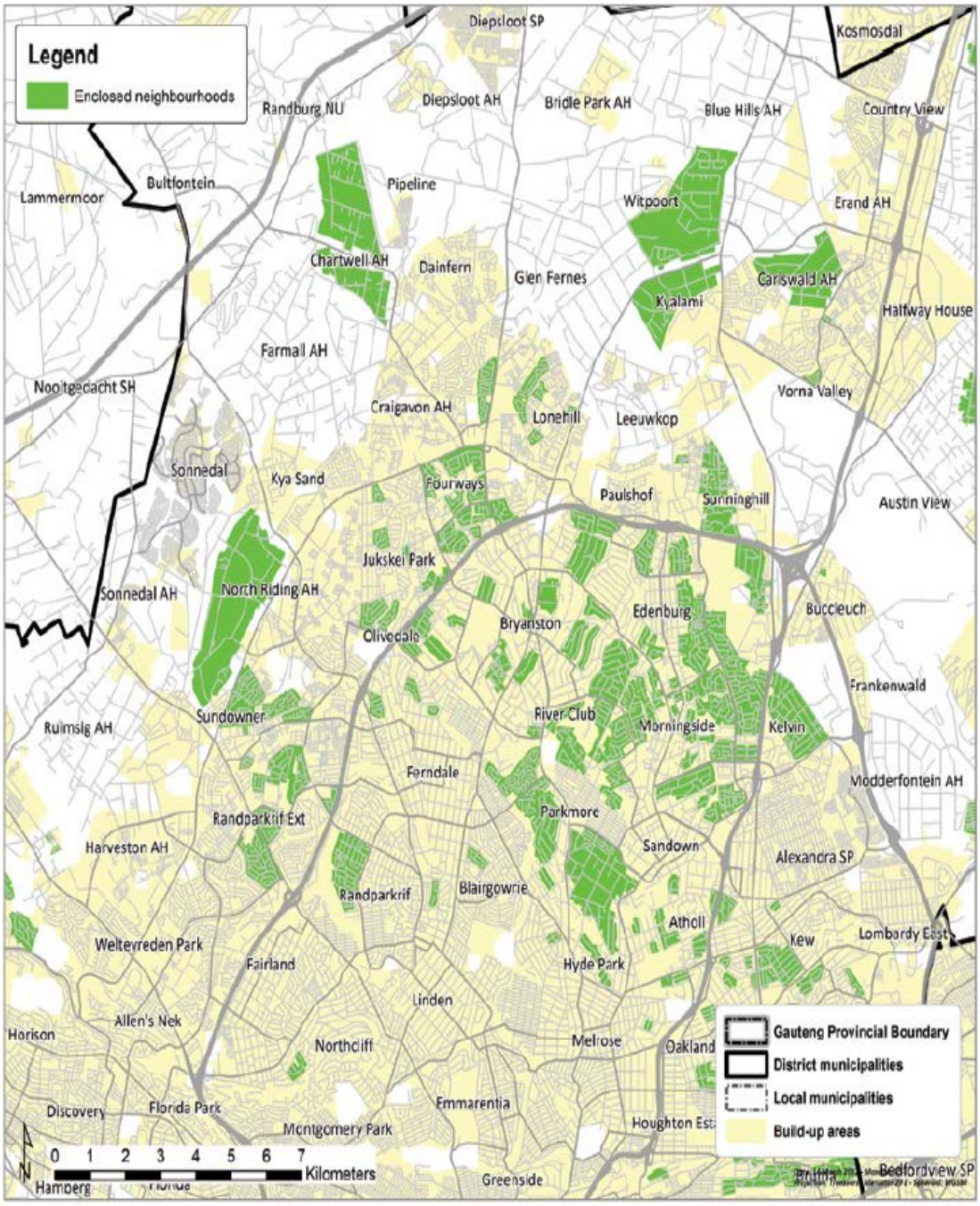


Figure 2.2: Distribution of Enclosed Neighbourhoods in Greater Johannesburg
Source: Landman and Bardenhorst, 2012

a. The Reconstruction and Development Programme (RDP)

The Reconstruction and Development Programme (RDP) was the first major housing programme introduced by the government at the dawn of democracy in 1994, and was envisioned by many people as a solution for the advancement of the poor. This programme earmarked households that earn R0 to R3 000 per month, covering the full cost of an RDP house. Ajayi (2012) documents that about 1.5 million housing units were built between 1994 and 2003, and a further 2.2 million units were completed by 2009.

Overall, the RDP policy recorded the successful delivery of 3.7 million housing 'opportunities' between 1994 and 2016 (Human Settlements, 2016). Through this effort, 73,4% of households had access to piped water inside their houses, while 57% had flush toilets and by 2012 84,7% had electricity (Human Settlements, 2012). Unfortunately, literature records that the applied policies attempted to address housing shortages in urban areas in a manner that was arguably reminiscent of apartheid's racial markets (Verster, 2009). Hadebe, (2012, p. 119) summarized the situation as: "The houses are still located far from the places of work and they are so small ($40m^2$) and there is overcrowding. The sizes of the sites are small and the sanitation provided unacceptable. The recreational facilities are nonexistent. Beneficiaries expressed dissatisfaction with the educational facilities."

In addition, Tomlinson (1998), Jones and Datta (2000) agree that institutional blockages, disintegrated delivery, and insufficient budget caused the RDP to be opposed. To counter this problem, the National Home Builders Registration Council (NHBRC) was established to improve standards. In addition, builders had to pay a warranty to guarantee against inferior building (the 1998 Housing Consumers Protection Guidelines Act). Tomlinson (1998), in Mackay (1999), finds less lending towards RDP housing due to poor quality. The banking sector had suffered losses from township lending in the 1980s that damaged the government mortgage lender,

Khayalethu Home Loans and holding properties, in the issue of non-performing loans of close to R2 billion in 1994. Due to these complications, a Memorandum of Understanding (MOU) to invite the private sector to lend for affordable housing was signed in 2008. This shows a housing policy preference for the private sector as an ideal housing delivery system. Figure 2.3 shows an RDP housing settlement in Panel B, which is no great improvement on the previous apartheid housing provision (Landman, 2010; Verster, 2009; Osman and Karusseit, 2008).

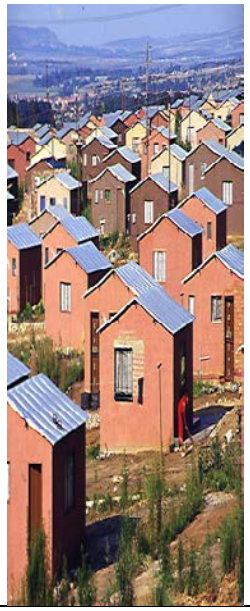
Panel A : Apartheid low- income housing	Panel B: Public provision (RDP) low-income housing	Panel C: Mixed-income housing such as Cosmo City
		

Figure 2.3: The Transition of Residential Markets in South Africa
Source: Adapted from Verster, 2009 & Sibanda, 2017

Jones and Datta (2010) clearly articulate that initially the government aimed to achieve a people-centered programme, yet the subsidy amount was only accessible to land developers, and contractors. Due to this form of flow of finance, the subsidy was later revised to allow individual people access in the form of serviced sites.

b. Community Residential Units (CRU)

Literature suggests that the only difference between this form of housing and the RDP housing, explained earlier, is that CRU programme units are rental units in inner city buildings and in hostels for households who earn between R800 to R3 500 per month (Marais and Cloete, 2017, Ajayi, 2012, Huchzermeyer, 2000, Tomlinson, 1998). This shows the extent to which the government is trying to help households afford housing. The CRU programme requires that indigents and old people are able to pay an affordable amount for rental, utilities, and services. Marais and Cloete (2017) see an opportunity for this kind of housing to be built in prime areas. There are also other programmes, such as informal settlement-upgrading, emergency, or transitional housing programme, and the social housing programme that directly links to other existing programmes (Pienaar, 2010).

c. Upgrading of Informal Settlements Programme (UISP)

Informal settlements are undesirable, yet they still exist in most cities and probably are the main reason for the increase in gated communities (Landman, 2004). The current informal settlements in South Africa calls for a deeper understanding in reforming urban planning beyond an ‘orderly’ development as this puts human face to South African cities which excludes the rights of the poor to urban land (Huchzermeyer, 2009). Informal settlements in South Africa are an undesirable phenomenon where violence and crime are shaped by deep socio-economic inequalities of the past. Meth (2017) agrees that spatial designs of urban areas and housing also play a role in increasing crime. To cater for informal settlements, the public sector used UISP to provide electricity, running water, sanitation, and build roads within existing informal settlements. This does not necessarily include building houses. Under this programme, a household is able to apply for a construction loan and the applications for funding through this programme are administered by municipalities that identify informal

settlements through the provincial department's Member of the Executive Council (MEC) (CAHF, 2012).

d. Finance-Linked Individual Subsidy Programme (FLISP)

The Finance Linked Individual Subsidy Programme (FLISP) model enables qualifying households to acquire a first-time home by providing a once-off subsidy amount between R10, 000 and R87, 000, depending on the individual's monthly income (Bah *et al.* 2018). This programme targets the housing 'gap' for households that earn between R3 501 and R14 999 per month, and it works via banks' with grants from the National Housing Finance Corporation (Centre for Affordable Housing Finance (CAHF), 2012). In South Africa, the NHFC is guaranteed by the Department of Housing and the Association of Mortgage Lenders against defaults.

These loans were managed by a new public-private organization called Servcon Housing Solutions (Pty) Ltd. Thus, Servcon refinanced properties that could not be repossessed. Households could transfer to a tenancy agreement offering households the opportunity to move to more affordable accommodation, or by renegotiating the original loan package. This programme is necessary given that banks remained reluctant to lend to the inhabitants of these townships for fear of the default 'culture' that was linked to political objections against apartheid (Dhladhla, 2014; Ajayi, 2012; Mackay, 1999; Rakodi and Withers, 1995). This programme is considered a successful provider of private sector oriented housing finance through the public sector.

e. Social Housing Programme (SHP)

Under this programme, government is the major stakeholder and the Social Housing Regulatory Authority (SHRA) carries out the tasks. Municipalities and local government play roles in locating Integrated Development Plans (IDP) of the National Housing Code of 2006. This is done with the aim to identify, finance, package, and release land parcels for social housing projects, and to establish collaboration with

delivery agents such as Social Housing Institutions (SHIs) to ensure programme success with grants from the government (CAHF, 2012). These SHIs do the actual work of providing social housing in restructuring zones that have been identified by municipalities. This makes the planning, building, and renting of the projects less expensive. SHIs target households that earn between R3 500 and R7 500 per month and that do not own property.

Generally, the grants SHIs receive from the government and SHRA leave a shortfall, and the SHIs then have to borrow from government-funded institutions such as the National Housing Finance Corporation. SHIs have to recoup it through rentals that also have to include the costs of maintenance, services, and the development of new units. Literature indicates that more than 20% of South African households are tenants in social housing units. The demand for such units is ever increasing, as more than 40% of the urban populations are slum dwellers for whom social housing represents a significant improvement (UN HABITAT, 2005).

However, there are challenges that this policy faces, which include the slow delivery of new units, failure of households to pay rent even though it's low, and certain councilors selling land to private developers at inflated prices for private gain (CAHF, 2010). Apart from its social and political obligations, there still is a need to unlock social returns for government on social housing, as it has become an essential component for MIH, a view shared by Gruis and Nieboer (2004). Considering that social housing is a component of MIH, it is critical to incorporate asset management strategies to make sure that all typologies within the development complement each other in order for the development to be viable (Fraser and Kick, 2007).

2.7 Inclusive Urban Planning Era

2.7.1 Inclusive Housing in Developed Countries

Inclusionary housing policy is necessary in developing countries if they are to move away from concentrated low-income to more multi-tenured residential markets (Landman, 2012; McIntyre and McKee, 2012; Calavita and Mallach, 2010, and e *et al.* 1999). Developed countries such as Austria, the Netherlands, the United Kingdom (UK), and the USA have made concerted efforts, and are pioneering countries that had an inclusionary housing delivery system known as 'social housing' in the early 1920s. The policy was mostly voluntary until 2000 when it was incorporated into national legislation (McIntyre and McKee, 2012). In the UK, the concept is termed 'social mix,' which stems from a concept of Jupp *et al.* (1999) about 'pepper potting'; the implication being that low-income people are re-housed or 'scattered' across better income neighbourhoods to reduce problems associated with concentrated poverty.

The Netherlands initially required new and larger-scale housing developments to set aside a minimum portion of the housing units for social housing (Galster, 2004), a model known as 'mixed districts' with mixed residential environments potentially creating opportunities for the poor when they learn and adapt to the ways of high-income people (Galster *et al.* 2010; Musterd, 2004). In Sweden, through the Swedish Development and Justice policy (1998), mixed income housing sought to improve life opportunities, and the social inclusion of disadvantaged groups (Delorenzi, 2006, Galster, 2007). For Spain and Italy, lack of rental housing, especially for immigrants, gave rise to the need for inclusionary housing to boost development in otherwise privately owned housing areas. In Spain, developers are building for the rental market, which is required in the form of inclusive housing (Calavita and Mallach, 2010). Overall, the need to dismantle the distinctive low-income housing typology that

prevailed in many European countries was the main driver for IHP (Atkinson, 2005; Tunstall and Fenton, 2006).

This review discusses the intended goals of Inclusionary Housing Policy, and its resultant mixed income housing. These new housing initiatives are known as inclusionary zoning, mixed housing typology, among many other labels. Mixed Income Housing (MIH) is a complex phenomenon extending beyond the boundaries of politics, geography, real estate economics and investment, sociology, psychology, law, planning, and development. Literature suggests that MIH developments are able to reduce malnutrition, high unemployment rates, high school dropouts, and crime rates (Kempen and Bolt, 2009).

Despite these evidently virtuous side effects, pressure groups routinely take government to court to try and block housing developments that are required to include a percentage of housing units for low-income households within an otherwise 'market rate' MIH development (Hughen and Read, 2014). This means that for an MIH to be successful in South Africa and elsewhere, it has to pass the investment risk screening criteria, as understood by the housing beneficiary, government, and the private stakeholders in a comprehensive way. In fact, Khadduri and Martin (1997, p. 63) concluded: "Most of the HUD-assisted multifamily stock, mixed-income housing does not depend on the continuation of project-based rent subsidies or affordability restrictions. Merging this mixed housing into the unrestricted private rental market would mean that as long as tenant-based assistance is available to present residents and other very low-income families, mixed-income housing could exist without a special policy to create it." This suggests that MIH developments are better suited to private initiatives and, hence, they must be developed and evaluated using investment theoretical perspectives. After the benefits of inclusionary policy became clear, MIH developments were built in Europe and the US. However, South Africa has embraced

inclusionary housing policy as a way to do away with concentrated low-income housing.

The concept of Mixed Income Housing (MIH) is, thus, embedded in efforts to reverse the disparities brought about by the apartheid regime, and the government has used the public sector support to deliver housing to low-income households. Government has promulgated a number of initiatives to boost supply of housing, which include the Reconstruction Development Programme (RDP), Community Residential Units (CRU), Informal Settlements Upgrading Programme (ISUP), Emergency Housing Programme (EHP), Linked Individual Subsidy Programme (FLISP), Social Housing (SH), and Breaking New Ground (BNG). These government efforts since 1994 are summarized in Table 2.1

The management of these types of housing is undertaken through the Municipal Housing Demand Database, and the National Housing Needs Register (NHNR). However, public sector housing provision in South Africa is not without limitations, and challenges. These programmes still had shortcomings in reducing housing inequalities and the supply of adequate housing assets.

2.7.2 Inclusive Housing in South Africa

The Breaking New Ground (BNG) programme aimed to correct the failures of the RDP subsidy housing system (National Planning Commission, 2014; Ajayi, 2012; Hadebe, 2012). To this end, the BNG requires better-located housing developments, more diverse housing forms, informal settlement upgrading, accrediting municipalities for housing delivery, as well as linking job creation and housing. This progression of policies collaborates with a business model for dealing with housing provision. This

Table 2.1: A Timeline for Affordable Housing Provision in South Africa

Year	Government Initiatives
1994	Housing rights enshrined in Constitution.
1996	NHFC registered as public company with four main divisions: Niche Market Lenders, Housing Equity Fund, Housing Institutions Development Fund, and Rural Housing Loan Fund (RHLF).
1996	National Housing Finance Commission (NHFC) established as micro-financing tool for incremental housing, capitalised with R880 million.
1997	Social Housing Foundation was established under NHFC to generate and establish social housing sector.
1998	Subsidiary company, Gateway Homeloans (Pty) Ltd, established to deliver housing to income bracket of R25 000– R60 000 and promote secondary home loans in low income housing sector.
1998	NHFC and City of Cape Town form a 50/50 joint social housing venture called Cape Town Community Housing Company (CTCHC).
1999	Loan book records a balance of R1 billion and NHFC Sponsors and co-founds Micro Finance Regulatory Council.
2001	Government restructures existing institutions into divisions: Alternative Tenure, Incremental Housing and Home Ownership. RHLF and Social Housing Foundation become independent entities.
2002	Government provides technical assistance to draft Community Re-investment Bill, and tasked with implementing Presidential Job Summit Housing Pilot.
2004	The total asset base reaches R1.4 billion. Responds to government's 2004 Breaking New Ground strategy by broadening and deepening access.
2005	NHFC helps government negotiate signing of MoU between Minister of Housing and Chief Executive Officers (CEOs) of four major banks.
2006	NHFC plays key role in forming National Credit Bill and assisting with founding of Regulatory Institution for National Credit Act.
2008	NHFC and Old Mutual eestablish Housing Investment Partners (HIP), developing innovative income linked home loan product.
2009	NHFC acquires 100% shareholding of CTCHC and establishes retail division (Home Front) to accelerate provision of access to affordable housing.
2010	NHFC concludes external funding agreements with Agence Française de Dėveloppement and European Investment Bank.
2012	NHFC enters into co-funding collaboration with Gauteng Partnership Fund (GPF) to enhance access to housing finance for historically disadvantaged entrepreneurs who otherwise would be excluded from participating in the residential property market.
2015	Strategic focus and intent is the conclusion of the consolidation process to deliver a Human Settlements Development Finance Institution and thus significantly grow the human settlements development impact.
2016	NHFC applies to National Treasury for income tax exemption for assets and liabilities of RHLF and National Urban Reconstruction and Housing Agency (NURCHA), as tax exempt Public Benefit Organisations, to be transferred to the NHFC as part of DFI consolidation process.

Source: Extended from Tissington, 2010 and NHFC, 2015

notion is expressed through the 2004 Comprehensive Plan for the Development of Sustainable Human Settlements (CPDSHS). The plan presented seven key programme guidelines for the successful implementation of BNG housing through business plans, as shown in Table 2.2.

Table 2.2: The CPDSHS

Business Plan	Key Programme
Business Plan 1	Stimulating the Residential Property Market
Business Plan 2	Spatial Restructuring and Sustainable Human Settlements
Business Plan 3	Social (Medium-Density) Housing Programme
Business Plan 4	Informal Settlement Upgrading Programme
Business Plan 5	Institutional Reform and Capacity Building
Business Plan 6	Housing Subsidy Funding System Reforms
Business Plan 7	Housing and Job Creation

Source: National Department of Human Settlements, 2004

The argument that in itself an MIH development is not a sufficient strategy for eradicating poverty and racially integrating people of different incomes is indisputable, as demonstrated in the case of Cosmo City where the social component has degenerated into regression by causing water pollution in Watercombe Dam in Farmall at Kya Sand. The main cause of this being that the sewer system is unable to accommodate the ever-increasing number of users from slums, which mushroomed from the social component as a means of earning money (Luvhengo, 2016). Residential markets need to be able to attract investments within the context of mixed income housing.

In South Africa, an Appeal Court ruling (2010) confirmed that MIH developments have, in fact, obstructed private land rights (Hervé, 2009; Klug *et al.* 2013). Due to the problems surrounding MIH developments, stakeholders remain hesitant to commit resources to residential markets. One potential solution to reduce opposition to MIH developments in a South African transformation context is to find clear investment implementation guidelines on how RDP, social, and mortgage housing can be

juxtaposed in an MIH development. It is a problem when there is no such comprehensive strategy from communities, the public sector, and the private sector perspectives, as the lack of this insight blurs the changes that are necessary. As explained in the Integrated Urban Development Strategy Draft 5, South African cities have the lowest population concentrations in the world, and residential areas that are mostly separated from shopping centers, places of employment and public facilities (Tissington, 2010; Huchzermeyer, 2009). It is through MIH that RDP, and social housing can be developed together to reverse these failures in the planning systems.

Inclusionary Housing (IHP) has gained momentum in South Africa since 2004 as it is viewed as a way of achieving transformation in the country's previously segregated cities (Green Building Council of South Africa, 2014). It is an initiative that aims to accomplish inclusive housing on the basis of income and race. The goal of this policy is to somehow include the private sector in building mixed income housing through either incentive or compelling processes (Tissington, 2010). Thus it also seeks to boost the supply of affordable rental properties and levels of homeownership through provincial legislation and municipal by-laws that promote certain zoning requirements.

MIH developments in South Africa are delivered through collaboration with government largely due to the need for new bulk infrastructure and amenities as part of the housing development. In its nine provinces, South Africa has experienced an increasing number of MIH developments since 2004. The most prominent ones are Amalinda in East London built in 1999, Mahlako A Phahla in Polokwane built in 2009, Cosmo City in Johannesburg built in 2004, Pelican in Cape Town built in 2007 and Cornubia in Durban built in 2012. However, the MIH developments vary in terms of the year in which they were built, the typology built, distance to nearest CBD, and the nature of the receiving residential neighborhood in which they were built. So far, Gauteng province has pioneered most mixed income housing, with Johannesburg City

developing more MIH developments in areas beyond the normal urban development boundary (Klug *et al.* 2013).

Table 2.3 Mixed income housing development

Project Name	Location	No. Houses
Lufhereng, Soweto	City of Johannesburg	24 100
Cosmo City Region A, Gauteng Province	City of Johannesburg	14 800
K206 (Alex)	City of Johannesburg	3199
Riverside View Fourways	City of Johannesburg	11 046
Leratong City	City of Johannesburg	15 000
Fleurhof Randburg	City of Johannesburg	10 411
Thorntree View	City of Tshwane	11 700
Nellmapius New	City of Tshwane	3597
Olivenhoutbosch	City of Tshwane	4452
The Willows	City of Tshwane	10 977
Lady Selbourne	City of Tshwane	6000
Elandspoort / Danville	City of Tshwane	2 000
Leeuwpoort	Ekurhuleni Metropolitan	17 899
Chief Albert Luthuli Ext 6	Ekurhuleni Metropolitan	5398
Droogeheuwel	Randfontein Local	9 900
Mohlakeng Ext 11	Randfontein Local	3495
Westonaria Borwa	Westonaria Local	16 000
Chief Mogale	Mogale City	6800

Source: Added from Gauteng Partnership Fund, 2014

At present, Gauteng Province has the highest number of MIH developments that are shown in Table 2.3, with the highest number of MIH developments in the City of Johannesburg compared to other provinces. Some other MIH development projects in Gauteng include , Olivenhoutbosch, Brickfields, N2 Gateway, Cosmo City and Glen Ridge (DHS, 2012, p. 10). Many of these neighborhoods are transitioning from the initial post-apartheid RDP houses to mixed income housing.

Of special note is an MIH development in Durban, named Cornubia, and Cosmo City in Johannesburg. These developments incorporate residential areas for social rental housing, bonded housing, industrial areas, retail establishments, schools, and new infrastructure as part of the complete development package. In this way, people are able to find employment, and improve on their well-being without adding pressure to existing amenities and services in the areas where such 'new cities' are located. Gunter and Manuel (2016) concluded that housing developments could act as a catalyst for economic development. These developments facilitate different typologies with multiple ownership levels and selling restrictions, and require a collaborative funding delivery mechanism.

From this chapter, the best housing policy would appear to be linked to the ‘financial feasibility’ of private developers for providing affordable housing units which is only possible through collaboration between government and the private sector. This makes inclusionary housing in South Africa viable and sustainable even if it remains the duty of the national housing policy to provide housing to the lowest income households. Thus, the economic and social effects of housing policies, initiatives, and programmes need careful assessment and monitoring to fulfil this public sector goal. The evolution of housing has been summarized in Figure 2.4.

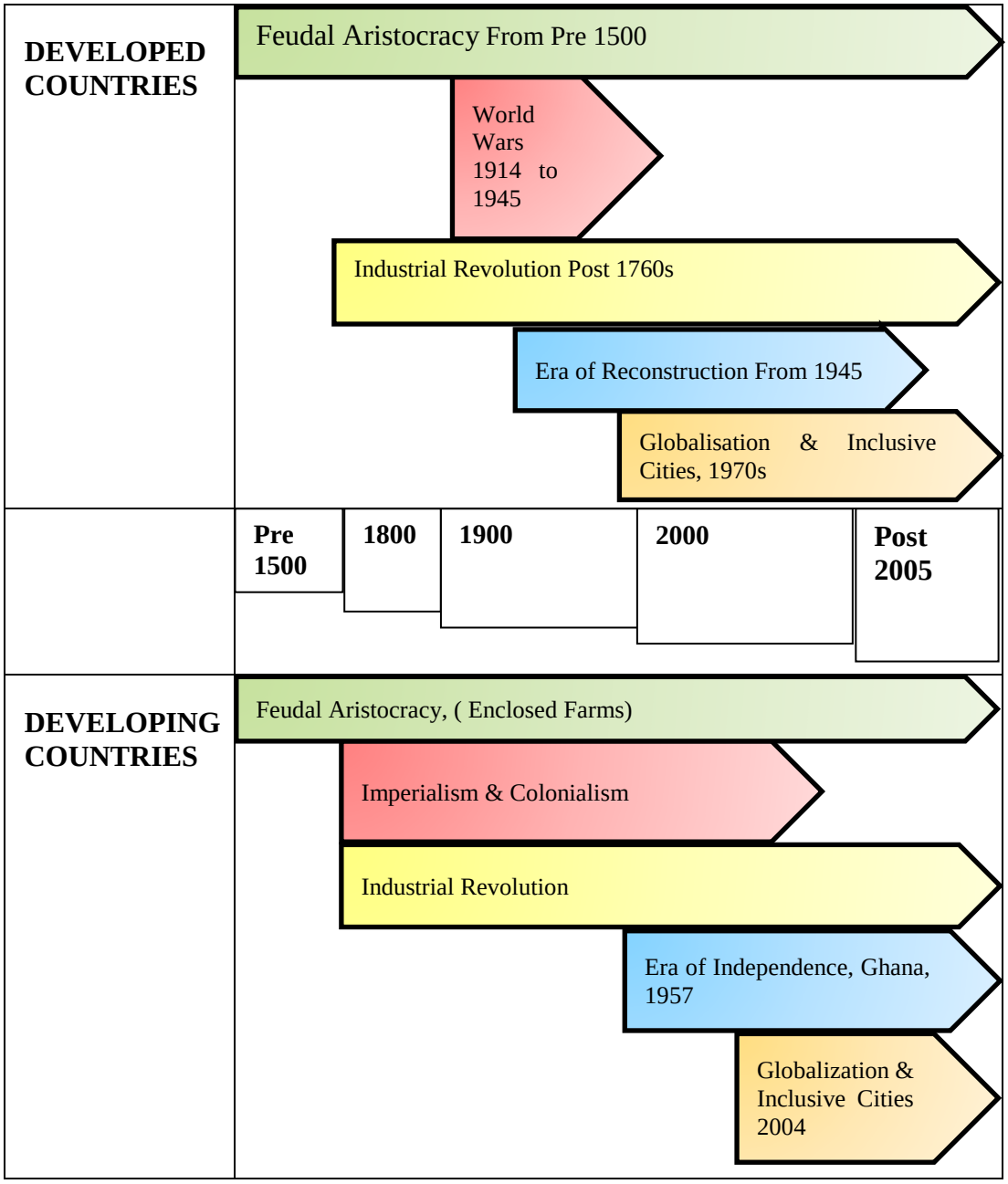


Figure 2.4 A Summary of the Evolution of Housing Policy
Source: Own compilation

Figure 2.5 shows the results in housing typology following the progression of eras from the feudal era when aristocrats lived in castles which contrasted markedly with the less than salubrious accommodation of peasant poor houses pre 1700s. The first industrial revolution and WW 1 highlighted the need to rebuild the countries as explained by the famous quote ‘housing for heroes through government provision’ (Stewart, 2019). We now inhabit an era of democracy during which inclusive housing from post WW 11 is promoted, such that government and private sector collaborate to build mixed income housing. The developed and developing worlds are currently on the same level shown by the red and green dots where globalization has aided Foreign Direct Investments (FDIs) in persuit of marketised or commodified housing (Wu, 2001).

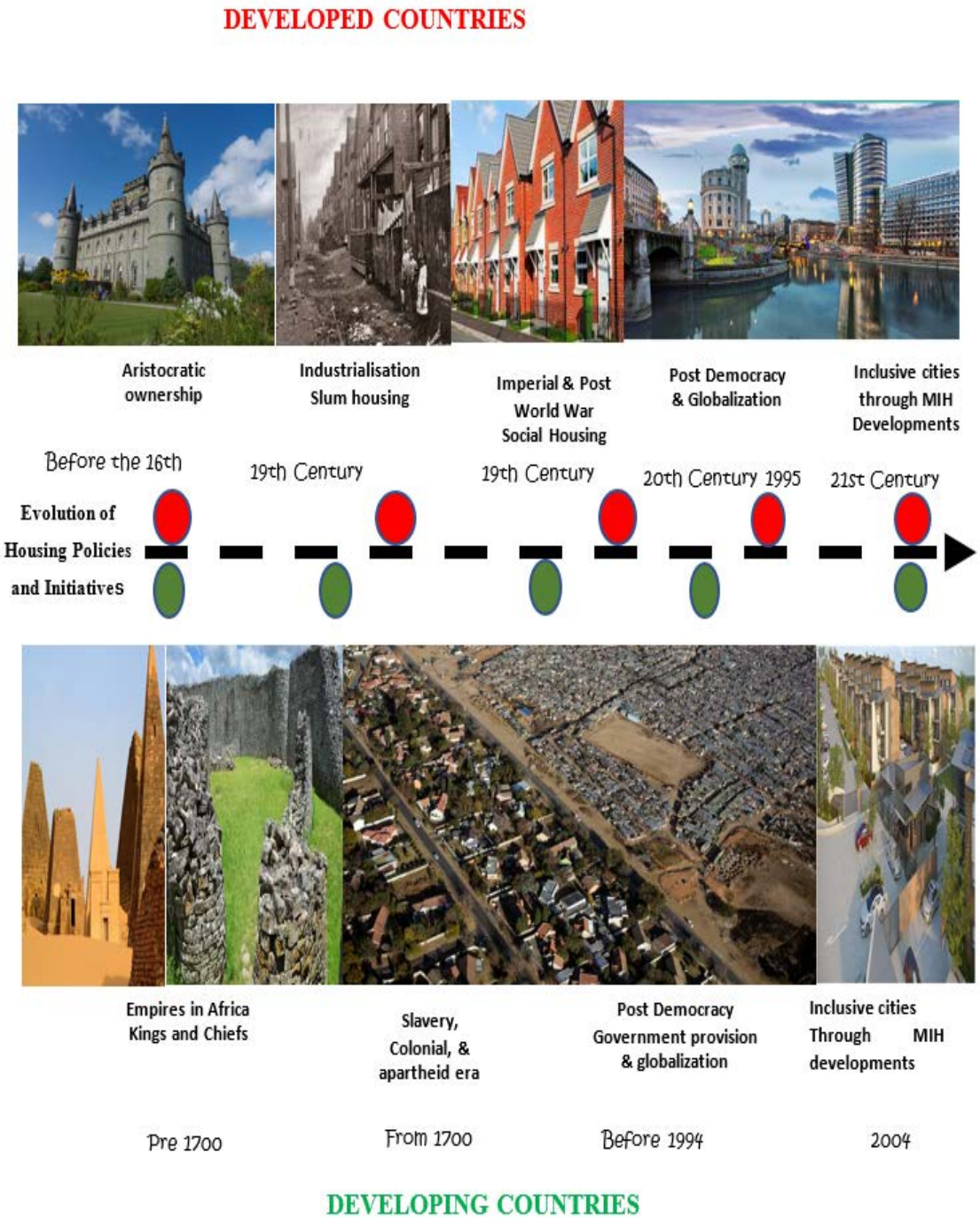


Figure 2.5: The Depiction of Housing through the Evolution
Source: Own compilation

2.8 Contemporary Challenges of MIH

Current policies support inclusivity through mixed income housing as a way of blending social with private housing. Such policies are not without challenges, as the evolution of housing indicates a preference for detached living between the poor and the rich (Stewart, 2019). This is because MIH developments are a sensitive issue, especially in South Africa where the concept ideally translates into mixing black and white people through multiple housing tenure systems. However, ‘Not In My Back Yard’ (NIMBY) opposition to change in land-use increases the ‘risks’ of home ownership for reasons such as loss of value to property, increased crime, and overcrowding on services and amenities. Thus, NIMBY opposition is a global problem as it raises investment risks in the delivery of MIH developments. 'Investment risk' is the likelihood that the invested value will be lost relative to the expected return.

Accordingly, reducing investment risk associated with MIH developments would seem to directly translate into reducing NIMBY opposition. There are five sources of risk regarding MIH developments. The first emanates from government making inclusionary housing compulsory in MIH developments, which is a deviation from market based approaches (SAPOA, 2018). Another pertains to the issue of partnering with government, due to the potentially ineffective manner in which funds are supplied and regulated. This negatively affects the investment value of such developments. Further, there is investment risk regarding the profitability of MIH developments depending on the location of the build. In addition, IHP requires MIH to be built in brownfields and such land is more expensive than greenfield locations. There is also the investment risk of not finding the right mix of households to create sufficient demand for the developments, and risk associated with ineffective asset and property management strategies. If these risks are not minimised, there is a high probability that the MIH development may not succeed. These risks are conceptualized in Chapter 3.

CHAPTER 3: CONCEPTUAL FRAMEWORK FOR MIH NIMBY EFFECTS AND INVESTMENT GUIDELINES

3.1 Introduction

This chapter develops a conceptual framework through which opposition to mixed income housing can be investigated and minimised. Thus, the chapter makes a case for applying hedonic, location and investment theories to find ways that reduce investment risks of home ownership associated with mixed income developments. Section A discusses theories that explain determinants of house prices and hedonic modelling. Section B discusses sources of risks associated with mixed income housing developments opposition.

3.2 Neighbourhood House Price Determinants

Some early literature shows that 'house price' variable is taken as a proxy for neighborhood quality given that there is correlation between house prices and neighborhood quality (Graspareniene et al. 2014; Malpezzi, 2003; Ball, 1977; Maclennan, 1977). The study identifies four theories that seek to explain neighbourhood house price determinants. These determinants include the following; transaction cost theory, user cost theory, cost of capital theory, the neoclassical theory of demand and supply, profit maximization theory, monetary theory, artificial neural network theory, hedonic theory, and location theory.

3.2.1 Transaction and User Cost Theories

At country level, there are transaction costs associated with how easily it is to do business. These costs increase or decrease housing prices depending on the ease of conducting real estate transaction deals. A country's fiscal, tax, and migration policies

add to or reduce the final transaction cost of housing and the price through the transaction cost theory where transaction costs add to the total price of a property (National Treasury of South Africa, 2016). Central banks affect house prices through the theory of User Cost because interest rates and monetary policies are the sole preserve of the institution in all countries. If central banks increase interest rates, mortgage or borrowing rates also increase, reducing demand for loans to make houses more expensive in the long-term. Abelson (2009) proposes housing affordability should be measured based on real housing user costs or rents.

On the second level is the market micro equilibrium through which forces of demand and supply determine house prices. Transaction cost theory postulates that developing countries have common, other factors such as housing policies, lender/borrower environment, impediments to land bureaucracies and exchange rate fluctuations that affect housing markets (Graspareniene et al. 2014; Venter, 2009). These costs are captured in the transaction price of a house.

At country level, monetary policies affect housing markets mainly through the user cost of capital theory of interest rates (André et al. 2012; Chiquier and Lea, 2009; Glindro et al. 2011; Gupta and Kasai, 2011; Mishkin, 2007; Estrella, 2002). The general conclusion is that monetary policy (to a larger extent) influences house prices across regions (Bjornland and Jacobsen, 2010). Antipa and Schalck (2009) found that subsidies to residential investment are most effective in stabilizing the business cycle. Fiscal policies affect house prices through transfer costs and subsidies given to the housing markets. There is consensus in literature that the housing market is the main sector through which these policies are transmitted (Kohlscheen et al. 2018; Mishkin, 2007; Muellbauer, 2012).

3.2.2 Neoclassical Profit Maximisation Theory

Neoclassical theory postulates that supply and demand forces determine house prices, outputs, and income distributions through maximization of utility by income-constrained housing consumers and of profits by cost-constrained developers, employing available information and factors of production in accordance with rational choice theory (Graspareniene et al. 2014). When there is market disequilibrium, excess demand results in increasing house prices and the reverse is true. Studies of this nature mainly contribute to price stabilization efforts by government and central banks. In general, price movement is based on costs of construction, capitalization of rental income and market sales data. To analyse house price movements using this theory, techniques used include the sales comparison approach, mean/median transactions prices approach, repeated–sales methods, hybrid methods, computer assisted assessments and hedonic methods (Bello and Bello, 2009; Boshoff, 2013).

3.2.3 Artificial Neural Network (ANN) Theory

In addition to the neoclassical theory, there is a relatively new theoretical view of 'Neural networks', based on neurons created through artificial computer based intelligence (Abidoye, 2017; Igbinosa, 2011). Using this system enables price determinant attributes such as number of bedrooms, presence of a pool, and proximity to shopping centers, schools to be captured in the form of neurons and used statistically to determine real estate prices. However, Artificial Neural Network (ANN) models fall short on the practicality of interpretations associated with black boxes where results do not have a meaningful interpretation highlighted by Bello and Bello (2009). Hedonic Pricing Method (HPM) is the general approach adopted in this study, as it is able to capture specific variables important to given locations.

3.2.4 Hedonic Pricing Theory

Hedonic theory is another lens through which house prices are determined. Hedonic price studies draw heavily on the 'product differentiation' theory pioneered by Lancaster, (1966) and Rosen (1974), with origins dating back to Haas (1922) and Court (1939) who appropriated the word 'hedonikos' meaning 'pleasures' in Greek (Colwell and Dilmore, 1999, cited in Coulson, 2003). A hedonic model is based on the theory that an asset is a composite good that derives its value from its utility-bearing attributes or characteristics. This means that anything with a claim to having attributes, such as the wine industry, agricultural land or the cell-phone industry can be valued using a hedonic strategy (Schamel and Anderson, 2003).

To extrapolate, the residential market consists of implicit markets for each characteristic (Rosen 1974, in Tse and Love, 2000). As Ball (1973) reports, a variety of studies have examined the attributes inherent within the housing industry to which investors can refer and either derive or depart from the inferred utilities. Along with colleagues, Ball designed a regression model, which identified three categorical factors: structural, locational and neighborhood.

Literature shows that hedonic theory is commonly adopted to analyses the effect of MIHs on host neighborhoods. This theory is appropriate in assessing consumers' evaluation of inclusionary housing. In this strategy, 'house-price' variable is a proxy for neighborhood quality, drawing from economic theory that postulates a high correlation between house prices and neighborhood quality ceteris paribus (Ball 1977; Malpezzi, 2003). Overall, hedonic theory postulates that the price of a house is determined by its characteristics and amenities. This means that hedonic theory is able to provide an insight into interactions between the development and operating costs of mixed-income housing by assessing the design, size, location, and amenities, together

with the socioeconomic composition (income and race) of its residents and the regional dynamics of the country.

Hedonic modelling requires many control variables to make the study robust. These are subdivided into three levels; idiosyncrasies and other country-specific factors (macroeconomic factors level 1), housing market factors (level 2); house-attribute level factors that include artificial neural networks (level 3). A hedonic pricing model is defined by regression models of house prices on housing characteristics or attributes (Malpezzi, 2003). Hedonic pricing models have been widely used in many countries to assess both positive and negative externality effects on house prices using house price indexes. A hedonic pricing model is defined by regression models of house prices on housing characteristics or attributes (Malpezzi, 2003).

Adapting from Graspareniene et al. (2014) and Mishkin (2007), McCarthy and Peach (2002), and Modigliani and Miller (1958), these theories were summarized into three theoretical views on what affects house prices and they include country level, market specific and house specific factors as shown in Figure 3.1.

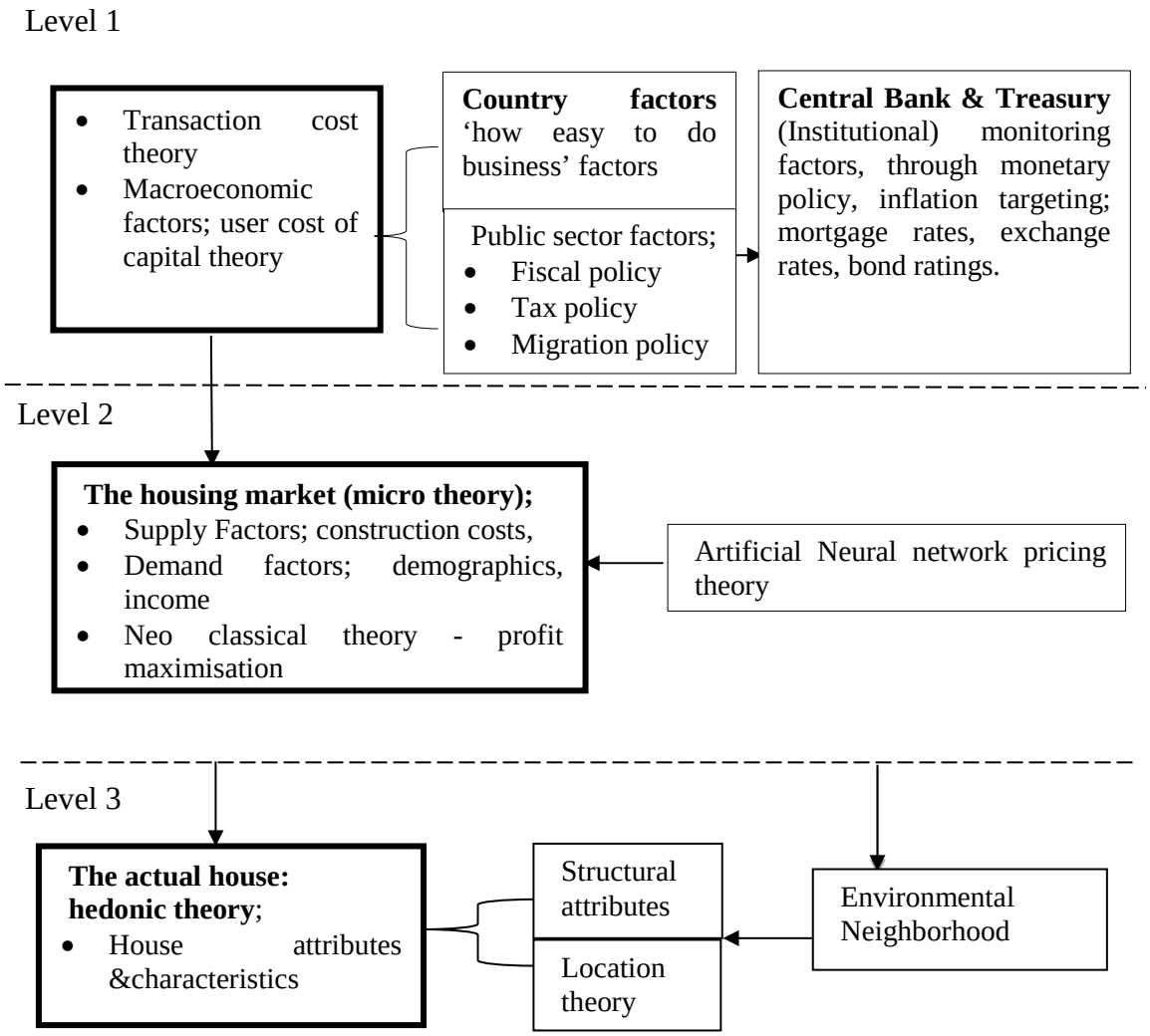


Figure 3.1: House Price Determinant Factors
Source: Adapted from Graspareniene *et al.* 2014 and Mishkin, 2007

3.3 Previous Empirical Studies on NIMBY Effects

De Salvo (1974) investigated the effects of upgrading New York City housing development on adjacent house prices. His findings were that locating projects in the poorest or best quality neighborhoods produces the smallest benefits of an upgrade whereas a middle-income neighborhood presents the best opportunity for upgrading an area. Ding and Knaap (2002) in Cleveland, USA, evaluated the influence of distance to new and rehabilitated developments on single-family housing values in the inner city. They found a positive effect because a house could sell for about USD 5000 more because of its close proximity to a new construction and that this effect diminished at a distance point of 300-feet (91.44 meters).

Few empirical studies found negative effects on neighborhood house prices. Using distance variables and taxable house values in North Carolina, Newell (2009) found Lyon Park negatively effecting Durham city neighborhood. The reason cited was the increased supply levels that dampened house prices. The study therefore recommended that mixed developments be located in places where demand is increasing. Thus, Newell (2009) found no positive effect on house prices and argued that this nullified the politically popular view given for urban revitalization, which is subsidized by government.

However, he found that the effect on residential house prices is different when a nearby development is of a commercial nature. By applying a distance variable in a hedonic assessment, Thibodeau (1990) was able to gauge the effect of mixed income development on house values in Dallas, Texas, which were near the Lennox Center, a newly developed high rise office building. The study concluded that there was a positive effect on the home values with properties within 1000 to 2500 meters of the building. Galster (2004) measured the influence of ‘supportive housing facilities’ on house prices using the ‘difference in difference’ method which found a positive effect

on residential values in Denver urban areas. The only visual negative effect was in the form of greater than before traffic and service flows in and out of the affected local area. The study, however, pointed out that the negative externality of denser traffic flows was offset by positive externalities in the form of increased property tax revenues.

Ellen and Voicu (2008) assessed the effect of ‘renovation’ on nearby property values in New York City in a study similar to Thibodeau (1990), Ding (2002) and Galster (2004) using the 'difference in difference' methodology. They found a positive effect on house prices. Pollakowski et al. (2005) used five project case studies (1983 – 2003) to study the effects that high-density developments had on surrounding areas with lower densities in Greater Boston. The projects included developments in Abington, Canton, Concord, Ipswich, and Reading. The study found that there is no quantitative evidence to support the hypothesis that multifamily developments have a negative impact on the sales prices of nearby single family houses. Unlike Ellen and Voicu (2008), analysis by Pollakowski et al. (ibid) restricted the effect area to only those homes closer to the project. They compared house price changes in the surrounding affected area using a house price index to the remainder of the municipality (as a control) before and after construction. They concluded that such developments do not depress property values as feared by sitting residents in the Boston area.

How MIH developments affect house prices can depend on employment levels of households in the MIH. Gornstein and Verrilli (2006) find no negative effect of mixed housing when all classes of people in an MIH model are employed in Massachusetts. This finding led to the conclusion that the effect depends on the characteristics and employment status of the people under study. Given the high unemployment levels of about 27.2% (Stats SA, 2018) prevalent in South Africa, a study of MIHs in the country would differ from the models applicable in developed countries.

After the US trend changed from mixed income developments being located in the city periphery to vacant land within city limits, McConnell and Wiley (2010) studied the trends in property prices using traffic effects and the house price index before and after developments. The index method involves creating an index from the properties included in a sample. This index is tracked after a phenomenon to indicate whether the properties have gained any price increases or decreases. They also complemented the study with a survey on residents. Figure 3.2 shows that there was no substantial house price variation in the area that 'received' the development (Trulia, 2016)



Figure 3.2: Trulia Research Finds no Effect in US Counties

Source: Kashef, 2016

In agreement with Thibodeau (1990), a negative effect in the post development phase was attributed to an increase in traffic flows, and did not lower house prices. They highlighted a finding, which showed that residents placed value on government backed

developments that came with improved amenities such as new and better road networks, clinics, and schools. This often feeds into increased demand for the local private rental sector increases for both low and medium income households (Hulse and Yates, 2016).

In Europe, most researchers found through hedonic regressions, interviews, surveys and event studies, two contradictory findings: no positive effect and negative effect of MIH developments on house prices (van Gent and Musterd, 2013; Calavita and Mallach, 2010; Van Ham and Manley, 2009; Tunstall and Fenton, 2006). Few researchers argue that decisions on MIH are merely for political gain, as people do not appear to mix as presumed by the concept. In fact research suggests that an individual voucher system is better for achieving the goal of integration and alleviating urban poverty. This research employs established methodologies that include tax income base effect, interviews, and literature reviews (Schuermans, 2015; Ellickson, 2010; Newell, 2009; Popkin, 2007).

In South Africa, Du Preez et al. (2013) measured the effect of Quebera Township (social housing) on the house prices of the affluent suburb of Walmer in Port Elizabeth. They used distance as a variable in a hedonic model and found that "the average price of a house in the neighborhood increases by R228.85 for every meter further away from the low-cost housing development" (Du Preez et al. 2013, p. 13). Disagreements as to which hedonic model specification is best and most accurate still exist (Bala *et al.* 2014; Du Preez et al. 2013; Tandon, 2012; Priilaid and van Rensburg, 2012; Perry and Francis, 2010; Song and Knaap, 2004; Clapp, 2004; Pakes, 2003; Lee *et al.* 1999; Wallace, 1996, Coulson, 1992; Can, 1992; Rosen, 1974).

The key recommendation that comes out of literature is that parametric specification is best when independent variables are exhaustive and expressed in semi-log form. Du Preez et al. (2013) found social housing to have a statistically significant negative

house price effect on affluent neighborhoods regardless of whether the model specification is parametric, semi parametric or non-parametric. Where data is not exhaustive, as in Anglin and Gencay (1996), non-parametric models are considered the best in hedonic pricing models (Du Preez *et al.* 2013; Kwong *et al.* 2011; Joseph *et al.* 2007; Dewenter *et al.* 2004, Hulten, 2003; Epple, 1987; Anglin and Gencay, 1996; Goodman, 1978).

Table 3.1 summarises previous studies indicating that MIH is still a debated issue in academic circles as to whether such developments affect house prices in the neighborhoods negatively or positively. Contrary to Du Preez *et al.* (2013) findings, Onatu (2012, p. 9) conducted an exploratory study of Cosmo City and concluded that, "private sector participation in housing development should be continued through local authorities to provide housing and services." Property price analysis is, thus, in agreement with private sector participation as it is the basis for private investments.

As examples from developed countries, this literature review has focused on studies from USA, UK, and the Netherlands to provide comparative studies relevant to South Africa. However, South Africa, as a case, is distinct from developed markets where most MIH developments are built in already blighted areas. As a result, developments in areas that need regeneration are viewed positively, whereas in South Africa, the impact is expected to be negative. This is because such developments are built in affluent suburbs as a transformational tool to reverse the legacy of apartheid that removed black people from economic hubs.

Thus, MIH developments in developed markets are viewed as having the power to promote urban regeneration. This finding contrasts literature where most research finds that MIH developments do not have a significant effect on house prices in the most developed countries. Indeed, in the developed world, MIH developments have the potential to revitalize neighbourhoods. In developing countries, most research finds either no substantial impact or a positive impact on house prices (Pollakowski *et al.*

2005; Galster *et al.* 2006; Gornstein and Virrilli 2006; Schwartz *et al.* 2006; Obrinsky and Stein 2007; Voicu and Been 2008; Ellen 2008; Van Ham and Manley 2009; McConnell and Wiley 2010; van Gent and Musterd 2013). There are few research exceptions where there is a negative influence on taxable property values (Newell, 2009). Thus, there exists a gap shown in Table 3.1, in academic research regarding the effect of MIH developments on house prices in South Africa. It is important to measure this effect, given the NIMBY phenomenon in South Africa.

Table 3.1: Literature review summary on effects of MIH on house prices

Researchers	Context & Conclusions	Method	Findings
(Anglin and Gencay, 1996; DE Salvo, 1974; Ding and Knaap, 2002; Galster, 2004; Galster *et al.* 2012; Galster *et al.* 2006, Galster *et al.* 2007, Gornstein and Virrilli, 2006; McConnell and Wiley, 2010; Obrinsky and Stein, 2007; Pollakowski *et al.* 2005; Thibodeau, 1990; Voicu and Been, 2008) Simons *et al.* 1998 Bowen *et al.* 2002)	No substantial effect of MIHs on house prices in **USA**	Hedonics, parametric, semi and non-parametric models specifications, control and effect areas, index construction (Most linear functions, index control and effect areas comparison)	+ (positive effect) MIHs do not depress neighbourhood house price
(Calavita and Mallach, 2010; Tunstall and Fenton, 2006; van Gent and Musterd, 2013; Van Ham and Manley, 2009)	**Most European** countries find no positive effect.	Linear hedonic regressions, interviews, surveys and event studies	+ (positive effect) where MIH developments do not depress neighbourhood house price
(Ellickson, 2010; Newell, 2009; Popkin, 2007)	Decisions are a mere political gain, as people do not mix as purported. Individual voucher system is better	Hedonic modelling, tax income base effect, interviews and literature reviews	- (negative effect) where MIH developments do depress neighbourhood house price

Researchers	Context & Conclusions	Method	Findings
None in particular, close research includes (Boshoff, 2013; du Preez and Sale, 2014; Klug *et al.* 2013; Kotze, 1999; Onatu, 2012; Prinsloo, 2008; Tse, 2002)	Influence of transport development projects on property values. Effect of social housing on house prices. What is effect of MIH as a unit?	Linear hedonic functions Geographically Weighted Regression (GWR) Du Preez and Sale (2014, pp.) compared OLS nonparametric modelling "…significant results regardless of the model specification used in hedonics (parametric or nonparametric)"	It is unknown how MIH developments affect neighbourhood house prices

Source: Own compilation

Hedonic variables from literature are summarized and explained in Table 3.2. MIHs located closer to Central Business Districts do not depress house prices (Khadduri and Martin, 1997; Obrinsky and Stein, 2007; McConnell and Wiley, 2010). These variables are adapted for investigating the effect of Cosmo City MIH on neighborhood house prices.

3.4 Conceptual Framework MIH NIMBY Effects

Hedonic theory maintains that a house price for each house sold (Pi) can be deconstructed into its attributes/characteristics implicit prices that include Structural Attributes (SA), Locational Attributes (LA), and Neighbourhood Attributes (NA), Income categories (Y) and Race categories (R) (Sirmans, *et al.* 2004 and Du Preez *et al.* 2013). The closer the distance from the subject property to the nearest school, hospital, place of worship, CBD, and shopping centre, the more it is expected to increase in price. However, there need to control for informal settlements in the hedonic regressions. These include Diepsloot informal settlement, Kya Sands informal settlement, Zandspruit informal settlement, and Plastic View informal settlement. Apart from variables from location theory, structural attributes of a house are

considered in this study. Their presence also affects house prices positively or negatively. These include; area under roof for the property from various possible sources, number of bedrooms, number of bathrooms, number of garages, number of servant rooms. For instance, when number of bedrooms increases, house prices increase, hence there is a positive relationship between house price and number of bedrooms. To capture the fact that there is a point where an increase in number of

Table 3.2: Hedonic variables from literature Source: Own compilation

Classified attributes	Variables /signs from literature and theory	Sign of regression coefficient and the effect to house prices
House structure (SA) Galster *et al.* 2012	plot/erf	+ the higher the plot size, the higher the house price
	size house size	+ the bigger the house size, the higher the house price
	number of rooms,	+ the greater the number of rooms, the higher the house price
	number of bedrooms	+ the greater the number of bedrooms, the higher the house price
	number of bathrooms	+ the greater the number of bathrooms, the higher the house price +
	presence of study	+ houses with a study are highly priced
	presence of garage	+ house with closed garages are highly priced
	presence of swimming pool	+ house with swimming pools are highly priced
	presence of domestic worker room	+ house with workers' quarters are highly priced
	age of house	+ the higher the plot size, the higher the house price
Location to amenities (LA) Boshoff, 2013	distance to a school	+ the closer a house is to a school, the higher the house price
	distance to CBD	+ the closer a house is to CBD, the higher the house price
	distance to shops	+ the closer a house is to shops, the higher the house price
	distance to main transport network,	+ the closer a house is to transport network, the higher the house price
	distance to hospitals	+ the closer a house is to a hospital, the higher the house price
	distance to religious building	+ the closer the house to place of worship, the higher the house price should be +?
	distance to Cosmo City	+ the closer a house is to COSMO CITY MIH, the higher the house price
du Preez and Sale, 2014 Neighborhood quality (NA) crime statistics Johannesburg Calavita and Mallach, 2010	Perception on crime	- the higher the crime rate, the lower the house price
	Increase in Traffic	- the higher the traffic, the lower the house price
	Black to White Race	- houses in areas concentrated with black people are discounted on sales.
	No. of flats/apartments in block of flats in area	+ the higher the density of an area, the lower the house price
	Household income (Transferees and transferors)	+ the higher household incomes, the higher the house price
	Most prominent race in an area Black , White, Colored, Asian	+ Area occupied by the white race experience higher house price than areas occupied by the black race
	Most prominent income group in an area	+ The more affluent the most prominent income group, the higher the house price
	Comparable properties	-+ Comparable property prices influence prices negatively and positively. An auto regressive term was calculated to control for this effect
Spatial geographically coded variable (SGC) Boshoff, 2013	Closeness to natural features	+ The closer a house is to natural features, the higher the price.

bedrooms does not increase price, the variable was squared to reflect this. Erf size in South Africa represents the yard or compound size and this variable affects price positively. Distance contours are able to capture the locational advantages that determine house prices. The closer the distance from the subject property to the nearest school, hospital, place of worship, CBD, or shopping centre the more it is expected to increase in price.

Table 3.3: Hedonic explanatory variables

	Hedonic variables
1	House Price
2	Distance contours 1 to 8 where 8 is the furthest,
3	Distance to Cosmo City from a neighbourhood house
4	Nearest Distance from informal settlement,
5	Size,
6	Age,
7	Distance from Central Business District (CBD),
8	Distance from shopping Center,
9	Race type: Reference, 4 = Caucasian, Race Type, 1= black, Race Type, 2 = Coloured, Race Type, 3 Asian, Race Type, 5 Others,
10	Crime per 1000 households,
11	Auto-regressive term, Income:
12	Income group, 1, 3,4,5,6,7,
13	Number of bedrooms,
14	Sales Before October 2005 and number of bathrooms
15	Auto- Regressive Term (ART)

Source: Own compilation

However, there is a need to control for informal settlements (Diepsloot informal settlement, Kya Sands informal settlement, Zandspruit informal settlement, and Plastic View informal settlement) in the hedonic regressions. These include crime rate, income groups, number of bedrooms, number of bathrooms, distance to the Central Business District, distance to the shopping malls, race type, age and distance to informal settlement. In Table 3.3, 15 out of 65 variables are summarized.

Critical Distance Where the Effect of an MIH is Zero.

The study investigates the critical distance point at which an MIH effect is zero. So far, there is no literature on what distance an MIH development can be built without a price lowering effect. It is true from a location theory that the further away a house is from an MIH development, the lower the MIH development effect on house prices if an MIH development is viewed negatively as shown in Figure 3.3. This zero critical point effect has not been investigated in South Africa.

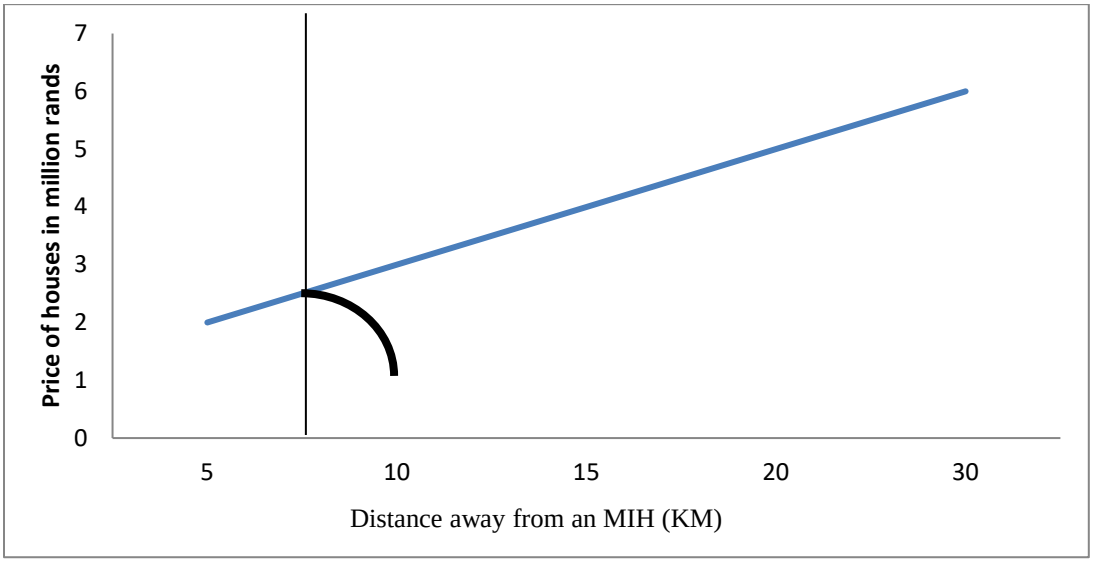


Figure 3.3: Relationship between House Price and Distance from MIH
Source: Own compilation

The graph helps to explain if NIMBY effects have a 'no effect' point. The graph illustrates a hypothetical point where the price of houses does increase up to a 'critical point' with distance away from an MIH. The study investigates what this critical point is in the case of Cosmo City MIH.

Using hedonic theory, the conceptual model is specified in Figure 3.4 (Boshoff, 2013; Du Preez, 2013; Borowiecki, 2009; Ham and Manley, 2009; Selim, 2008; Delorenzi, 2006; Garner et al. 2006; Van Wen et al. 2004; Limsombunc et al. 2004; Barker, 2003; Ball, 1973). The effect of low income or high income developments on affluent suburbs

appears rather evident; however, the effect of a residential development of varying typologies that is built by both the public and private sectors is less clear.

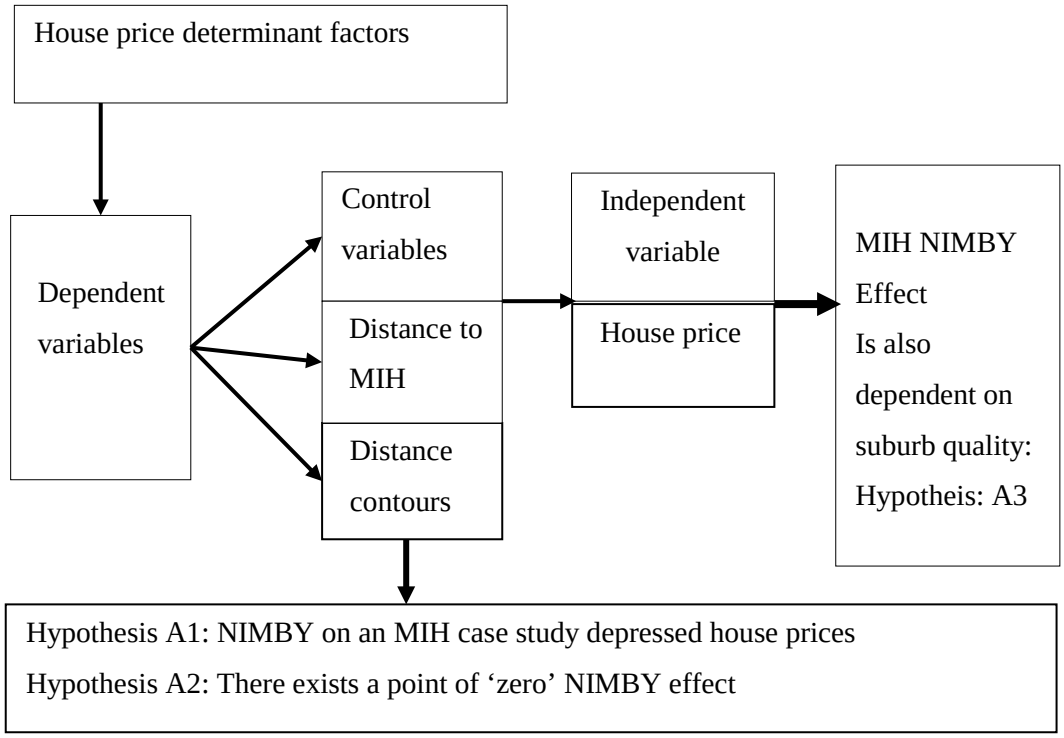


Figure 3.4: Conceptual Framework for Reducing MIH Investment Risk
Source: Own compilation

Through hedonic modelling, the study investigates the effect of the Cosmo City MIH development on neighboring house prices in order to investigate the basis of NIMBY opposition.

3.5 Conceptual Framework For Evaluating Investment Risk

3.5.1 Introduction

Section B discusses investment theories and the conceptual framework for MIH units to be viable and sustainable investments. Investment theory provides a point of focus for investigating how to reduce the investment risks of MIHs where the associated benefits of MIH should outweigh the associated costs from the investors' point of view. This theoretical view is expanded to include ways of minimizing risks and improving the management of these developments.

This section presents an investment theoretical view that guides the location and improvements of MIH developments in South Africa. The theoretical strategy is based on location and investment theories in order to generate relevant constructs and hypotheses to be tested and explored. The world over, due to inclusionary policies, residential markets have gone through changes where social housing is generally a component in mixed housing typology sites where public/private partnerships tap into private finance funds (Whitehead and Scanlon, 2007). This is a paradigm shift beyond the social housing subsidized by governments alone.

High levels of NIMBY opposition could be an indication of the implementation flaws of the current MIH models. The question then becomes: what is the relevant theory that can explain the deviation of the current outcomes (NIMBY) from the intended goals of urban development, integration, and transformation as part of the intervention to make the MIH model successful and sustainable. Arguments that are investment-theory-based allow for an exploration of possible unsatisfactory effects originating from the 'implementation flaws' of MIH.

From an investment perspective, an area perceived to be desirable, experiences positive house price movements and through hedonic modelling, the price determinants' coefficients agree with literature postulations (Hui, 2010). The fundamental basis for a positive hypothesis derives from the fact that, to some extent, South Africans may forego some negative aspects of affordable housing in order to redress apartheid problems as long as there is a general focus on improved infrastructure development, improved security and vigilance against crime and improved management skills. Moreover, the financial sector is encouraged to finance MIH for the same reasons because there is no loss of value in these neighborhoods. Investment theory postulates that a good investment asset is one, which reimburses commensurate return for the risks taken. Most importantly, a good investment asset is able to maintain its value in the future. Thus, MIHs are likely to attract higher prices if their locations are more preferred.

3.5.2 Capital Asset Pricing Model (CAPM)

According to Glaser (1995), Modern Portfolio Theory (MPT) is used to explain rational investor choice and investment strategy in the normative sense while the Capital Asset Pricing Model (CAPM) guides investment allocations in real estate. These normative models are mathematical in nature and they use historical data in analysis. French and French (1997) and French (2001) argue that these normative models are limited in that real life decisions are drawn from wider disciplines relative to current expectations, which cannot be captured mathematically but more in a natural setting (French, 2001; Heiner, 1989; Bell *et al.* 1988; Lincoln and Guba, 1985).

When investors (including government) invest in residential markets, they should get a competitive Internal Rate of Return (IRR) that is above the cost of money in the open market. Markowitz (1959) develops this notion further, arguing that future investments in diversified assets prove to reduce investment risk. Although referring to the financial

markets, Sharpe (1963) further postulates that share returns are determined by systematic and unsystematic risk in the equity investment market. This has become a textbook analysis in building investment portfolios without the unsystematic risk because it can be diversified away.

3.5.3 The Net Present Value (NPV)

Modern investment theory, pioneered by Fisher, explains that the value of an investment asset is the sum of its present value against its future income, (1930). From this theory came the concept of Net Present Value (NPV) captured in equation 1.

Equation 4.1: Net Present Value formulae

$$\text{NPV} = -C_0 + \sum_{t=1}^{n} \frac{(benefits - Costs)_t}{(1+r)^t} \quad \ldots\ldots\ldots\ldots 1$$

Where C_o = initial costs, r = discount rate, n = investment period. Net Present Value should be positive to indicate that the sum of the discounted cash-flows from time one (t_1) to time n (t_n) are greater than the initial investment incurred in time zero (t_0).

3.5.4 Internal Rate of Return (IRR)

Internal Rate of Return (IRR) is used with discounted future cash flows on a project such that net present value is equal to zero competing investments on the investment's rate of return. The calculation excludes external factors, such as the risk-free rate, inflation, the cost of capital, or various financial risks. It is also called the rate of return.

$$0 = -C_0 + \sum_{t=1}^{n} \frac{(CF}{(1+IRR)^t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

Where C_o = initial costs, IRR = Internal Rate of Return, n = investment period.

This IRR should be greater than the hurdle rate, which is usually the Weighted Cost of Capital (WACC) to show that the investment is viable.

3.5.5 Strategic Asset and Property Management

Real estate management falls into three organizational levels as shown in Figure 3.5 (Miles *et al.* 1996 in Gruis and Nieboer, 2004). These are broken down into portfolio, asset, and property management as strategic and operational structures needed for the successful management of any real estate. The portfolio management is more investment policy; asset management is more performance analysis, while property management involves more daily administration of real estate. Managing housing units requires 'strategic management', which lies in between asset, and portfolio management. These help in designing the desired housing units and prices (Gruis and Nieboer, 2004

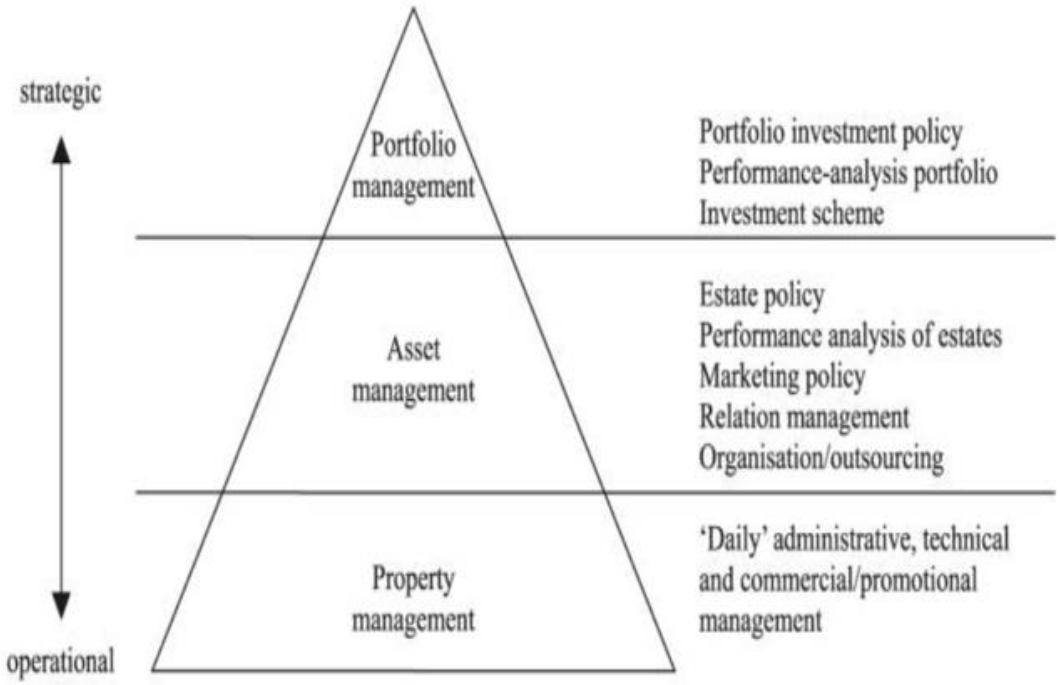


Figure 3.5: Real Estate Organisational Management Levels

Source: Miles, *et al.* (1996)**.**

Larkin (2000) defines asset management within a social housing perspective as the range of activities undertaken to ensure that the housing stock meets the needs and standards in the future in the most efficient way. This means asset management models should evaluate the performances of housing to ensure sustainability in the future. Traditionally, asset management is concerned with a property company's decisions about the selling and holding of its assets (Jones and Kaluarachchi, 2008; Gruis and Nieboer, 2004; Fraser and Stupak, 2002). Thus, broad asset management focuses on the entire stock rather than individual housing units (Al Nasiri, 2015). This is done through a proactive approach where social property owners follow market-oriented principles by systematically and actively identifying the problems and opportunities of a housing development.

Housing asset management has become a new concept in social housing which requires a business focused approach rather than the traditional public management approach (El-Akruti and Dwight, 2013). Generally, asset management emphasizes maximising financial performance and returns, whereas for social property owners, the main issue has been to push for social housing management. According to Priemus, *et al.* (1999), housing property management includes technical management through the maintenance and repair focus; social management through the housing allocation and tenancy management and financial management (returns and rent policy).

3.5.6 Location Theory

Pioneered by Alfred Weber in 1906, location theory states that developments located close to places of business, infrastructure, and transport linkages are highly favored investments as they maintain greater future value than those that are not as proximate and an MIH development built close to these amenities is likely to attract higher prices because of the preferred location (Weber, 1906 in Battis, 1989). .

Another theory, investment theory explains that high risk must be rewarded in returns. Therefore, these two theories provide guidance in the development of this study's conceptual framework. Location theory's testable hypothesis is whether a compelling MIH development reduces the house prices of surrounding neighborhoods. Also, the perception that the downgrading effect is more for better quality neighborhoods than for lower quality neighborhoods is testable in order to assess the location of future MIH developments.

It would seem that the tools exist to ascertain the need for a cautious continuity of such inclusionary housing policy in urban residential markets. The house-price variable is taken as a proxy for neighborhood quality as economic theory suggests a high correlation between the two phenomena, *ceteris paribus* (Ball 1977; Malpezzi, 2003). Theoretically, neighborhoods can tell a story through property prices, contending that high quality neighborhoods compellingly retain high and stable property values while deteriorating ones show decreasing property prices (Can, 1992, p. 701; Ding and Knaap, 2002; Nguyen *et al.* 2012). Drawing from literature, NPV and IRR can vary depending on the factors that determine value in residential markets.

The negative perception shown in the background (house price reduction) does not seem to have a fundamental basis. The fact that housing is both an investment and consumption commodity makes it rare and important in the development of an economy (Mishkin, 2007). Following the recent 2007/8 financial crisis where sub-prime mortgages were at the heart of its causes, research into housing markets has rekindled the need for developing further understanding of the linkages between housing and the rest of the economy (Sebehela, 2009). Of interest are house price/valuation/formation studies pioneered by Maclennan (1977, p.1) which offer "some thoughts on the nature and purpose of house price studies." Valuation is also based on costs of construction, capitalization of rental income and market sales data. Techniques include the sales comparison approach, mean/median transactions prices

approach, hedonic methods, repeated sales methods, hybrid methods, computer assisted assessments, rules-based artificial intelligence and artificial neural networks among others (Can and Lee, 2004, Boshoff and de Kock, 2013).

Internationally, there is evidence that lower income households which moved to areas with more employment opportunities were not necessarily more likely to access and retain jobs or obtain jobs with higher wages and therefore ended up suffering due to their misalignment with the purchasing power parity of the new environment (Popkin, 2007). The UK's social mix differs with the United States' MIH developments, which are explicitly socio-spatial approaches to attract capital investment with the intention of gentrification (Bridge *et al.* 2015; Lees *et al.* 1999). In South Africa, however, most MIHs are built in affluent neighborhoods, which is contrary to the developed world where MIHs are mainly built in lower income neighborhoods with the aim to revitalize them.

3.6 Previous Studies on Investment Risk of MIHs

While the current body of knowledge concludes that house prices in existing neighborhoods do not decline because of mixed housing, with the exception of a few, there is likely to be a negative effect in the South African context as several researchers have pointed out (Galster *et al.* 2006; McConnell and Wiley, 2010; Voicu and Been, 2008). An important point to note is that in South Africa, it is the majority population that move to a neighbourhood occupied by a minority population compared to the developed countries, such as the USA and certain European countries. As such, the hypothesis for this study is arguably at variance with common literature findings. The common methodologies used in the hedonic strategy include distance as a variable in hedonics as well as 'difference in difference' with repeat sales, price index and event studies.

In sum, MIHs are not the only factor that affects house prices in neighborhoods. The more the quantity and quality of the variables increase (house or structure specific), the more house prices increase. These include the size of the plot or *erf*, the size of the house, number of rooms, number of bedrooms, number of bathrooms, a study room, car garage(s), a swimming pool, and a domestic worker's room.

From a neighborhood point of view, an increase in crime perception and/or traffic congestion will have a negative effect on houses, selling at discounted prices. In South Africa, race and income matter because of the apartheid legacy, which still determines where people find themselves living. The race and income of both the seller and buyer also matter which is why sub-categories of black to white races may have an effect on house prices. Literature shows that spatial geographically coded (SGC) variables such as closeness to water, add to the price of a house up for sale. Most variables noted in literature are shown in Appendix B.

To be objective, this work is guided by the assumptions that house price is the main variable of focus through which we can measure the effect of MIH developments on housing markets (Hughen and Read, 2014; Ding and Knaap, 2002; Maclennan, 1977; Ball, 1973). Literature shows that most MIH developments face NIMBY opposition problems for various reasons and, theoretically, there is a relationship between these framed attitudes and perceptions with investor behavior towards market-rate residential units in such developments. These aspects are summarised in Figure 5.1. According to portfolio theory, there exists a minimum risk portfolio in the investment universe. The best portfolio has the lowest risk due to holding assets that do not correlate in movement. Most models such as the Net Present Value (NPV) and Internal Rate of Return (IRR)) thus use sensitivity analysis of arbitrary inputs guided by the decision makers' view of the world. This means that normative models must evolve to include current judgement and expectations.

Following Freeman *et al.* (2004), modern finance theory guides mixed income housing investments. This is because stakeholders that include departments of human settlements, related government departments, and local municipalities invest in the form of land and financial incentives. The South African government has invested large sums of money for providing public housing which has progressed from RDP housing free/fully subsidized housing to mixed-income housing. By joining hands with the private sector, government has, through inclusionary housing, delivered a total of 5,6 million formal houses since 1994 (a growth of 50%) (Human Settlements, 2012).

Literature shows that there are five pathways guiding the improvements of future MIH developments. These are inclusionary housing policy, housing delivery mechanisms, location of an MIH development, design of an MIH development and the asset and property management strategies. Issues relating to poverty reduction efforts within MIH regarding employment and title deeds are also raised. This section presents a conceptual view that underpins decision analysis regarding the implementation of MIH in South Africa as an investment problem. There are five themes underpinning the success of MIH developments in terms of viability and sustainability of such developments listed.

Internationally, key MIH success factors highlighted in literature include the following; a focus on market rate developments containing indistinguishable house designs, a higher percentage of employed people who are able to sustain the viability of the development and good asset and property management skills (Khadduri and Martin, 1997; Obrinsky and Stein, 2007; McConnell and Wiley, 2010). For South Africa, Klug *et al.* (2013) concluded that the potential of IHP policy in reshaping its cities is limited, unless location is adjusted to low/middle-income neighborhoods as a developer-led model yet relying largely on government subsidies. Onatu (2012, p. 9) used an exploratory study for the Cosmo City case and concluded that, “private sector participation in housing development should be encouraged as most local authorities

struggle to finance housing and services." This shows the need for housing policy to lean towards involving private sector in housing provision. Currently the sources of MIH investment risk include such factors as legislating the development of mixed income housing and the kind of collaboration to improve investment value of MIH developments. The location of an MIH development situated on greenfield rather than brownfield provides better investment value for improved housing unit design, quality, size, and uniformity within an MIH development.

This makes such houses good investment assets. It is also possible to mix people of different backgrounds within MIH developments regardless of race, social economic status following the multi-typology housing units within MIH developments. This increases housing density, which is much needed for social/rental markets. The risk is also reduced depending on whether the applied asset and property management strategy is market oriented which has a bearing on whether the MIH achieves viability and sustainability.

3.6.1 Investment Risk from Housing Regulation

There are two views on this policy: one view suggests that legislating inclusionary housing distorts the free operation of markets, not to mention land and property prices. Currently, developers are not forced to comply regarding inclusion of some affordable units in a development, but government does have advantages in the provision of bulk infrastructure. Private developers cannot recoup sufficient returns on their investment unless developers upgrade public roads and water supplies to service surrounding areas as well as their own development through a concept known as planning gain or value capture (Higgins, 2019). Planning gain refers to the increase in the value of land resulting from planning permission granted for that land which accrues to the owner of the land. A levy or tax may be applied to divert some of the planning gain for redeveloping the area. Higgins, (2019) found uplift in value for properties due to

transport infrastructure upgrading in the UK. This concept is similar to 'Tax Increment Financing' (TIF) by which approved development companies use the concept of 'value capture' to redevelop deteriorated neighbourhoods (Squires and Hutchison, 2014).

Developed and developing countries have incorporated inclusionary housing policies in different variations in attempts to do away with concentrated low-income residential markets. In most post-colonial countries, the issues pertaining to land and housing shortages are greatly influenced by the inherited colonial structures, which in certain instances limited access of urban land for the poor majority, prohibiting them from purchasing and owning urban land. Thus, lack of consensus on land issues, and title deeds for housing remain the major challenges faced by many African cities. Ruiter (2009) points out that with the constraint of available land, limited supply and the increased need for accessible amenities, land prices and housing prices ultimately increase, which, again, decreases affordability. In as much as adaptation to 'developed world' models of housing have been attempted, shortages of housing too still exists in such countries (Hoekstra and Marais, 2016).

The chapter finds that the best way to reduce NIMBY opposition is to reduce the investment risk of MIH developments. This involves setting up better planning frameworks, as well as monitoring and evaluating specific outcomes of inclusive housing. This includes delivering MIH developments through collaboration, with a bias towards the private sector. Given the shortfalls associated with public sector provision, well-structured collaboration which is well-regulated and monitored has the capacity to provide good quality housing units that can be good investment assets.

3.6.2 Risk from Delivery Mechanism

It is a common thread throughout literature that local governments do not have the appropriate skills to rationally set the best implementing modality. This lack of skills and resources results in inaccurate financial feasibility analyses, and the absence of

project evaluation, leading to the failure of planned schemes, and strategies, which only further discourages the participation of private institutes. Tomlinson (2007) as well as Pillay and Naudé (2006) highlight the shortcomings of the South African government, and how previous models, policies and programmes have been unsuccessful in addressing the problem of access to finance for affordable housing. Therefore, the governments of numerous countries have reached out and tried to encourage the investment of private capital to finance and support the local affordable housing programmes.

Collaboration between the public and private sectors is a key factor, as real estate developers and financial institutions have experience in monitoring construction costs, and upholding a high standard of construction quality. In many countries, this relationship between the public and private sectors is based on the formula of the public sector providing land and procedures, with the private parties providing the finances and execution.

Most MIH developments are delivered through collaboration (Molaskalyk, 2008). This collaboration provides 'land' finance for land assembly, reallocation grants, and project packaging support. Land finance is followed by the 'infrastructure' finance, which funds basic infrastructure grants and bulk infrastructure projects. End user finance is also important where 'households' housing finance access mortgages for self-help housing developments. The 'formal housing' finance includes mortgages and related support such as insurance, refinancing and securitization where capital markets play a huge role. This kind of financing requires adequate knowledge in understanding financial products offered by commercial banks (Tomlinson, 2007; Pillay and Naude, 2006). There is also the 'rental housing' finance that gives rental project finance and incentives to tenants in social housing and lastly the 'contractor or developer' finance for emerging contractors as a way of bridging finance for increasing housing supply.

The World Bank, (2015) points out that in Sub-Saharan Africa, only 3% of the population can afford a mortgage. There is need to continue encouraging policies that taps into globalized fund such as FDIs. This put commercial mortgages in the forefront of promoting homeownership through longer term finance structures and encourage competitiveness in mortgage markets in ways that make mortgages affordable (World Bank, 2016). There is also need for policies that originate from the grassroots in ways that back up microfinance, savings groups, and cooperatives towards affordable housing (World Bank, 2016; Marais and Cloete, 2017).

Government's facilitation of projects in the form of bulk infrastructure is one way of financing housing development projects. The National Housing Finance Corporation (NHFC) and International Finance Corporation (IFC) invested half a billion rand through the International Housing Solutions (IHS) company (SACPN, 2014). Parastatals such as Eskom, where its Pension and Provident Fund collaborated with HIS are also included here in the half a billion rands. The IHS investor successfully financed its housing investments though the 'SA Workforce Housing Fund' (SAWHF) and IHS Fund II.

This deal managed to build approximately 28,000 homes for public sector employees from this fund. In return, developers agreed to reserve a portion of the project for MIH inclusion. South Africa followed suit, with municipalities playing an important role in promoting inclusionary housing (Marrais *et al.* 2017). In the United States, the same policy has been successful; for example, Montgomery country in Maryland, where inclusionary zoning policy and land use regulations reserve 15% of housing for low-income families (Hughen and Reeds, 2014). Density bonuses encourage mixed income developers to build more units per given area than permitted.

In South Africa, MIH development would receive financial assistance in the form of local tax abatements or increments that help remove barriers to financing. Du Preez and Sale (2014) find that developers benefit by cross-subsidizing capital from market

rate units to subsidy units depending on the state of the market. Where the market is weak, subsidization to market rate is required and the opposite is true where the market is stronger (Hughen and Read, 2014). Thus Hughen and Read (*ibid*) recommend that large-scale MIH developments are able to create their own localized property market as they attract a larger higher-income base that helps create a critical mass of market units and, therefore, better sustains the developments. The larger the higher-income base, the better the performance of the social housing component

Collaboration plays a major role in the delivery of MIH developments. Rowlands *et al.* (2006) finds that developers are willing to engage in these kinds of developments in the USA because as a stakeholder, government plays an important role in minimizing investment risk in MIH developments through expanding infrastructure and by deploying adequate security personnel to guard against crime (Freeman *et al.* 2004). At national level, some metropolitan cities such as Cape Town metro have a condition that MIH developments must include a specified number of affordable and low-cost houses in exchange for publicly owned land selling concessions. Local councilors are in charge of directing planning officials to set aside 60% of municipal land for inclusionary housing (Prinsloo, 2008).

There are two dimensions with regard to incentives surrounding proposed developments and the percentages mentioned above, depending on circumstances through which MIH developments have been implemented (Roux, 2007; Verster, 2009). A ‘Voluntary Pro-active Deal Driven’ approach (VPADD) involves a developer provides approximately 0-30% affordable housing. Another approach, the incentive linked regulation based component called ‘Town Planning Compliant’ approach (TPC) is where a developer provides affordable housing that does not exceed 60% of the whole development. In the USA, the design is such that in every development of Hope VI there is a section of smaller affordable units within a complex of larger market-rate units. This design supports buyers who might eventually ‘graduate’ into the larger units

within the area where government further subsidizes mortgages in market-rate sections of the development (Feijten and van Ham (2009).

If the subsidy amounts remain low, the less affluent neighborhoods become the likely MIH location, as in the case of FLISP gap-housing programme. By prescribing the size of the subsidy house to remain the same as apartheid-era structures, one is agreeing to the lower market location and therefore rendering the MIH concept to be a low-income model rather than challenging the desegregating housing model. Although, the subsidy amount for the 40m^2 house has risen from R15 000 in the 1990s to R160 573, it is still not competitive for the MIH concept to work well within the context of its definition.

3.6.3 Investment Risk from Location of MIH Developments

In South Africa, the most preferred location is one which is closer to economic hubs or places with business and employment opportunities, rather than outskirt/peripheral locations. For South Africa, researchers agree that mixed income housing could be successful if located close to amenities and supported by infrastructure development (Verster, 2009). The South African academic literature perceives location of an MIH development as a contentious issue in that developing MIH in city peripheries and outskirts is associated with apartheid era zoning (Lemanski, 2014; Public Affairs Research Institute, 2013; Human Settlements, 2012; Landman, 2012; Huchzermeyer, 2000). Thus, there still exists a huge misnomer or contradiction that developers argue for outskirt location because this is where developers see business viability in terms of higher absorption rates and cheaper private land (Massyn *et al.* 2017). Market analysis of such a development will indicate high absorption rates for MIH developments. This means investment allocations are likely to follow those developments placed closer to economic development zones and Transport Oriented Developments (TODs) as their value is upheld in the future (Calthorpe, 1993).

Market analysis of such a development will indicate high absorption rates. This means investment allocations are likely to follow those developments placed closer to economic, transport and development oriented zones as their value is maintained. Abelson (2009) argues that to reduce housing costs, the government ought to permit more housing in Greenfield areas, complemented with infrastructure development and good transport networks.

The effect of a well-preferred MIH development is often witnessed by general property price increases in the surrounding neighborhood, indicating a good investment. However, a mixture of low cost and high cost housing is not easily predictable. Location theory postulates that less preferred MIHs have a price depressing effect on house prices due to the high risks associated with low-income households that are part of inclusionary units.

3.6.4 Investment Risk from the Kind 'Mix' in an MIH

It is an investment risk if households cannot pay to sustain the MIH development as a comparison of incomes earned by people in the mix to house prices, an idea explained well in Wong *et al.* (2019). Jupp *et al*'s. (1999) 'pepper potting' concept has extended greatly into understanding how an MIH development should be planned and how the actual houses should be designed in terms of quality, size, and uniformity. This literally means scattering poor households in otherwise richer neighborhoods. However, this results in bitterness owing from the 'pepper dissolving' into a good neighborhood and therefore making its new, less affluent residents indistinguishable from the original inhabitants. Higgins and Moore (2016) show two different ways of designing mixed income housing in Figure 3.6 which include 'salt and pepper' design which spreads affordable housing unevenly in the development and the silo design where units for an income class are concentrated in one building of a development

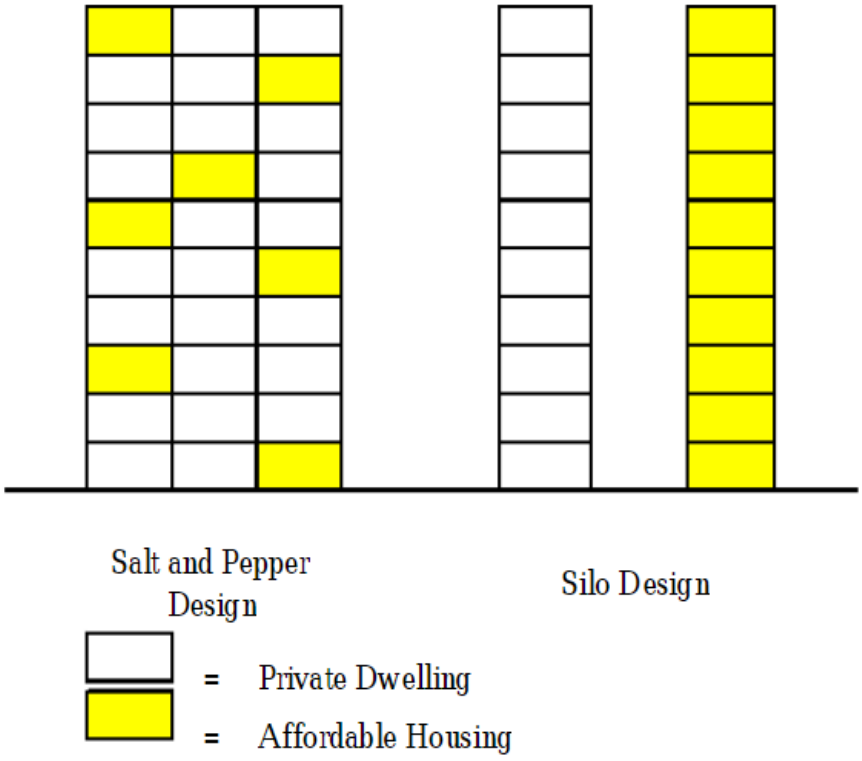


Figure 3.6: Residential Developments and Mixed Tenure Housing
Source: Higgins and Moore, 2016

South Africa, follows the 'silo' design as IHP proposes the strict separation in space of affordable units from market units (Verster, 2009). However, a uniform architectural style is desirable because the development should be able to absorb the surrounding demand in neighbourhoods, and be integrated as far as possible.

Literature on this aspect concurs, stating that the development of affordable housing should be architecturally compatible with neighboring market-rate homes, thereby preserving the character and marketability of the neighborhood. This reduces NIMBY opposition towards such MIH developments as investor attitude to MIH is improved, and this stimulates investments in residential markets (Hughen and Read, 2014; Khadduri, 2001).

There would, however, appear to be an absence of any consensus in academic literature on how housing policy should be modified to achieve both goals of deconcentrating urban low-income neigbourhoods to create more integrated neighbourhoods with households with different incomes and of racial backgrounds live together. Perhaps, as suggested by Brophy and Smith (1997), it is necessary to have guidelines that are more grassroots in focus, capable of empowering people according to their needs that are specifically aimed at creating opportunities for low income households (Brophy, 1993; Escobar 1995).

3.6.5 Investment Risk from Inefficient Asset and Property Management

Gruis and Nieboer (2004) find most European countries (such as Netherlands, Germany, and Britain) use market-orientated social housing systems that lean towards privatization and decentralization of public tasks and housing policy. This view provides a forward-looking perspective given that government has limited resources, which requires collaboration with the private developers. There is a need for a more market-oriented social housing management in developing countries, such as South Africa, which, unlike the developed world, is still grappling with the development of housing stock within a myriad of legislation and policies (Priemus *et al.* 1999, Onatu, 2012). Of particular note is Britain, where local authorities and housing associations are leaning towards the strategic level for the housing associations to employ more asset management skills in support of investment policies to increase housing stock.

Literature shows that good management of an MIH is a critical factor in maintaining its attractiveness and marketability and hence investment value over time (Graham *et al.* 2009; Thomas *et al.* 2004; Brophy and Smith, 1997). Effective management includes increasing security guidelines, good resident relations, site maintenance, trash collection, and management of child play areas. Tenant selection, intake standards,

enforcement of lease provisions (including rent collections) and house rules, as well as providing extra services such as in-unit upgrades, package acceptance, cable TV and internet service and, in some cases, a business Centre (HUD, 2003) will improve the acceptability of an MIH.

Questions on management responsibility are an oft debated issue, where it is recommended that an in-house developer company or its appointed agent with property management experience will help the development in maintaining good appearance and value (Gruis and Thomas, 2002). This is because the on-site visibility of the company's office makes a good impression and therefore such developments are thought to be viable and capable of maintaining value despite some of the units being in the subsidized category (Gruis and Nieboer, 2004). However, Gruis and Thomas (2002) point out that management tools for RDP and social housing need improvement as the units have to be sustainably managed, despite the fact that they are largely non-profit making and therefore do not fit the usual profile.

The sustainability of MIH developments is possible through good asset and property management of the of RDP and Social Housing components of MIH developments (Akruti and Dwight, 2013). Sustainability is about the feasibility and success of IHP and the harmonious continuity of such a development where people living together within different housing typologies are able to benefit in the long term despite their cultural and racial differences and with little to no conflict or the fear of crime. Brophy and Smith (1997) raise an interesting point about the social housing (rental) component being crucial to the success of a mixed income development as its performance is a bellwether for prospective investors in the sector. This indicates that the sustainability of an MIH development rests on the performance of RDP and Social Housing as numerous studies have shown.

3.7 Conceptual Framework for Reducing Investment Risk in MIHs

Literature reviewed from countries such as Austria, the Netherlands, UK, and the USA has revealed certain risks associated with MIH developments. The idea of business plans in this comprehensive plan clearly shows the need the government had to place the housing issue in the hands of efficient private markets (Yates and Wulff, 2005). Globally, inclusionary housing policies encourage investments in residential markets that have the potential to increase the supply of housing for the poor in a way that deconcentrates poverty, and integrates people of different racial ethnicities.

The reviewed countries have continued adapting the MIH concept as a way of stopping concentrated poverty. For South Africa, social integration, as a means to end inequalities reminiscent of apartheid, is the main goal as well as economic development behind the concept. From an investor's point of view, this means that treating MIH developments as direct investment assets will ease the resistance to them and eventually connect with IHP, urban transformation, integration and urban poverty reduction. Following Hendler (1991), there is a need to understand the profit motives of developers and their capital accumulating imperatives. Figure 3.7 shows the conceptual framework through which hypotheses were tested abductively in order to find ways of reducing investment risks associated with MIH developments.

This study conceptualizes houses within MIH developments as investment assets that maximize and maintain value for all involved stakeholders. The implementation of inclusionary housing policy remains central to the viability and efficiency of residential markets in attracting investment funds. Following Bazeley and Jackson (2013), some theoretical postulations were made from *a prior* literature to inform the nodes for a thorough content analysis (Vaismoradi *et al.* 2013).

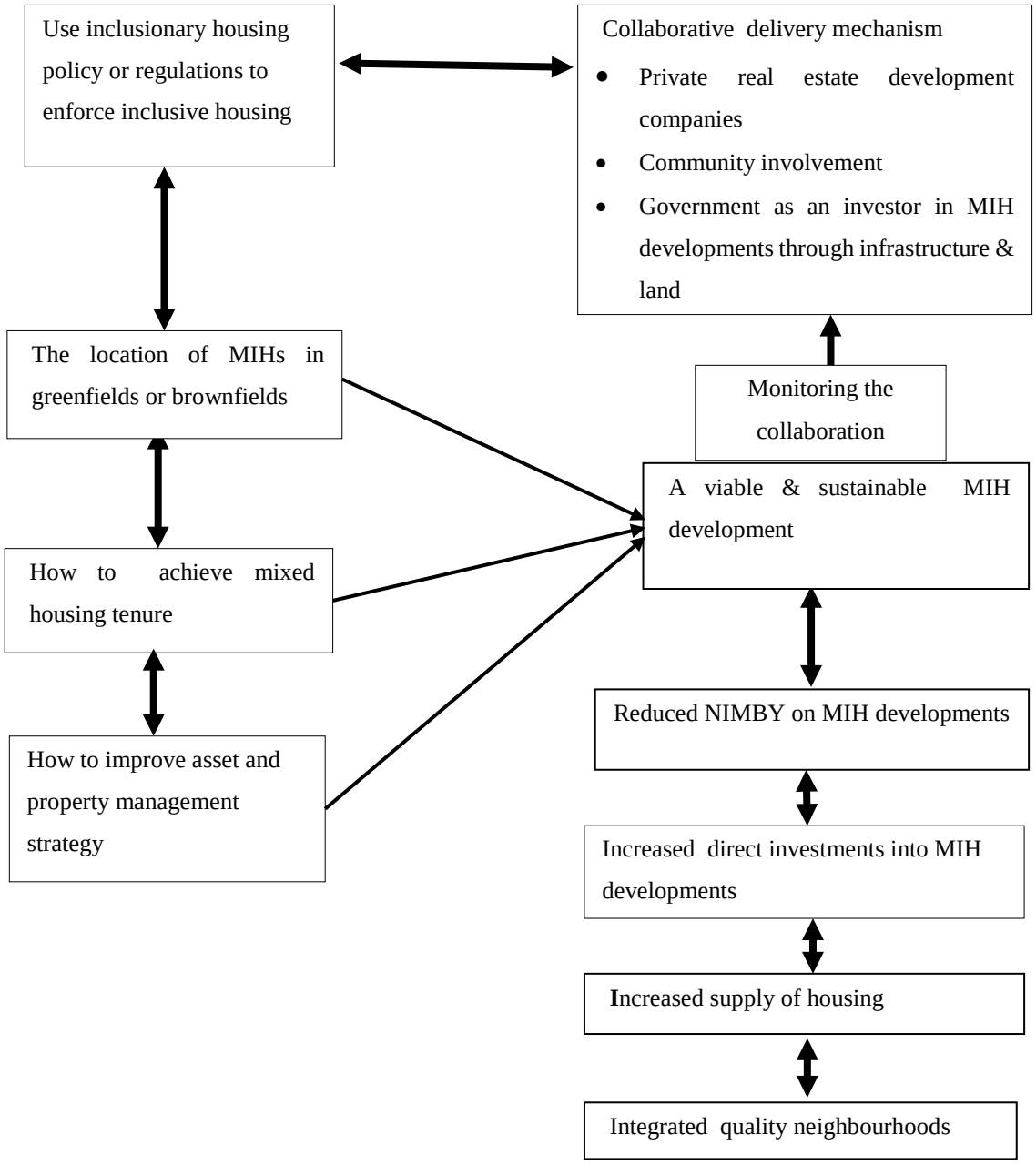


Figure 3.7: MIH Investment Risk Reduction Conceptual Framework
Source: Own compilation

Firstly, participants were asked to confirm or reject a hypothesis framed from literature for the modification of future MIH implementation investment guidelines. The hedonic valuation modelling used in this study is based on the notion that a housing asset is a composite good that derives its value from its utility-bearing attributes or characteristics (Calhoun, 2001). Hedonic theory postulates that the value or price of a house is determined by its physical amenities and neighborhood characteristics. This means that the theory is able to provide an insight into how an MIH affects the pricing of houses in the receiving neighborhoods (Chin and Chau, 2003).

From an investment theoretical perspective, stakeholders evaluate MIH developments in such a way that the related benefits of MIH should outweigh the associated costs. The sought guidelines should be minimizing risks, and improving the administration of property in mixed developments. When involved stakeholders understand mixed income housing as an investment asset, they are able to recommend guidelines capable of reducing the associated risks and costs in a way that rewards appropriate returns for risks taken. It means such improved MIH developments will have the ability to attract investments within the context of an Inclusionary Housing Policy. Thus, for wealth-generating mixed income housing investments, it is important to know how these expected returns are affected by the way the MIH is regulated, financed, located, designed, mixed and managed as sources of risk.

The study ultimately investigates ways to reduce NIMBY opposition and improve future MIH developments that are viable and sustainable. Thus, the study employs positivist philosophy through which hedonic modelling investigated the effect of an MIH development on its neighboring house prices using secondary data. This was followed by a qualitative second study which used data from documents, site-visit observations, and interviews.

As a parallel empirical study to testing for NIMBY effects of Cosmo City MIH development on its neighborhood house prices, second study investigated ways though which the NIMBY problem can be reduced through guidelines that reduce investment risk associated with MIH developments thereby making future MIH developments viable and sustainable. As with any other risk-bearing investments, the concept of a risk-return trade-off does have application to MIH developments. Thus, MIH investment should be valued in terms of expected rental returns and capital growth using Net Present Value (NPV) and Internal Rate of Return (IRR) investment valuation tools. The NPV discounts cash flows using the market opportunity cost of capital where stakeholder investors maximize their investments. The investment theory behind risk-return trade-off is that mixed income housing should reward risks taken by all stakeholders for the development to be considered successful.

Investment theories link MIH to sustainability screening in an objective manner, assessing the model as an investment asset that is capable of giving good returns and integrating the poor (effectiveness) at the associated costs and risks (efficiency). It is the hypothesis of this research that for MIH developments to achieve optimal inclusion there are critical guidelines to consider. They include inclusionary policy development, a viable collaborative finance mechanism, location green/brownfield preference, the nature, and degree of mixing people, and asset and property management as shown in Figure 5.3. This list is by no means exhaustive but it guides all theoretical arguments for MIH composition and scale. This study expands ideas by Khadduri (2001) on factors debated in literature on taking housing as an investment asset in making MIHs successful.

Evidently, investment theory drives the viability sustainability of MIH developments (Hui, 2010). When developer companies and banking institutions finance the construction and acquisition of residential assets, on the advice of real estate agents and property valuers, all jointly become investors in those projects, as well as house-owners, ward councilors and ratepayers' associations. In summary, stakeholders including managers of

organizations that are directly involved in implementing, regulating, or providing advisory service to, or are affected by MIH developments ultimately perceive risk differently within the MIH development. For an MIH development to be successful, mixed income housing should reward risks taken by stakeholders from an investment theoretical perspective.

3.8 Summary

An important conclusion is that MIH developments must be viable, sustainable and able to maintain value for all stakeholders (Nguyen, 2005; Klug et al. 2013; French and French, 1997; Jorgenson, 1967). If NIMBY opposition towards such MIH developments is reduced, investor attitude to MIH is improved, and this stimulates investments into residential markets. This shows the need for well thought out guidelines that improve the implementation procedures of MIH developments. The premise is that ineffective implementation of MIH is the root cause for increased NIMBY opposition against MIH developments in South Africa. The emergent themes (sources of risk) listed below are referred to as nodes in the research design (Fox, 2017).

- Compulsory IHP is a source of risk for the development of mixed income housing (section 3.6.1)
- The nature of collaboration in MIH developments affects investment value of MIH developments (section 3.6.2)
- MIH developments that are built closer to economic hubs are expensive and not profitable(section 3.6.3)
- Mixed housing typologies that do not absorb the local market are risky (section 3.6.4).
- Asset management that is private oriented is risky to MIH developments (section 3.6.5).

CHAPTER 4: RESEARCH DESIGN

4.1 Introduction

Research design shows the complete plan for set out research as explained by Saunders *et al*. (2016) This chapter presents the research design that connects the conceptual frameworks previously discussed in Chapter 3 to empirical research in two parallel empirical investigations to NIMBY effects of the multi-dimensional mixed income housing (quantitative research) and the necessary guidelines for improving future developments (qualitative research). The research design is shown in Figure 4.1

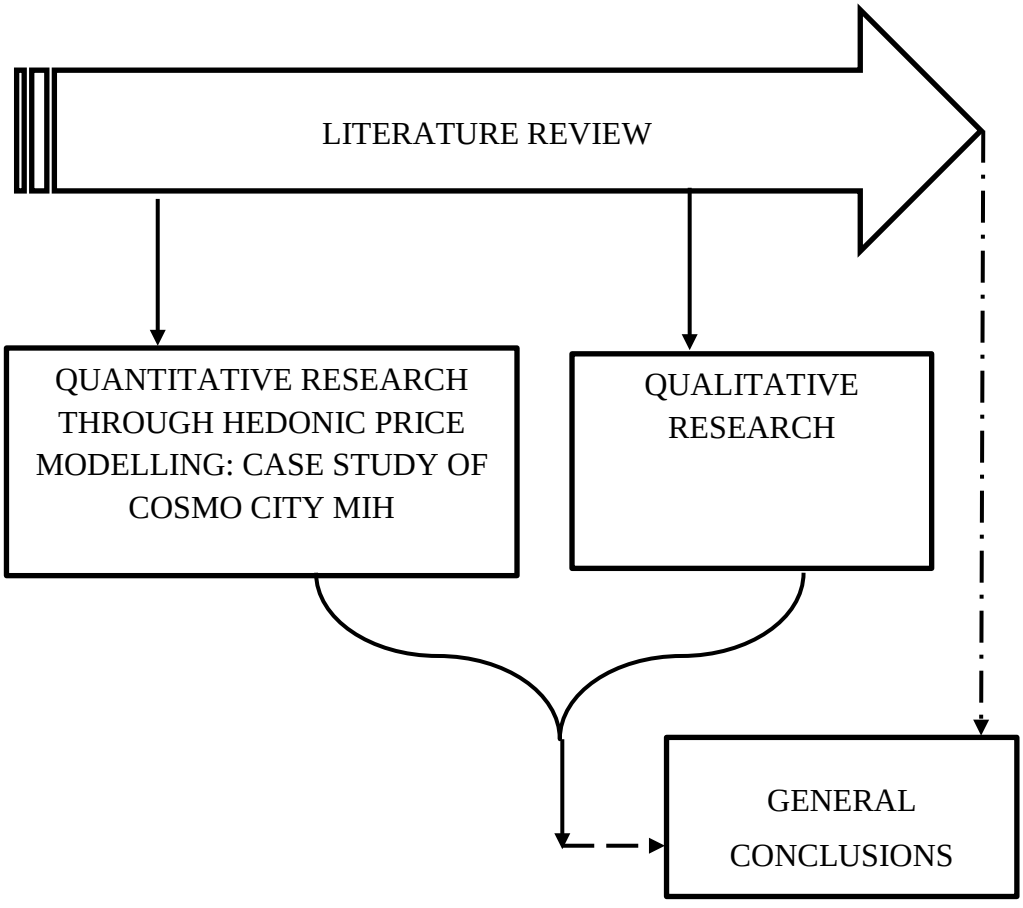


Figure 4.1: Mixed Methods for Two Parallel Investigations on MIHs
Source: Own compilation

It is not the intention of this chapter to repeat other methodological perspectives already covered comprehensively in literature. Following Saunders et al. (2016, pp. 124), both the quantitative (A) and qualitative (B) research designs comprise six sections as guided by the famous research onion (Figure 4.2) regarding (a) ontology-epistemology/philosophy of knowledge, (b) research approach and strategy, (d) choice of methods, (e) time horizon of data, (f) techniques and procedures of analysis.

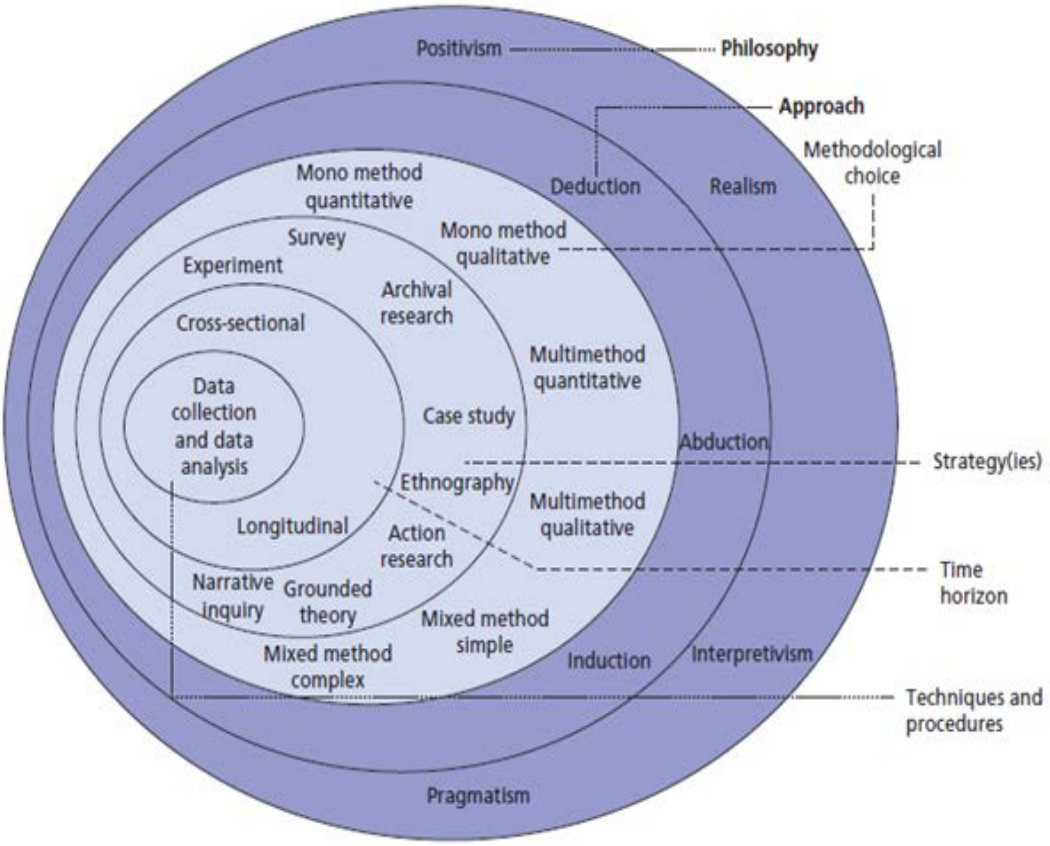


Figure 4.2: Research Design
Source: Saunders *et al.* 2016

4.2 Research Philosophy

4.2.1 Ontological Position of the Study

Ontology is concerned with the 'being' of things. It refers to what kind of entities exist in reality and assumptions about the form and nature of that reality. Thus, ontology is the study of reality, how things really are, and how things really work. It is concerned with whether reality exists independently of human understanding and interpretation. These realities are distinguished in literature as realism, idealism, and materialism (Barker *et al.* 2016). Realism claims that there is an external reality independent of what people may think or understand it to be (unconsciously). Thus, realism claims to be objective. Realism philosophy purports that there exists reality outside the cognizance and intellects of the scholar and that every concept that is acknowledged as true can be reviewed. Direct realism pre-conditions that the researcher's experiences reflect reality whereas critical realism sees the researchers experiences as not necessarily reality but subjectively directed by the mind.

This is different from idealism, which maintains that reality can only be understood via human mind and constructed meanings which make decisions subjectively. Materialism claims that there is a real world composed of material and a physical world that is considered real. Beliefs, values, or experiences arise from the material world. This study thus falls under realism and materialism where 'truth' about the way house values respond to what happens in a neighbourhood and how the MIH developments may be improved are viewed objectively rather than subjectively

4.2.2 Epistemological Position of the Study

Epistemology is the theory of knowledge or philosophical views, which deals with questions of what should be regarded as acceptable knowledge in a discipline. Theories of knowledge regarding social reality are often based on experience and individual social constructs (Bryman and Bell, 2013, Zainal, 2007). Positivist and interpretivist are the two broad philosophies of the nature of knowledge, where constructivism (reality is socially constructed, that there is no external reality that is not socially constructed independent of human consciousness) and naturalism fall under interpretivist. Positivist philosophy uses objective logic, which claims that truth is not relative and that it is independent of one's subjective understanding. Positivism bases social constructs of reality on themes that are known to be true in a way that reduces bias from subjective opinions (Tsang *et al.* 2019).

Positivism is a leading philosophy in research. It accepts that the 'social construct' exists objectively (accurately) and externally (quantifiably). Thus, positivists favour scientific methods which are objective to answer their inquiries. Thus, the researcher is able to get explanations on an already set objective reality and this enables the researcher to understand what truth should be. Positivism is applied when reality exists externally to the researcher and that its properties can be measured scientifically as an empirical enquiry on house prices. A positivist philosophy looks for explanations of a phenomenon based on accepted predetermined knowledge where the researcher can investigate the cause-effect relationship of a phenomenon.

This means there is need for hypotheses and research questions formulated by a researcher using predetermined knowledge. Thus, data collected is usually quantitative and analysis is usually statistical. Positivism contrasts with interpretivism philosophy, allowing the researcher to study social and cultural complexities of reality. The investigator of a phenomenon has to collect data through observations and contact with

participants (Tsang *et al.* 2019). These are usually smaller samples that are analyzed qualitatively. The study is therefore designed using positivist philosophy. The qualitative study also uses positivist philosophy to logic, building an argument from theory-hypothesis and applies interview data that leads to confirmation or rejection of themes (Chong, 2019; Woiceshyn and Daellenbach, 2018).

4.3 Research Approach

Research approach refers to the tactics employed to conduct an empirical enquiry, which are inductive, deductive, and abductive. Inductive logic is when research starts without predetermined hypothesis such that data itself create patterns that can be used to create theory. Inductive logic is usually used following interpretivist philosophy that that takes 'truth' as a construct from human subjectivity. A positivist philosophy employs the classic example by Aristotle, *"all men are mortal. Socrates is a man. Therefore, Socrates is mortal."* Deductive reasoning is a top-down logic that is consistent with predetermined logic, while for this study, abductive logic analyses themes that are guided by investment theory (Figure 4.3).

This study uses a positivist philosophy in that regression coefficient values will be able to measure the MIH NIMBY effect on house prices. A hedonic pricing model is used as an epistemology of enquiry through this objective ontology. Figure 4.3 sums up key details about this philosophical thinking. There is a clear distinction between deductive reasoning that uses true statements versus abductive reasoning that provides explanations to the identified themes in order to test existing theory (Khairul and Noor, 2008; Yin, 1991). Deductive reasoning is a logical approach in which a conclusion is based on the agreement of multiple premises that are generally assumed true.

The logic is that NIMBY opposition can be verified deductively to investigate the hypothesis that Cosmo City MIH affects its neighborhood negatively by reducing house prices. Thus, the study tackles a multi-dimensional problem, which requires a more pragmatic approach. After this investigation, it is important to try to find implementation measures or guidelines that may reduce this NIMBY problem against MIH developments in future. This investigation uses abductive logic to test investment themes.

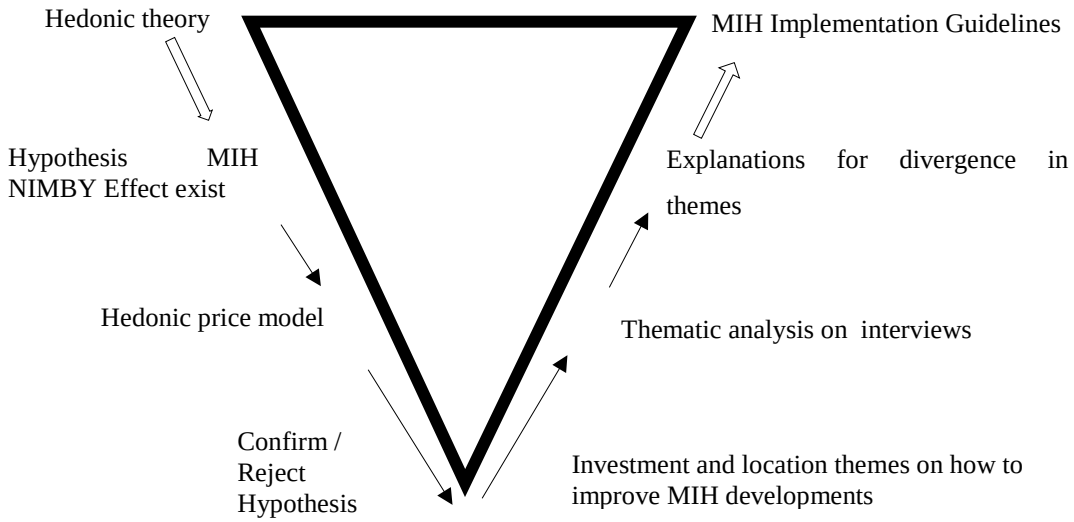


Figure 4.3: Deductive and Abductive Reasoning
Source: Adapted from Saunders *et al.* 2016

To investigate NIMBY opposition, the study uses deductive reasoning, empirical data, and hypothesis testing where house sales and their characteristics are hedonically modelled to measure the effect of Cosmo City MIH on its neighborhood house prices. Thus, the effect is viewed objectively to provide a measurement perspective. Drawing from hedonic theoretical arguments put forward earlier, the effect measurement uses "house price" as the epistemological representation/proxy variable through which perceptions on MIH developments are investigated. This construct is of a positivist enquiry using quantitative data on house price formation behaviour using the hedonic

pricing model where ‘house prices’ is the basis for opposition by house and property owners and the basis for calculating investment returns (McConnell and Wiley, (2010; Ellen and Voicu, 2006; Gornstein and Virrilli, 2006; Delorenzi, 2006; Mao, 1967).

Hedonic modelling is a positivist philosophy providing a deductive judgement based on coefficient values and signs of the hedonic distance variable used in many other studies, including Sale (2013). Palmquist (1992) uses a proxy of distance variable to capture the effect of Cosmo City on its neighboring house prices. Thus, the hedonic regression model is based on coefficient values of the distance variable to indicate whether the effect is positive or negative. Rossi-Hansberg and Sarte, (2012, p. 4), reasons that “measuring housing externalities is a complex task where proxies of the unobservable themes are used to make abductive conclusions.” This section outlines the philosophical thinking on “what, when, where, how and why” research methodology summarized in Table 4.1.

Using deductive reasoning, empirical data was collected for houses sold from 1995 to 2016. Thus, house transfers and property characteristics were used as an ontology to evaluate the effect of MIH objectively. Figure 4.4 summarizes the ontology employed through hedonic modelling to investigate the hypothesis that there is a negative effect of MIH developments on neighboring house prices.

The construct is that private stakeholders’ perceptions and attitudes towards a mixed income-housing model are reflected in their investment decisions. This can highlight the differences between theoretical postulations, government transformation goals, and business practices. This section explains very clearly how the study is deemed reliable and valid given the adequacy of information collected (Lather, 2006). This is shown through the choices regarding research philosophy, research design data analysis and ethics considerations. In order to investigate a way to modify the current MIH models while at the same time incorporating government transformation goals and encouraging

business practices, abductive logic is used to explain and understand investment decisions behind MIH resource commitments (Creswell, 2011; Saunders *et al.* 2016; Lather, 2006).

While literature review provided the theoretical foundation of MIH, abductive logical thinking is employed to investigate investors' expectations, requirements, and preferences for mixed income developments from investment theory (Zalaghi and Khazaei, 2016; Sneider and Larner, 2009). Investment themes are analyzed through cycles of abductive research. To improve the implementation of mixed income housing developments, abductive analysis is applied in a way that fits different themes that are already identified in literature. Participants were required to evaluate MIHs based on their experiences, opinions, judgements, knowledge, and values of mixed income housing in an abductive way. There is also a mixture of both methods, and indeed, 'pragmatism' research is becoming increasingly common. It is particularly useful when one wants to be objective on a multi-dimensional topic. As shown in Table 4.1, the methodology for this study aligns coherently from the overall philosophy of objectivism, through ontology, epistemology to aims and data collection methods. (Fox, 2017; Graham, 2016; Leitch, 2010)

Table 4.1: Research Philosophy on Future MIH Development

Philosophy	Study Aim	Data Collection	Ontology	Epistemology
Objectivism	To carry out thematic analysis on themes considered true in modifying MIHs	Qualitative data based on reality and truth as explained in literature themes. Small number of participants on whether they agree or disagree with themes put forward regarding MIH improvements	A condition of being true based on investment and location theories outside of a participant's individual biases, interpretations, feelings and thoughts	Realism uses objective judgement

Source: Adapted from Graham (2016)

Given the history of South Africa and its development stage, something beyond deductive logic is considered suitable for an analysis of concepts and themes emanating from literature to give a deeper perspective. Central concepts guiding the success of MIH developments in South Africa situate the modes of implementation or operation within abductive logic as well.

A case study strategy aims to get an in-depth understanding of a phenomenon such as NIMBY and is the strategy employed for this study (Yin, 2014; Palinkas, 2015). In ethnography, a researcher is part of the research so that most data is collected by observation and involvement in a community. Where the study seeks to address issues and implement solutions, an action research strategy is appropriate. This means the researcher takes part in the study or organization that needs solutions. Grounded theory strategy is mainly used in behavioral studies where data is collected through observation and analyzed to see if there are patterns that can generate theory. Research strategies are associated with philosophical perspectives as shown in Figure 4.4.

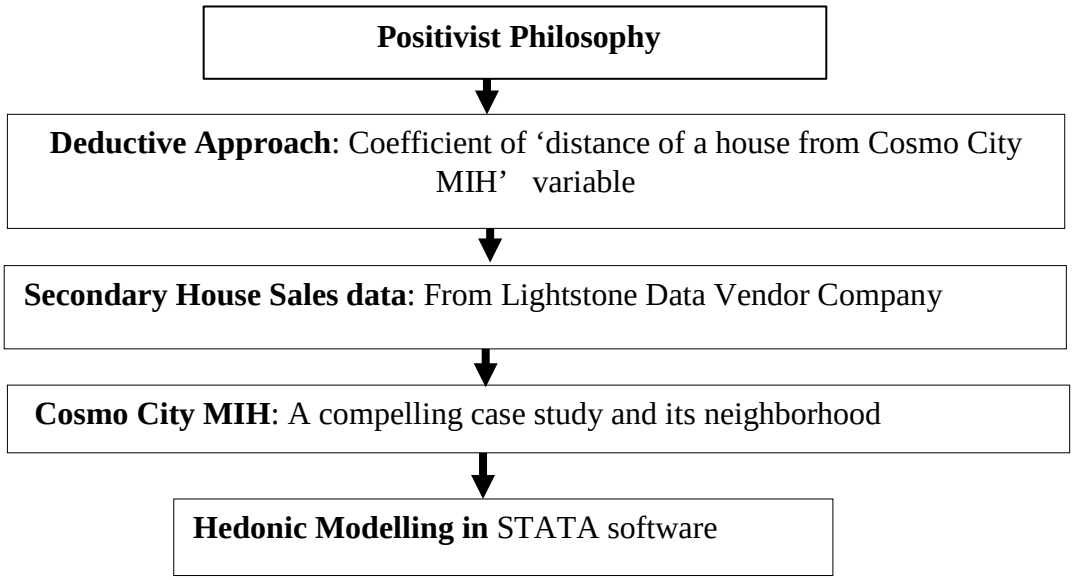


Figure 4.4: Hedonic Price Modelling on MIH NIMBY Effects
Source: Own compilation

A hedonic framework has been used in previous studies as price is the strongest basic yardstick for objections by house owners (Du Preez *et al.* 2013; McConnell and Wiley, 2010; Feijten and van Ham, 2009; Galster *et al.* 2006; Atkinson, 2005; Pollakowski *et al.* 2005; Ellen, 2008; Schwartz *et al.* 2006; Song and Knaap, 2002, Butler and Garnett, 2002; Ding and Knaap, 2002; Simons *et al.* 1998; De Salvo, 1974). This research approach is evaluative in nature within the hedonic pricing ontology. This has implications on what factors, attributes and characteristics command value in the evolving residential market. The study empirically tests an alternative hypothesis of Cosmo City MIHs negative effects on neighboring house prices from 2005, the year it was built.

A qualitative approach was used, which entailed gathering information through site visits, document analysis together with journal articles. The researcher carried out site visits in Cosmo City MIH and its neighborhood in order to broaden the understanding of challenges in the neighborhood of Cosmo City. This was done in 2016 and 2017 through semi-structured interviews with participants who were purposefully selected in the area. For data that is not found in a quantifiable state, Google Maps and Google earth were explored. Data was collected from site visits, preliminary interviews, and face-to-face random interviews.

4.4 Research Strategy

Research strategy is a systematic plan of action to produce robust and quality results. The study employs case study strategy beyond which there exist other strategies such as experiment, survey, archival, case study, ethnography and action explained in literature (Saunders *et al.* 2016). The case study strategy endeavors to get an in-depth understanding of the phenomenon of mixed income housing which has provoked significant NIMBY opposition (Yin, 2014; Palinkas, 2015).

The study employs case study strategy to research mixed income housing developments, a multi-dimensional phenomenon that requires investigation. This can be done through different lenses to answer questions related to (a) nature (NIMBY effects of an MIH development on neighbourhood house prices) (b) where (the researcher cannot influence participants on already set out objective themes) (c) and the contextual conditions explained in Chapter 4 are deemed relevant to mixed income housing developments.

4.4.1 Determining the Unit of Analysis

The study employs a case study as a unit of analysis due to the nature of the empirical questions regarding how an MIH development affects neighborhood house prices. For such an impact is the study attempts to determine whether there is a critical distance point where an MIH has a zero NIMBY effect and if this NIMBY effect actually varies with the quality of the receiving neighborhood. Also the kind of questions raised on how to improve MIH developments require a compelling case study as a unit of analysis that contextualizes why NIMBY is elevated in South Africa.

Yin (2003) suggests binding a case according to time, place, and context in order for the case to have relevance in scope. For this study, the boundaries of the case are that an MIH case study should be conducted on a development built long enough that it provides sufficient relevant information on how the neighbourhood has been affected by its development. Unlike other MIH developments, the chosen case study should be located closer to affluent neighbourhoods as the inclusionary policy seems to dictate in the context of South Africa. It would appear that these types of developments provoke the greatest NIMBY opposition.

There are different types of case study explained in literature which include; explanatory/illustrative, exploratory/investigative, descriptive, single/isolated, holistic/

all inclusive (Zainal, 2007; Yin, 2003). The explanations of each case study type fall out of the intended scope of this study. While there are many types of case studies in literature, this study uses a case study type that is of an explanatory type. Explanatory case studies are used when seeking to answer questions that sought to explain phenomena that are too multifaceted for the survey or experimental strategies. Exploratory case studies are used when there is no clear, single set of outcomes (Yin, 2003). Descriptive and collective case studies are used to understand a phenomenon as it occurred. In multiple-case studies, the researcher explores differences within and between cases with the goal to replicate research across the cases as a way for the researcher to draw similarities and differences.

The study identified Cosmo City MIH development as an instrumental/compelling case study to establish the extent of NIMBY opposition in the surrounding neighbourhoods. Thus, the case plays a supportive role, helping the researcher pursue the external interest of finding ways to improve future MIH developments. Cosmo City MIH development is used as a single case study to contextualize the study and efforts were made to return to the global issue of inclusive housing through MIH developments as initially set out to address housing inequalities justified in section 5.1 (Yin, 2003).

4.5 Research Methods

Research methods refer to the type of data that helps answer research questions more effectively and fulfil set out objectives. There are two choices regarding research methods, which include the mono method and the multiple method (Leitch, 2010, Saunders *et al.* 2016). Outside of the review of related literature, this research is based on qualitative interviews (with representatives of the developer, of a community organization and of a Johannesburg based NGO working in the field of urban development) and on several site visits (guided as well as independent) dating back to

2014. The aim was how to make it financially viable, “infrastructure requirements”, “available land” and “financial viability” are the keywords in this sphere. These terms are all calls for objectivity, and are translated into residential developments that do not seem to aspire to more than creating decent homes for specified target groups, and for the agents, developers, and builders to earn an income.

These methods can be in the form of quantitative or qualitative studies while the multiple method can be multi-methods and mixed methods. A qualitative study captivatingly concentrates on words, meanings, and explanations where the researcher frames complex, general depictions and scrutinizes words in a natural setting while the quantitative study uses statistical implications in exploring social or human problems (Saunders *et al.* 2016).

After quantitatively measuring the effect of an MIH on residential markets in section A, second study further investigated ways in which future MIH developments can be improved such that negative effects can be reduced. The study used mixed methods where secondary data on house prices was collected and analysed parallel to qualitative data on how to improve future MIH developments, which was collected through semi-structured interviews. Data also included hand written notes from the Africa Property Investment (API) summit, Gauteng City Region Observatory (GCRO) workshops and AfRES seminars and conferences (observation data).

For quantifiable data, Google Maps and Google earth were important sources. To ensure reliability, data was sourced from a property-consulting firm called Lightstone Company. The data includes house price sales in seven neighbourhoods of Cosmo City MIH. This section provides an overview of the data used for the analysis giving an explanation of the characteristics and attributes of data from 1995-2016. In the hedonic price modelling literature, the house’s attributes, characteristics, and proximity to amenities are the major house price determinants.

4.6 Time Horizons of Data

This was cross sectional data, collected at one point in time from different participants. The relevant population interviewed included all important stakeholders involved in MIH developments at management levels in municipalities, developer companies, banking officials, government officials and real estate agents. From an investment theoretical perspective, purposefully selected participants were deemed able to evaluate MIHs in such a way that minimizes associated risks and costs for houses in an MIH development. This means such improved MIH developments will have the ability to attract investments within the context of inclusionary housing. Thus, for mixed income housing investments, it is important to see how stakeholders evaluate guidelines found in literature. As shown in Appendix A.3, these include the debates on inclusionary housing policy, financing ways, location of MIHs and sustainability of an MIH development. Debates in academic literature also extend to the actual design of an MIH regarding quality, size, and uniformity of housing. This also extends to the degree of mixing regarding composition of race, religion, status, and culture of households.

4.7 Techniques and Procedures of Data Analysis

4.7.1 Quantitative Method: Hedonic Technique

Methodologies used to empirically investigate residential property markets are diverse (hedonic models, event studies and index analysis, to mention a few). At the global level, the hedonic strategy is commonly used. Hedonic theories conjecture a relationship of an MIH development to its neighbourhood house prices. Thus, the development of an MIH is bound to influence the price of houses in the neighborhood negatively or positively (Du Preez *et al.* 2013; McConnell and Wiley, 2010; Ding and Knaap, 2002; Simons *et al.* 1998; De Salvo, 1974). The study is set to determine the

relation between distance from the MIH development and the prices of houses in the neighborhood. The quantitative research presented in this chapter used pooled cross sectional regressions on house prices and amenities as explanatory variables. In an experiment, the study uses two groups to test the effect of a phenomenon where the treated group is compared to a control/placebo or counter-factual group. In the USA, some studies have conducted 'Difference In Difference' (D.I.D) analysis and found that MIHs have no negative effects on house prices (Galster, 2004; Schwartz *et al.* 2006). The problem with DID analysis is that one needs a counterfactual (in other words, an understanding of what the price would have been in the absence of an MIH) (Briggs *et al.* 2013).

Other researchers have used spatial econometrics to control for spatial dependence (Bala *et al.* 2014). This study uses an Auto Regressive Term (ATM) to control for this. It is a problem to rationalize this by using assumptions and dummy variables, which blur interpretation of findings because the treatment and control groups must be similar in every aspect. A survey research strategy is used where a wide range of analysis is needed hence large amounts of data is collected to get answers on who, what, how on the subject matter of the research without getting into the deeper paths of why some phenomena are happening. It is also possible to track changes of a variable over time. However, the amount of materials accessible and obtainable may be incomplete and inadequate and hence fall short on reliability.

To evaluate the effects of the Cosmo City MIH development on surrounding house prices, a quantitative approach was used through hedonic price modelling. The choice of hedonic modelling was deemed appropriate given the thoroughness of different possibilities within the hedonic price framework. Given the discussion on methodologies used, this study employed the traditional parametric specification, using some control variables; Can (1992) recommends both semi or double linear log instead of the Box-Cox procedure. Linear regression coefficient values represent a marginal

price attribute whereas semi-log function regression coefficients represent house price percentage change given a unit change in attributes.

Sampling Frame

Data included all houses sold from 1995 to 2016 as a ‘population’. Data came from seven suburbs surrounding the Cosmo City MIH development, which include Bloubosrand, Chartwell, Dainfern Golf Estate, Farmall, Jackal Creek Golf Estate, North Riding, and Zandspruit Extension 4. Woodhill Golf Estate was added as a control suburb. Secondly, data used from Lightstone on neighborhoods is more reliable and representative of the entire population of all houses sold. The inclusion of only one compelling case on seven surrounding neighborhoods into a cross-sectional analysis helped increase the number of observations and hence mitigate some of the shortcomings of generalization.

Following du Preez and Sale (2014), actual sales prices rather than assessed municipality values were the preferred set of data on house prices. This is because assessed values tend to be undervalued and do not reflect consumer-implied estimates of value. The purchase prices were inflated to 2016 current value. All house prices were converted to 2016 prices using the ABSA house price index (Table 4.2) to reconcile houses sold in different years and as a means to deal with inflation issues within the data set. This yielded a ‘pooled cross sectional’ data set representative of the Johannesburg residential market conditions (Du Toit, 2015).

Table 4.2: ABSA house price index

Year	Index	Year	Index
31 Dec 2000	100.0	31 Dec 2009	354.9
31 Dec 2001	114.3	31 Dec 2010	381.2
31 Dec 2002	131.7	31 Dec 2011	387.9
31 Dec 2003	159.6	31 Dec 2012	390.4
31 Dec 2004	211.1	31 Dec 2013	429.3
31 Dec 2004	259.0	31 Dec 2014	469.1
31 Dec 2006	298.7	31 Dec 2015	523.9
31 Dec 2007	342.1	31 Dec 2016	524.3
31 Dec 2008	356.2		

Source: Du Toit, 2015

The 'pooled cross-sectional' regression model uses Ordinary Least Squares (OLS) of semi-log specification shown in equation 5.1.

$LN (P_i) = \alpha + \beta X_i + \varepsilon$ …….5.1

Where;

Pi = Price for individual house (i) in surrounding suburbs of Bloubosrand, Chartwell, Dainfern Golf Estate, Farmall, Jackal Creek Golf Estate, North Riding, Zandspruit Formal Extension 4, and Woodhill Golf Estate

Xi = is a vector of hedonic explanatory variables for house i,

βi = are the estimated coefficients (percentage increase in price per unit and increase in explanatory variable).

ε = the residual component

Hypothesis 1: Cosmo City MIH depressed house prices in its neighborhood between 1995- 2016

H1: βDistance Contour 1 > 0 …….6.2

The hypothesis stipulates that there is a statistically significant relationship (association) between house prices and MIH development distance, which means the slope (β = implicit price) of a regression model captured by variable 'Distance Contour 1'. The slope indicates a direct relationship that the price of a house in the neighborhood increases as distance from Cosmo City MIH increases (+β). If an MIH suburb, B is built closer to suburb A which has more highly valued houses than houses in suburb B, then the houses in suburb A are likely to decrease in value. On the contrary, if suburb A had low valued houses, then building an MIH suburb B closer to A might increase the prices of houses in suburb A.

Hypothesis 2: There is no critical distance of 'zero MIH NIMBY effect'

Distance contours are able to capture the locational advantages that determine house prices. For South Africa, literature is silent about the point at which an MIH ceases to be of concern to homeowners. The study sought to determine this 'zero MIH NIMBY effect' point by using dummy variables that captured distance rings of 1 kilometer apart (Table 5.4). These were created for each suburb under study and were later converted into categorical variables. The intention was to check if there exist differences across neighbourhoods regarding how these different neighbourhoods perceived the Cosmo City MIH development. Where information was not found in a quantifiable state, extended techniques were applied using Google Maps, Google Earth to get more control variables. Lightsome Property Company based in Johannesburg, South Africa provided the main data set used for this study.

Hypothesis 3: The effects are dependent on the quality of a neighborhood

The effect of the Cosmo City MIH development on its neighborhood are likely to depend on whether the neighborhood is low, medium, or high income. The intention was to check if there exist differences across neighbourhoods regarding how these

different neighbourhoods perceived the Cosmo City MIH development. This is because the current trend is that most MIHs are built in highly priced affluent neighbourhoods.

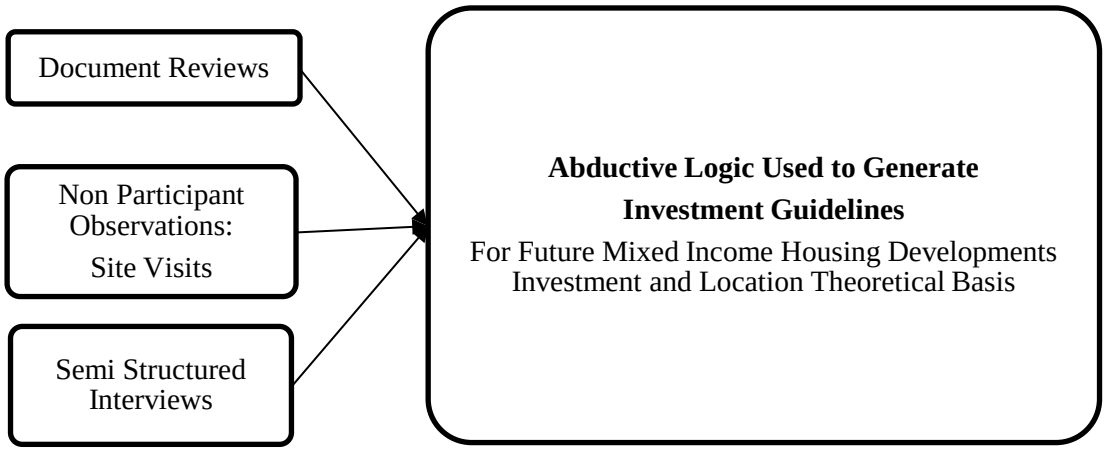


Figure 4.5: Qualitative Research Design
Source: Own compilation

4.7.2 Qualitative Technique: Thematic Analysis

First stage of data collection

Outside of the related literature, the qualitative technique used for this study used data from interviews (the developers and NGOs working in housing development). Guided and unguided site visits provided non-participant observations collected between 2015 and 2017. Discussions with residents as well as with real estate agents also gave insight. Document reviews and the non-participant observations were triangulated such that interview data carries more weight than data analyzed from documents and non-participant observations. This shows that this was a multi-method strategy as shown in Figure 4.5

Preliminary data was collected from site visits, preliminary interviews, and face-to-face random interviews. These yielded hand written notes that were also included in the study. The final nodes captured the answers given under each specific question and facilitated color coding as a thematic analysis linking data to propositions in an iterative way. Following Sousa and Rojjanasrirat (2011), Polit and Beck (2010) and Adams *et al*. (2016), there was no need for a larger number of participants except to establish a saturation point. The interview data was collected in an exhaustive way whereby interviews took between 20 minutes to one hour. Semi-structured interviews examined hypotheses formulated from literature to facilitate an exhaustive debate and, at the same time, stuck to the most relevant issues to mixed housing developments'

Second Stage of Data Collection

Validation of the nodes was done through a second stage of data collection. The researcher facilitated the process by engaging six participants who are experts to synthesis and rationalize the different views that emerged from interview data. Cross validation involves contacting participants again to check the exactitude of facts and observations.

Non-Random Sampling Frame

Sampling frame refers to a list of elements to be studied which could be individuals, or households. Where there are no available databases, non-random sampling becomes the default where individuals are selected based on a discretionary or snowball basis. The purposive selection of participants was based on more than three years' experience criteria across relevant sectors of the urban market that were deemed relevant in providing insights into the future of MIH developments. The main data was collected from developer companies, estate agents, government departments, Cosmo City residents, Cosmo City neighborhood residents, NGOs and banks. The semi-structured interviews of 20 participants provided data. Selection of participants was based on a

minimum three years' experience criteria shown in Table 4.3. Semi-structured questions make it possible to examine deeper issues that originate from literature with the aim of reconciling such information with literature debates.

4.8 Constraints

There are many other MIH developments built so far in Johannesburg and South Africa. The study should be read bearing in mind the shortcomings on generalization. Variables such as inflation rates were not controlled for, as all houses prices were affected by the same macroeconomic conditions and policies and the global financial crises in year 2008 (Simo-Kengne, 2014). However, adjusting for inflationary factors through House Price Indices made it justifiable to overlook macro-economic house price determinant factors as in Demary (2010). The study, however, focused on a compelling mega MIH case study mainly because residential developments are unique. The advantage of using the Cosmo City MIH development was that it borders on low, medium, and high-income markets and hence is considered a good representation of other sub-markets.

There is always existence of researcher bias in seeking an objective truth and facts as a considerable limitation. To counter these limitations, document reviews and non-participant observations based on contextual interpretive perspectives were also considered in both data collection and analyses.

Table 4.3: Summary of Informants Source: Own compilation

Pseudonym	Profession	Role/Position	Interview Type	Date
1	6th annual Africa Property Investment (API)	Analyst	Documents & Observation	2015
2	Developer	Manager	Personal	6-May 2016
3	Estate Agent	Manager	Personal	20-May 2016
4	Banker	Investment Analyst	Personal	27-May 2016
5	Developer	Manager	Personal	3-Jun 2016
6	Banker	Property Investment Analyst	Personal	22-Jun 2016
7	Developer	Manager	Personal	5-Jul 2016
8	Estate Agent	Director	Personal	23-Jul 2016
9	Resident	Accountant Manager	Seminar	24-Jul 2016
10	Developer	Manager	Personal	24-Jul 2016
11	National Department of Human Settlements	Manager	Notes	6-Oct 2016
12	Gauteng City Region Observatory (GCRO) Civil servant?	Assistant Director	Documents & Observation	15-Aug 2016
13	Surveyor General Office	Surveyor General	Personal	10-Nov 2016
14	Cosmo City Resident	Manager	Personal	11-Feb 2017
15	Cosmo City Resident	Manager	Personal	11-Feb 2017
16	Developer	Manager	Personal	21-Feb 2017
17	Social Housing Institute	Director	Personal	27-Feb 2017
18	World Wide Fund NGO executive	Manager	Personal	04 Mar 2017
19	NGO executive	Manager	Personal	10-Mar 2017
20	Real estate investment	Property Analyst	Personal	13-Apr 2017

Furthermore, a Delphi method was used to engage experts in evaluating research results alluded to in the study. Using this theory, the hedonic price model specifies attributes and characteristics into environmental, structural, neighbourhood and locational factors (Boshoff, 2013; Du Preez, 2013; Borowiecki, 2009; Ham and Manley, 2009; Selim, 2008; Delorenzi, 2006; Garner *et al.* 2006; Van Wen *et al.* 2004; Limsombunc *et al.* 2004; Barker, 2003; Ball, 1973).

The researcher carried out a pilot study that involved site visits in Cosmo City MIH and its neighborhood in order to broaden the understanding of what determines house prices in this area. This was done in 2014 and 2015 through semi-structured interviews with participants who were purposefully selected in the area. For this study, seven residential markets were investigated regarding how house prices responded to the Cosmo City MIH development in Johannesburg. A theoretical replication is invoked because of the differences between opposing hypotheses (negative and positive effects) where a degree of precision is required.

Theoretical replication contends that "any common patterns that emerge from great variation are of particular interest and valuable in capturing the core experiences and central shared aspects of a case" (Yin 1991), in Shakir 2002, p. 195). A micro level study was necessary for drawing a consensus in literature that different localities experience different forms of change and that there is no possibility of uniformity across suburbs (Kotze, 1999; Saff, 1998). The neighborhood is comprised of eight suburbs which contain the whole population of all houses sold between from 1995 to 2016; Bloubosrand, Chartwell, Dainfern Golf Estate, Farmall, Jackal Creek Golf Estate, North Riding, and Zandspruit Formal Extension 4. Woodhill Golf Estate was included as a control suburb (Figure 4.6)

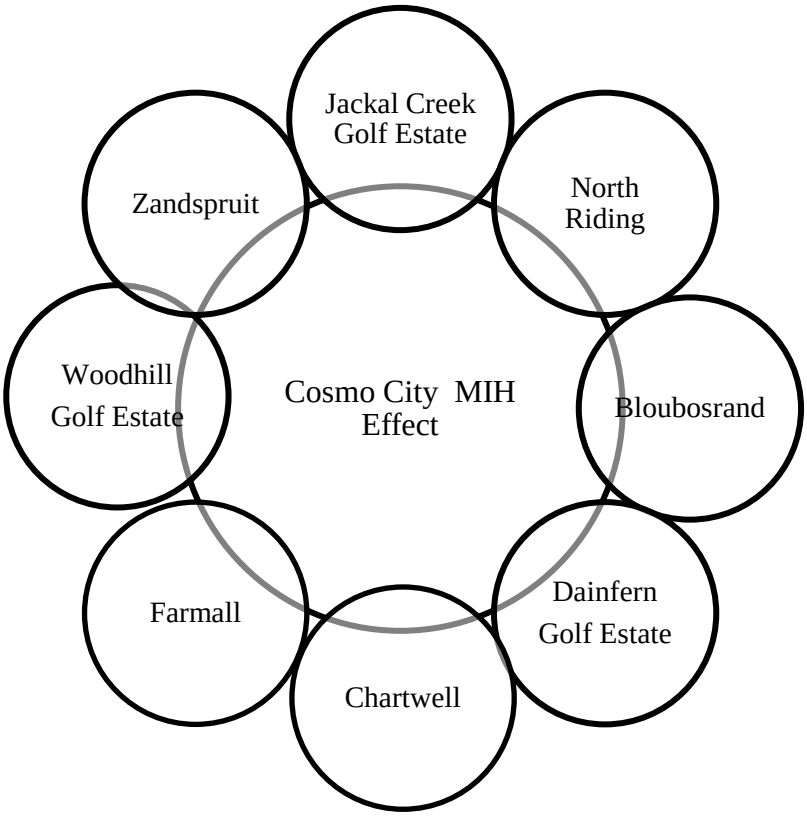


Figure 4.6: Eight Suburbs Selected to Fulfil Theoretical Replication
Source: Own compilation

4.9 Ethical Concerns

Study A used secondary data in modelling MIH NIMBY effects on house prices and this did not raise any ethical concerns. There were ethical concerns for study B that seemed to interrogate why government policies fail on housing delivery (a highly contestable topic on service delivery in South Africa currently). The main ethics risk was that, the study appeared to back a political party as a campaign for the 2019 elections. These were mitigated by engaging as an objective enquiry on themes already set out from literature to avoid biased responses from participants.

To mitigate these problems, informed consent was sought and obtained from Witwatersrand's ethics committees (see attached ethics clearance protocol number

H15/03/19). A participant information document and consent letter made it possible to ascertain that participants did engage in this study of their own free will. Permission and consent letters were obtained and treated with strict confidentiality at individual levels. Data was collected from individuals but analyzed at group level.

Allmark *et al.* (2009) recommends the use of pseudonyms to ensure privacy and confidentiality. Participants needed to give their written informed consent. Person-to-person interview formats were aided with group interviews (Thomas *et al.* 2010). Thus interviews can range from an extremely structured style where questions are pre-determined before the interview to an open ended, conversational format (Thomas, *et al.* 2010).

This study adopted the open ended (semi-structured) or conversational set up that allowed for two-way communications and flexibility (Yin, 2011, Brenner, 2006). The researcher adopted the same conduct with participants in order to collect uniform data. Small samples are used in qualitative research in order to access a greater depth of insight. Semi-structured questions provide some boundaries and yet give the flexibility of eliciting further important information by following upon cues. Because the objective is not to maximise the number of participants (extent), but (value) to gain insight through reaching ‘saturation’ point, the study stresses in-depth investigation by using purposive sampling other than random sampling (Padgett, 1998).

4.10 Reliability and Validity through Delphi Method

Reliability is the extent to which the study is trustworthy, in that other researchers can replicate it at other times yielding the same judgements. Following Cai *et al.* (2017), the study used node lists as themes generated abductively to ensure high reliability of data. The study validated results on MIH implementation investment guidelines through a Delphi method with the aim of building a consensus by checking for agreements and contradictions found in the results.

Method of Data Analysis

More insights came from QSR NUD*IST Vivo (NVivo 11). The digitally recorded interviews were mainly transcribed by 'Transcribe me' to ensure that the interviews were word for word without chances of misrepresentation in the data. Following abductive logic highlighted by Schurink (2003), Varner *et al.* (2011) and Zamawe (2015), interview data was generated from 20 interviews and six Delphi interviews. Computer assisted qualitative data analysis software called QSR NUD*IST Vivo (NVivo 11) was used to do a deeper thematic and thematic analysis in order to extrapolate implementation investment guidelines for future MIH developments.

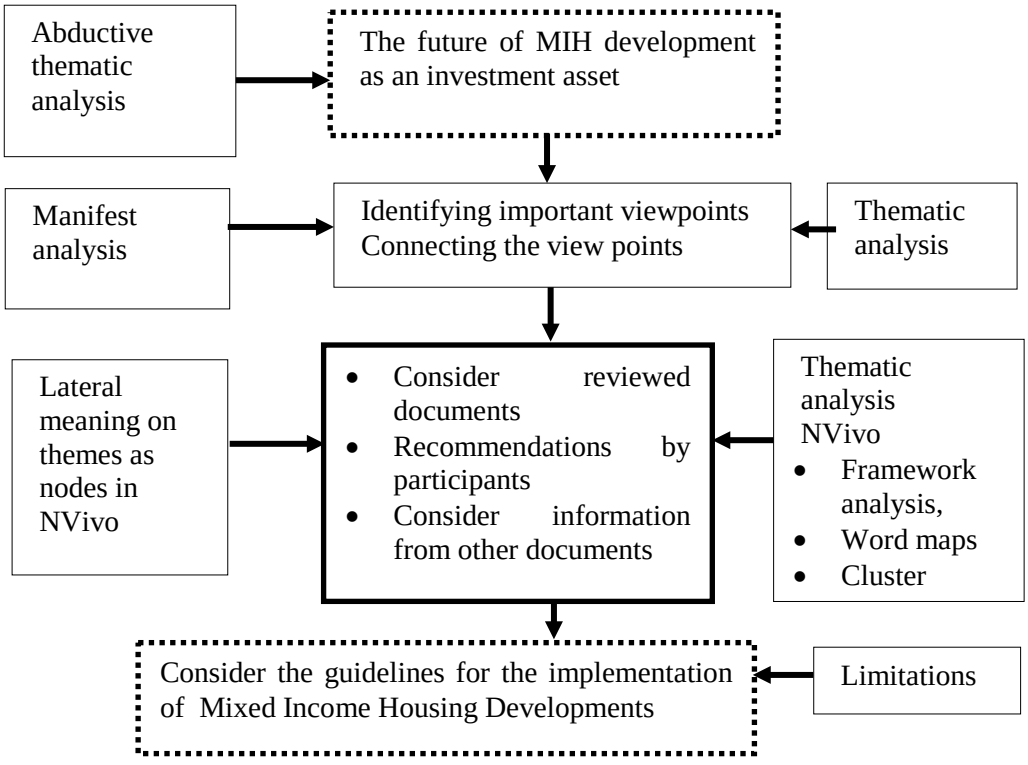


Figure 4.7: Thematic Analysis
Source: Own compilation

Through analytical tools such as ‘framework analysis’, ‘word maps’, ‘cluster nodes’ and ‘explore’, a comprehensive content analysis carried out in Excel showed congruent and deviating patterns revealing the guidelines formulated from the viewpoints expressed by participants regarding MIH investment risk-return trade off. Thematic analysis made it possible to add other hidden meanings regarding what investor preferences are on MIH developments. The legacy of apartheid is such that racially mixed neighbourhoods are novel and hence potentially fraught in South Africa. Integration might be promoted through creation of outdoor spaces that are inclusive in nature (Landman and Du Toit 2014). The steps taken are summarised in Figure 4.7. The abductive logic pointed to themes that are connected to identifying important viewpoints that can improve the current problems associated with MIH developments.

Qualitative Study Limitations

One limitation of this study is that participants were likely to be less objective as purported in the research design. This is because MIH developments are a sensitive issue, especially in South Africa where the concept ideally means ‘mixing the poor and the rich’ which translates into mixing black and white people through housing tenure systems. Results from a compelling case study cannot be generalized to other settings different from the Cosmo City MIH development.

4.11 Summary on Research Design

The study uses a mixed methods approach. The quantitative research design is employed to investigate the effect of an MIH on a neighborhood which is highly likely to vary with distance and other control variables such as ease of access and shorter travel time among others. In that regard the study will also investigate where the effect of an MIH development is zero; that is, the distance at which the MIH will not affect neighboring house prices. The study further extends into finding better implementation investment guidelines that improve the success of MIH. Second study seeks to

determine if MIH should be legislated and thus made enforceable. Further, the study investigates the appropriate delivery approaches for a viable and sustainable MIH development. It is also important to investigate the appropriate location and design of an MIH in terms of quality, size, and uniformity of houses. The suitability of mixing race and social economic status in an MIH development is also examined. Finally the role of an appropriate asset and property management strategy for the sustainability of an MIH development is assessed. This is summarized in Figure 4.8. Thus, the application of investment theory to an MIH development would put the MIH through a risk screening test to evaluate such developments objectively from stakeholder investors, financiers, developers, homeowners, government, and NGOs.

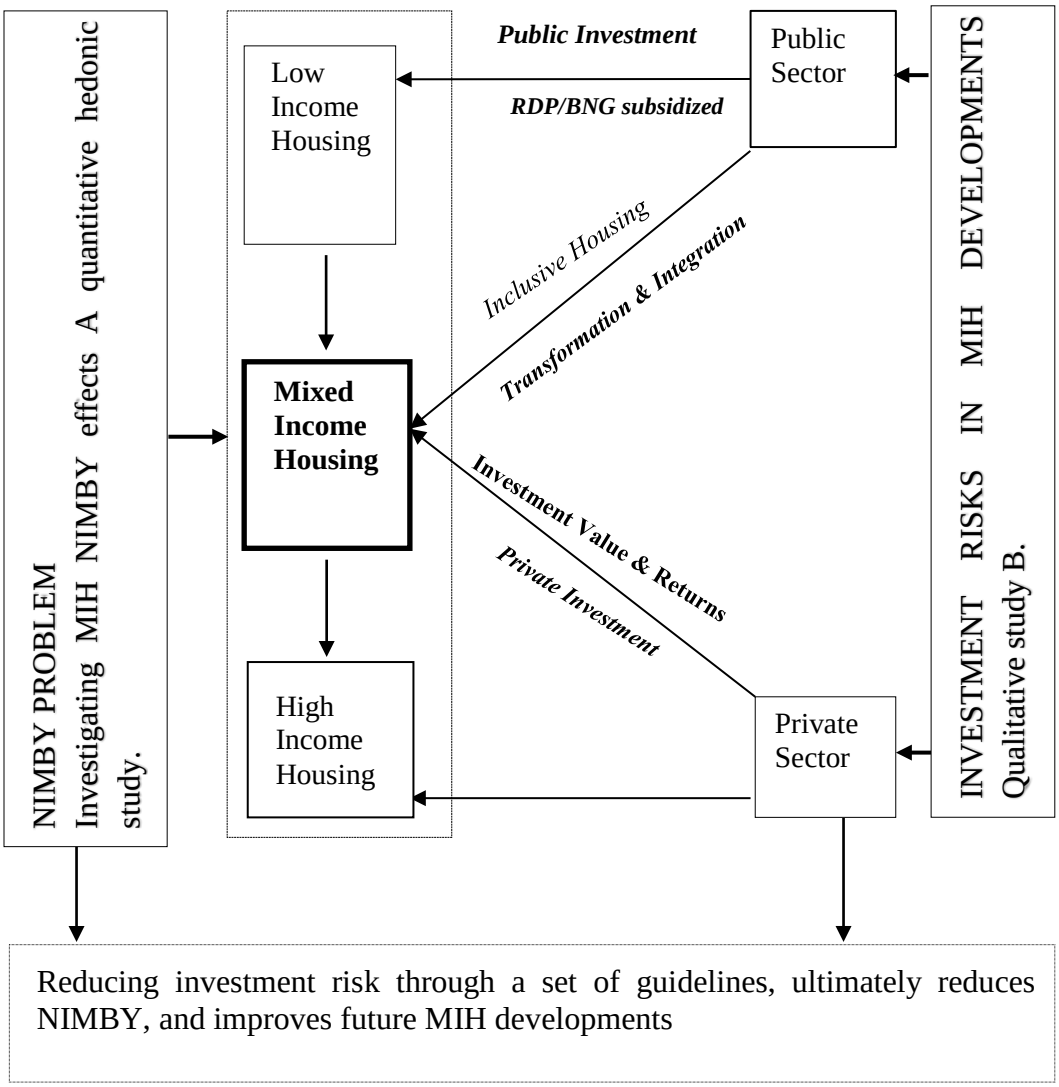


Figure 4.8: Summary of Empirical Studies
Source: Own compilation

CHAPTER 5: THE COSMO CITY CASE STUDY

5.1 Introduction

Cosmo City mixed housing development was a correction to the previously built RDP housing located on the outskirts of towns/cities whereas the location Cosmo City was moved about 25 kilometers from Commercial Business Districts (CBD). The Cosmo City MIH development experienced unprecedented NIMBY opposition. Thus, the chapter describes Cosmo City mixed income housing development in order to provide an understanding of it as a compelling case study as required in Section 4.4.1. This is due to the aforementioned negative effects of low-income markets such as loss of property value, crime, and crowding on services and amenities. The chapter includes the location, its housing typology, its neighbourhood, the intended MIH development, and the challenges associated with it. These are explained throughout the rest of this chapter.

5.2 Location of Cosmo City MIH Case Study

Located about 25 kilometers from Johannesburg CBD, Cosmo City is the first mixed housing estate in South Africa after protracted court hearings with NIMBY opposition. Patel, (2014) traces its origins from late 1998 when the idea was initiated by the Gauteng Department of Housing and the City of Johannesburg. Codevco or Basil Read, the private company started construction in year 2000. By 2012 Cosmo City became the first successfully completed mixed income, fully integrated sustainable human settlement in South Africa shown in Figure 5.1.



Figure 5.1: Cosmo City MIH Development
Source: Patel, 2014

Cosmo City MIH is a 200-hectare residential development in Gauteng Province. It is considered a mega development comprising about 15 000 housing units in various typology options, among others (Palmer Development Group, 2011). There are six schools, five parks, a clinic, and a shopping Centre.

Using Geo Data Software, the map in Figure 5.2 is based on a ‘shape file’ that shows the location of the Cosmo City MIH development and its neighborhood in Region A, Gauteng Province, Johannesburg. This map forms the basis for understanding the area of interest. The scale is shown in the analyzed maps that follow. The map shows a more mixed housing tenure.

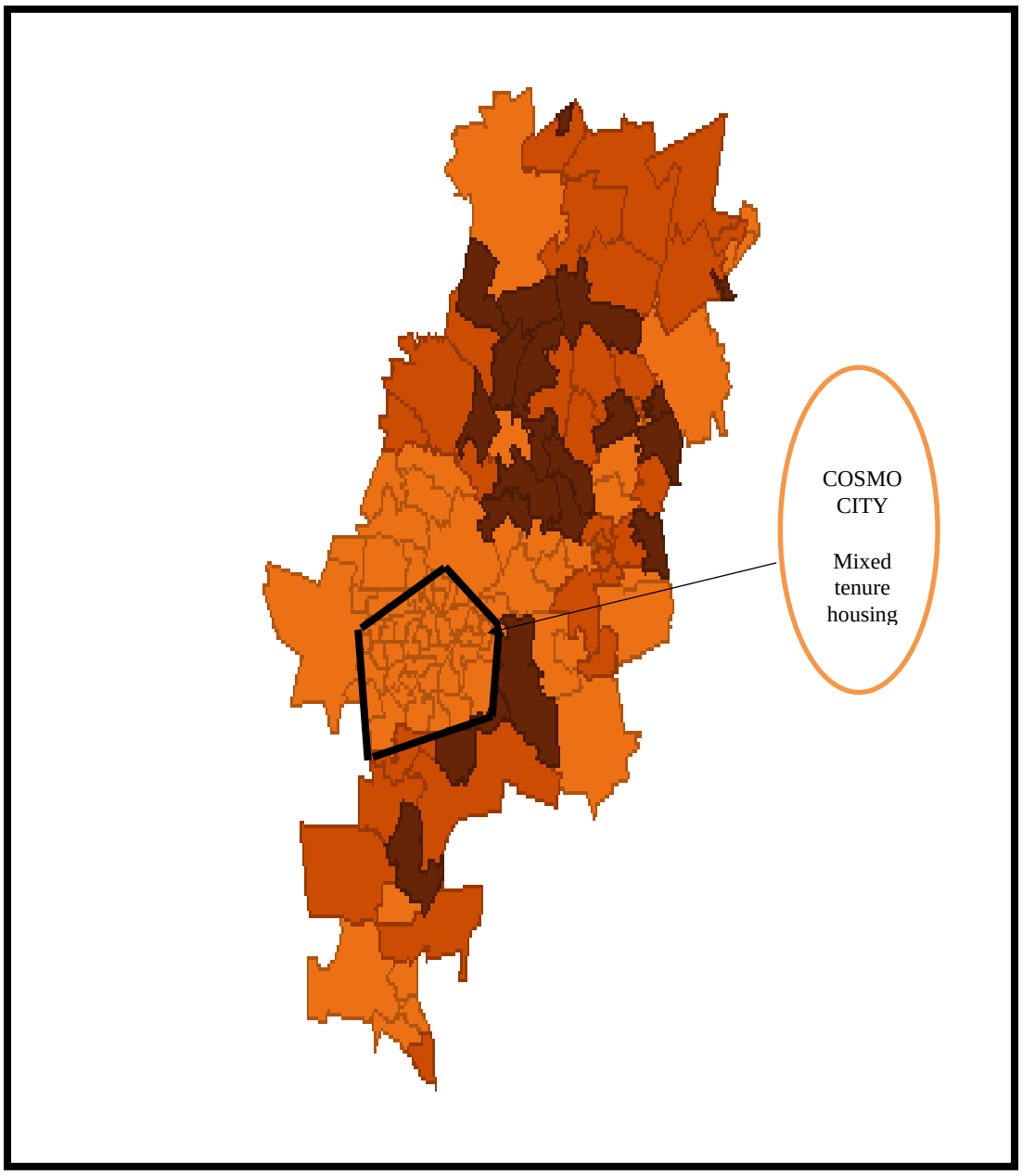


Figure 5.2: Cosmo City MIH and its Neighbourhood Map
Source: Own compilation using Geo Data software

The map in Figure 5.3 shows that the area under study included more middle to high income house prices hence the case study of the Cosmo City MIH development fulfilled the necessary conditions for mixed income housing in terms of the components of different housing units for different income households.

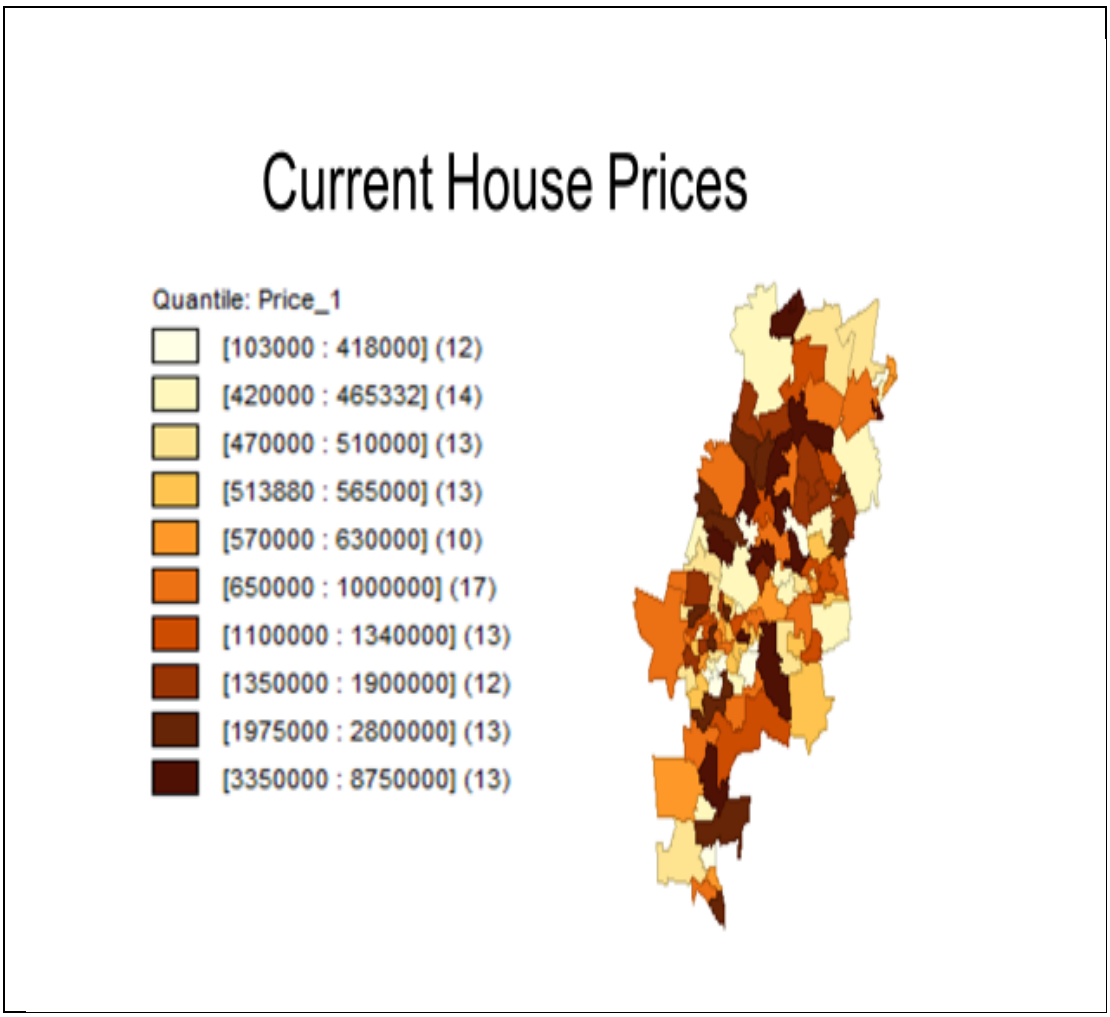


Figure 5.3: Cosmo City MIH Development Mixed Income Households
Source: Own compilation

The development is comprised of about 5,000 low income houses, 3,000 gap market financed credit linked houses, 1,000 social rental housing units and 3,300 open market mortgage houses (Urban Landmark, 2011). Figure 5.4 shows the inner structure housing typologies.



Figure 5.4: Cosmo City's Inner Structure
Source: Haferburg, 2013

5.3 The Neighbourhoods around Cosmo City MIH

The Cosmo City MIH development is surrounded by seven neighborhoods that include; Bloubosrand, Chartwell, Dainfern Golf Estate, Farmall, Jackal Creek Golf Estate, North Riding, and Zandspruit Formal Extension 4. The Cosmo City MIH development was built in 2005 in the City of Johannesburg (CoJ), Gauteng Province and is considered a 'pioneer' of mixed income housing in South Africa (CoJ, 2017). A Google

map extract shows the location of Cosmo City MIH and its neighborhood in Region A, Gauteng Province area in the City of Johannesburg in Figure 5.5.

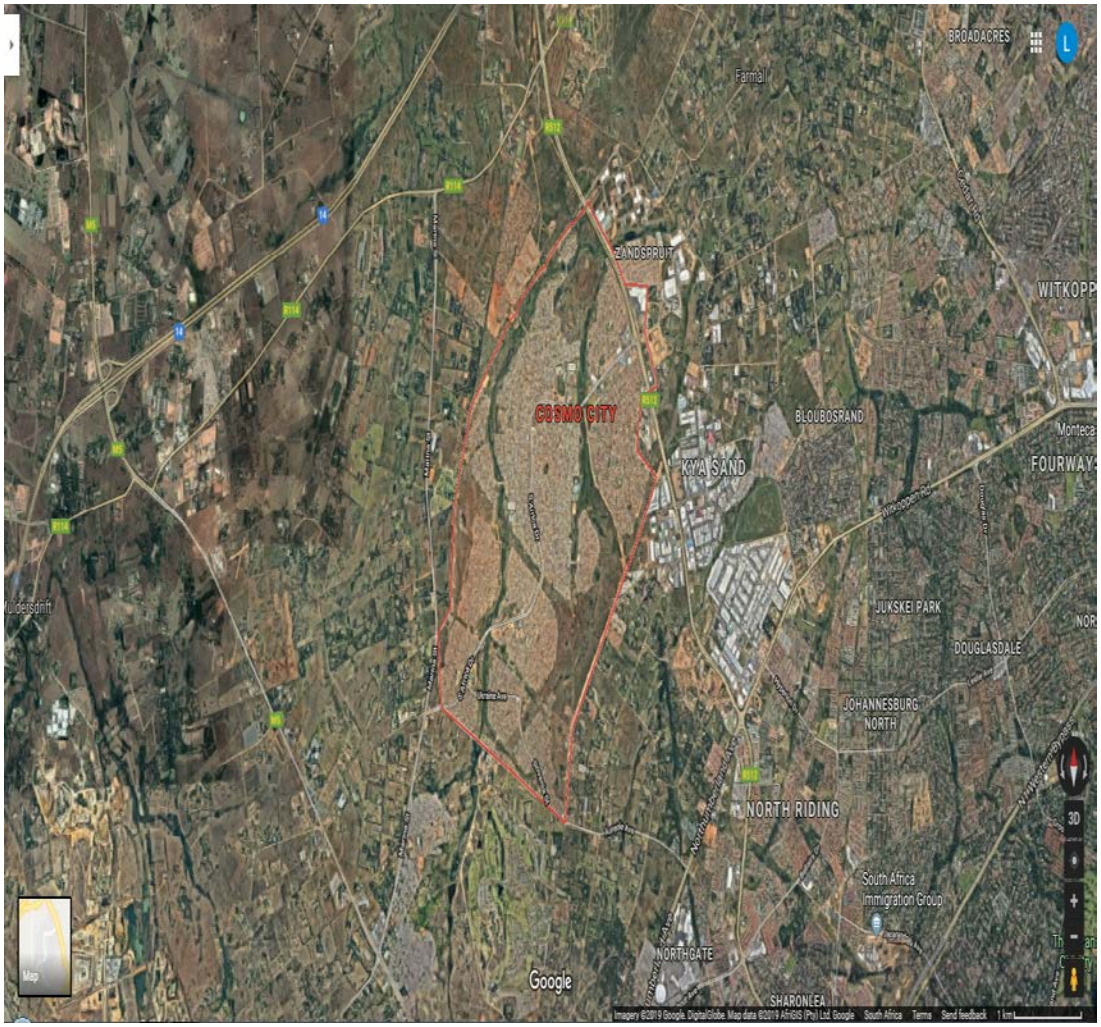


Figure 5.5: The Neighborhood of Cosmo City MIH
Source: Google Maps, 2018

The receiving neighborhoods are well-established existing neighborhoods predominantly occupied by the previously advantaged population. House values in the MIH projects range from about R 200,000 to R1, 500,000. Thus, 'Cosmo City' MIH

development is viewed as a distinct case of MIH as it is the first and largest MIH development in South Africa (Klug *et al.* 2013; Onatu, 2012). Cosmo City MIH is built with a higher density and typology than its neighborhood. Thus, the Cosmo City MIH neighborhood surrounding Cosmo City MIH includes low, middle, and high-income suburbs. This shows that is possibility of varying amount of NIMBY opposition. In addition, there is no suburb in a neighborhood that is inhabited solely by one race. This is because all suburbs have multi-racial populations. Thus, it is highly likely that race is not the source of NIMBY opposition in this area. However, the increased court cases against such housing developments are an indication that such MIH developments require empirical robust research.

Existing homeowners in the neighborhood of the Cosmo City MIH development have always asserted that the MIH development will devalue property prices and increase crime in the area. Dainfern Golf estate suburb brought a profound amount of NIMBY opposition to the Cosmo City MIH (Landman, 2004). It is likely that property owners in Dainfern could have speculated that the proposed Cosmo City MIH would mimic the Diepsloot informal settlement in their 3 km vicinity and therefore have a value depressing effect on their properties. Figure 5.6 shows Diepsloot informal settlement.



Figure 5.6: Diepsloot Informal Settlement Close to Dainfern Gated Golf Estate
Source: City of Johannesburg, 2011

The informal settlement of Diepsloot sprang up in 1995; a year after democracy was attained. It houses South Africans and foreigners from Mozambique, Somalia, and Zimbabwe, all of whom live in shacks and other unsafe dwellings (Charlton, 2004). It is not surprising that property owners in the neighborhood of Cosmo City vehemently opposed its development for fear of bringing crime nearer to their neighborhoods. Having discussed the Cosmo City MIH development and its challenges, the next

section presents the neighborhoods where NIMBY opposition is likely to have caused low house prices.

Bloubosrand is a middle-income suburb and is considered a neighbor to Cosmo City MIH and one that could have been affected by the development of Cosmo City MIH. Miller (2016) provided a comprehensive characterisation of Bloubosrand. Houses in this suburb are worth over R1 Million. According to Stats SA (2011), Bloubosrand includes Black Africans 85.9%, Colored's 1.8%, Whites 9.2%, and Asian 2.5%, out of about 10879 population. It is likely that house prices in Bloubosrand experience a price discount due to this proximity to an informal settlement, which needs to be controlled for in the analysis. The challenges that may depress house prices in this suburb include breakouts of fire from the informal settlement. This is because there is only road as shown on the map in Figure 5.7 separates these two neighborhoods.

The other neighbor is Chartwell described by Stats SA (2011) as a farming area on the outskirts of greater Johannesburg with a 30 minute travel time from the old City Centre (9.07 km^2). Chartwell has a total population of about 1,700, racial composition of 42.5% Black African, 1.6% Colored, 1% Indian/Asian, 50% White. The hypothesis is that property owners in this suburb would not approve of Cosmo City. This is because a high-income neighbor is likely to prefer farming activities compared to urban housing.



Figure 5.7: Bloubosrand and Kya Sands Informal Settlement
Source: Miller, 2016

Dainfern suburb is a ‘gated community’ approximately 16 km from Cosmo city. It is one of the most expensive suburbs in Johannesburg shown in Figure 5.8. The Cities of Johannesburg and Tshwane have the highest number of enclosed neighborhoods in the country (Business Tech, 2017; Landman, 2012). Dainfern was the first gated community built in 1991 and has the most expansive land area covering 320 hectares, followed by Woodhill in Tshwane (Landman, 2004). Dainfern Golf Estate is located in the north-west, between the R28 and the N1 freeways. The only predicted influence is increased traffic flow because of its gated security protection from crime. Nonetheless, this high-income neighborhood had the strongest negative perceptions on house prices. Sales data for Dainfern show that most traded properties were R 5 000,000 on average.

Racial composition in Dainfern consists of 61% White, 26% Black African, 1.7% Colored and 7.7% Indian/Asian of approximately 6,600 units.



Figure 5.8: Gated Dainfern Golf Estate
Source: Google Maps, 2019

Farmall

According to Stats SA (2011), Farmall is a mainly agricultural suburb of Region A, Gauteng Province in Johannesburg, consisting of smallholdings with a total population of about 1000. Total Area is five km^2. Racial composition includes Black African 42.1%, Colored 0.6%, Indian/Asian 0.2%, and White 56.2%. Amenities are 2 to 4 km

away. This is a high-income area where house prices were likely to be affected by the development of Cosmo City MIH.

Jackaal Creek Golf Estate

The most interesting neighboring suburb to Cosmo City MIH is Jackal Creek Golf estate. It is approximately 6 km from the Cosmo City MIH development as shown in Figure 5.9. The estate is the newest in this study and was built in 2008. This means that

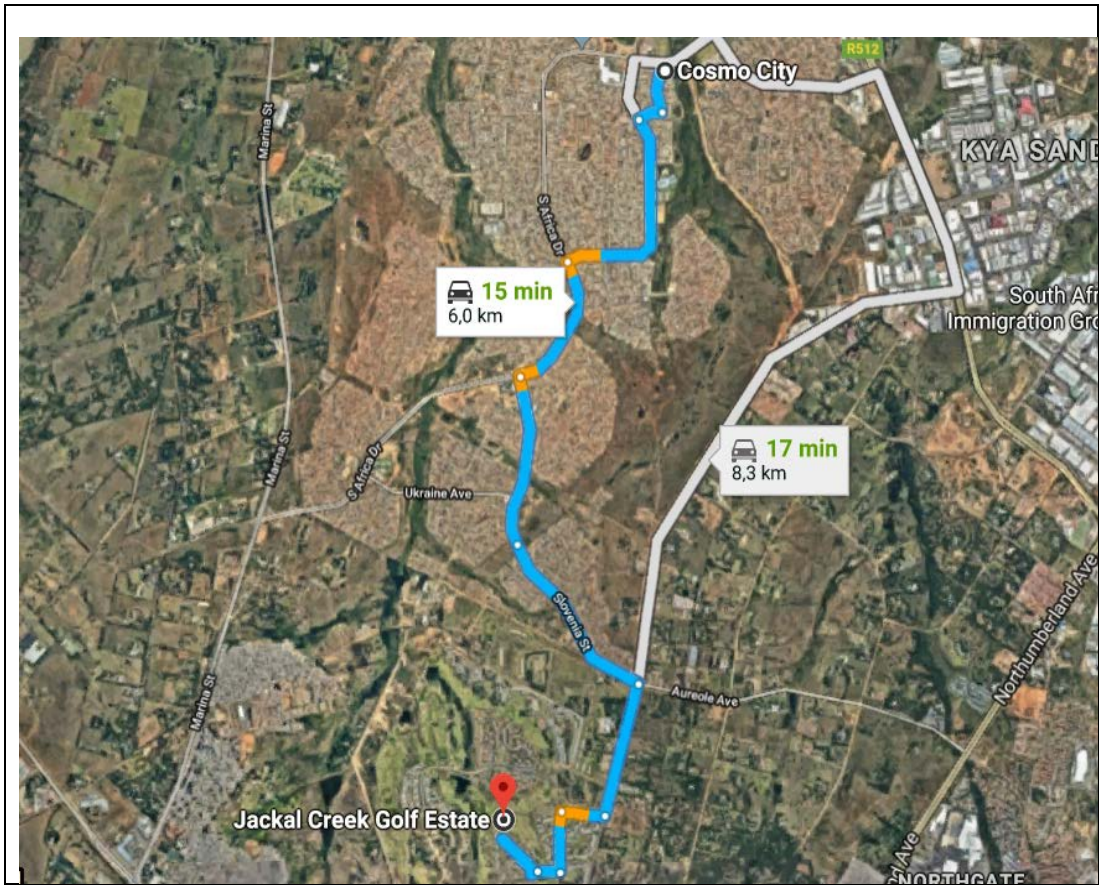


Figure 5.9: Jackaal Creek Golf Estate
Source: Google Maps, 2016

one would not expect the study to find negative effects from the development of Cosmo City as it was built knowing the about existence of Cosmo City MIH. However,

its nearness to Zandspruit informal settlement has to be controlled for in the regression model. Houses prices range from R650 000 to R3 500 000 in this suburb. The racial composition of about 1774 population includes 40.53% Black, 36.25% White, 16.46%, Coloured and 4.62% Indian or Asian.

Northriding

According to Lightstone (2016), North Riding is an area that was once smallholding farms and is on the peri-urban northern outskirts. The smallholdings have been extensively subdivided and redeveloped into sectional title apartments and townhouse complexes, gated villages and boutique estates (Figure 5.10).



Figure 5.10: Northriding Suburb
Source: Google Maps

Over time Northriding has grown to attract young buyers in greater Johannesburg and is considered to be one of the youngest neighborhoods (10 years) lying at the

intersection of Malibongwe Drive and Witkoppen Road. It is also one of the busiest neighborhoods in Johannesburg in terms of property sales. About 70% of homeowners are under the age of 50 and about 60% have lived in the area for less than seven years, which is understandable considering its proximity to Gauteng Province business centers, and via the N1 Western Bypass, to Fourways, Sandton, Woodmead, and Midrand. According to Lightstone (2016), the average price of sectional title homes sold in North Riding is R990 000, compared to R660 000 in 2006, and the average price of cluster or freehold homes sold this year is R1.6 million, compared to R950 000 in 2006.

Apartments and townhouses range from R650 000 for units with two bedrooms and up to about R1.8 million for freestanding family units with three bedrooms and two bathrooms. North Riding's exclusive estates price range is between R3.8 million to about R8 million. North Riding suburb has developed into mixed tenure and this makes it difficult to predict the effect of the Cosmo City MIH development as it is an evolving MIH suburb itself.

Zandspruit Formal

Zandspruit Formal suburb is the closest to Cosmo City, separated by Malibongwe drive as shown in Figure 5.11. Zandspruit is a low-income suburb. It is juxtaposed to Zandspruit informal settlement hence it is expected that the effect of Cosmo City MIH on its house prices will not be substantial. This is because the neighborhood is also low income. The only price depressing effect would be due to traffic congestion and overcrowding for available amenities and services.

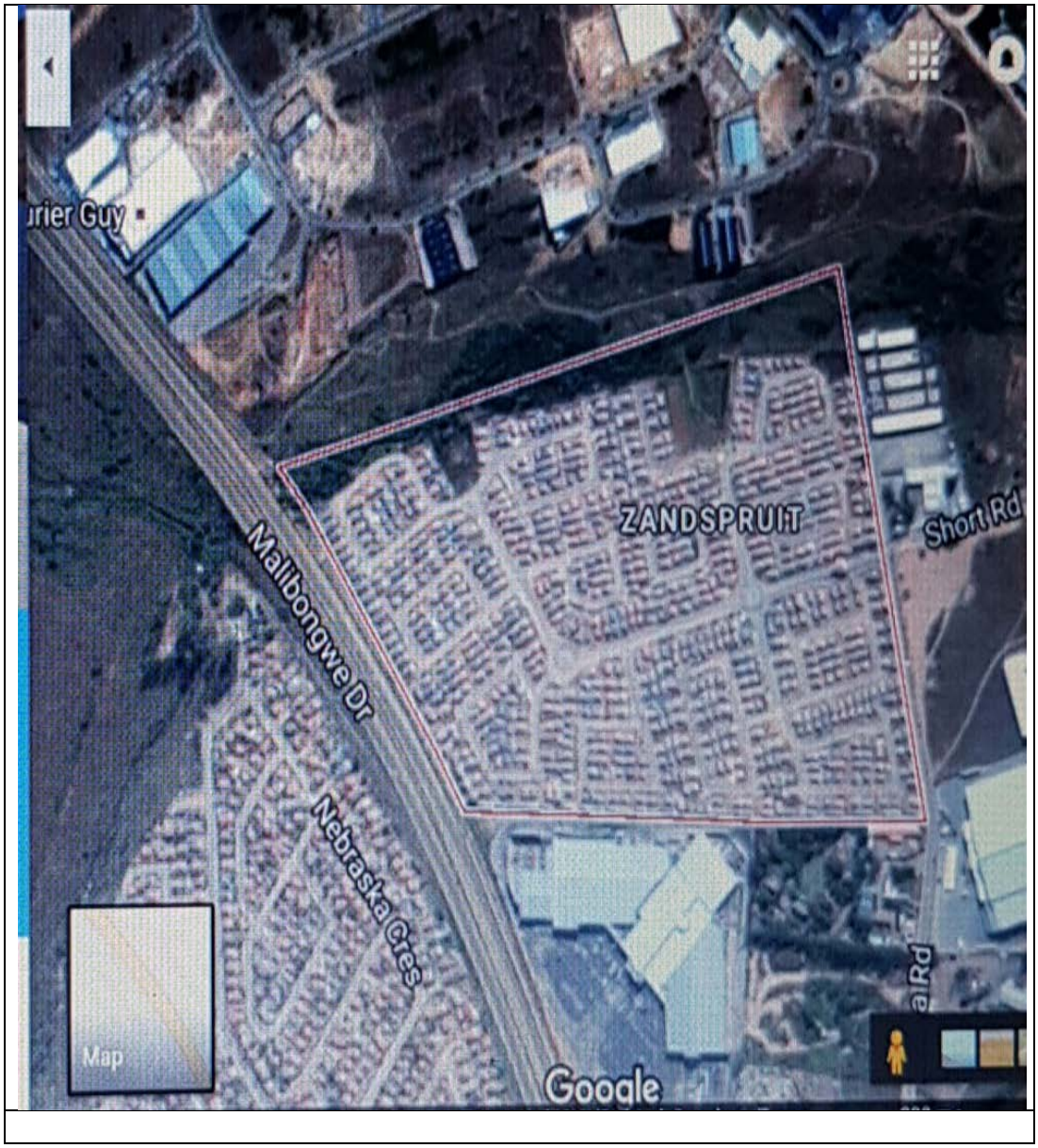


Figure 5.11: Zandspruit Formal
Source: Own compilation from Google Maps, 2016

Some of the neighbourhood characteristics are summarized in Table 5.1

Table 5.1: Summary of neighbourhoods of Cosmo City MIH

Suburb Name	Classification	Number of transfers	Considered Years
Zandspruit Formal	Low Income	305	1995 – 2016
Jackal Creek Golf Estate	Middle Income	2018	2000-2016
Bloubosrand	Middle Income	3231	1995 – 2016
Chartwell	Farming Area	395	1995 – 2016
Farmall	Farming Area	187	1995 – 2016
North Riding	High income	3911	1995 – 2016
Dainfern Golf Estate	High Income	1539	1995 – 2016
Woodhill Golf Estate Control	High Income	770	1995 – 2016
Total		14,927	

Source: Own compilation

5.4 The Intended MIH development

Cosmo City development accomplished the intended goals set for delivering housing to previously prohibited areas through land availability, accommodative spatial planning frameworks, housing as a constitutional right and integration of people of different income groups in a prime location (Ramashamole 2011). The main advantage of delivering housing through collaboration is that the model allowed the public sector and private sectors to do what they do best'. Patel (2014) summarised the players involved in the Cosmo City MIH development as shown in Figure 5.12. Patel, (2014) assessed the ffunding and cross subsidization of all housing units at a development cost of R 3.8 billion. The funding was shared approximately; (a) 20 % from the City of Johannesburg for land, bulk and link infrastructure for community and municipal

facilities; (b) 19 % from Gauteng Provincial Government used for subsidies, clinics, schools, and provincial facilities and lastly (c) 61 % from the private company that developed it.

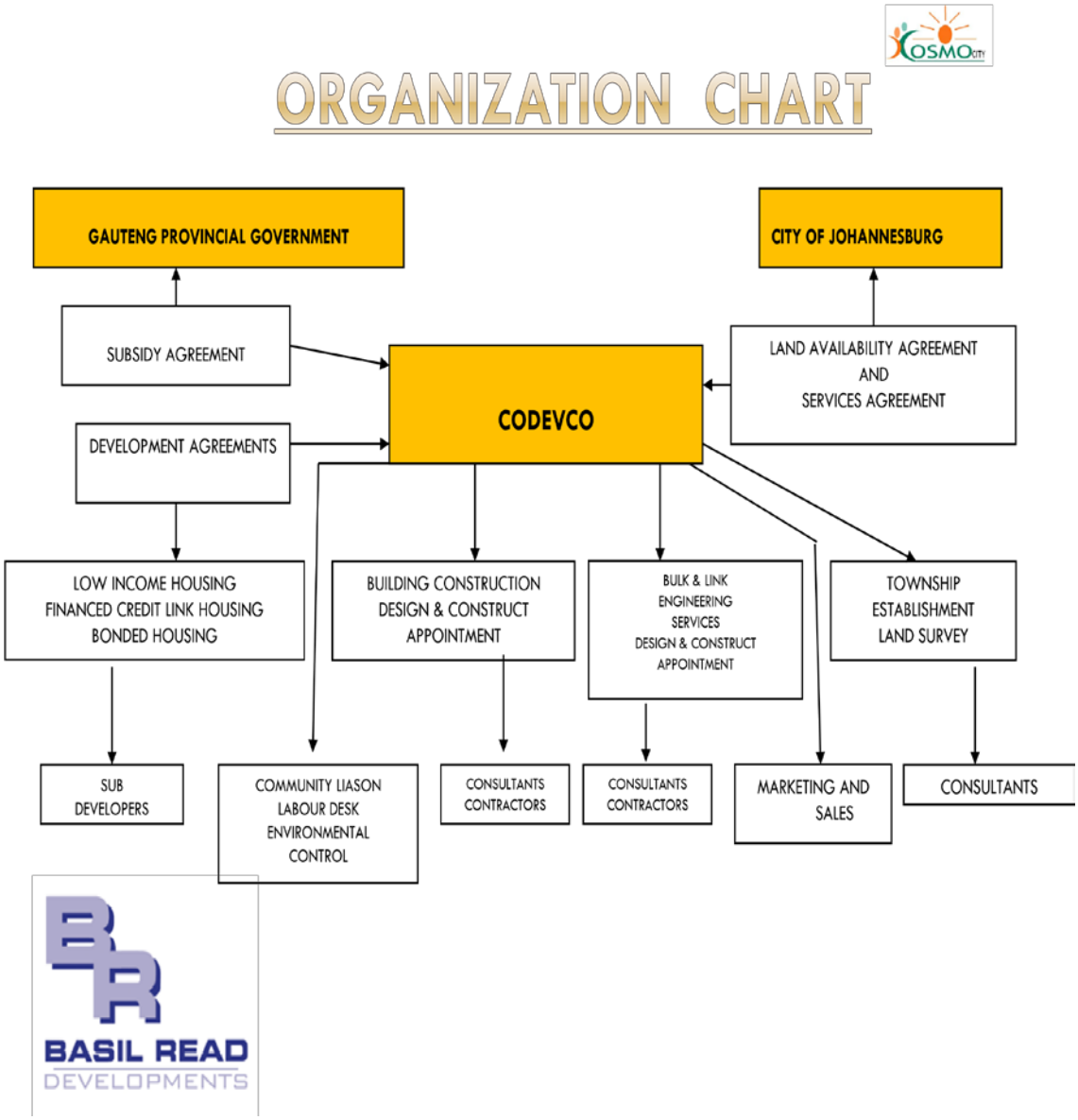


Figure 5.12: Stakeholders in Cosmo City MIH Development
Source: Patel, 2014

Construction costs were reduced through better technology, better management, better construction practices, economies of scale and effective cost/time management. On the other hand, the public sector set policies at national planning levels as well as regulating, and governing public interest that feeds into economic growth and development. Considering that the housing shortage in South Africa is significant, this collaboration increased the supply of housing and attracted more resources from private sector, creating an enabling environment. The enabling environment included removing all hindrances, providing fiscal incentives and mobilizing land in different ways. Private land was sourced for this development and linked to higher density ratios.

To note is that cross subsidisation that needs to take place especially to make the financed linked housing work. It was a requirement to provide a house on a serviced stand for a household income of under R 7500 /month. However, the development experienced certain challenges.

5.5 Challenges Faced by the Collaborative Delivery Model

The delivery model used for the Cosmo City development faced challenges cited in literature which included delays in commencement of the project, delays in the disbursement of funds from the provincial government, delivery of RDP housing to people who were not on the beneficiary list, lack of enough social facilities and ineffective rental collection mechanism (Haferburg, 2013, Ramashamole, 2011, Charton, 2004)

The City of Johannesburg and the Gauteng Provincial government were dragged to court over the acquisition of Cosmo Farm, which was the land upon which they planned to build Cosmo City and the court processes took long; although they won the case it led to delays in commencement of work. The other setbacks were on untimely disbursement of funds from the two relevant government spheres (Integrated Urban Development Fund (IUDF). This IUDF programme was an outgrowth of the IHP that

was publicized after the 2004 meeting which set out to fund housing developments. It is surprising that the public sector delayed in disbursing to a development they had wholly initiated.

Khatleli and Root (2008) recommended a rigorous regulatory regime in order to combat opportunistic behaviour in the provision of infrastructure through collaboration. This is because private companies save on costs at the expense of government's increasing costs. The regulatory regime may monitor and control profits that vary with the expected risk, the degree of competition, project scale, and complexity within MIH developments

Although the social units were built in accordance to approved township laws, they lack strong regulatory laws regarding their upgrading leading to informal structures, which led to local authorities failing to implement proper municipal service collections thereby causing severe hardships in service delivery. Thus, the development failed to put in place room for backyard accommodation, which resulted in slum dwellings that belong to unemployed RDP house owners who intended to benefit from the backyard slum rental collection (Gunter and Massey, 2017)

Cosmo City's success, was, at least in part, compromised and threatened by government's slow disbursal of funds. This highlights the probability that provincial and the local government have limited capacity when we it comes to honoring certain financial commitments. This compounds the challenges faced by the developer in making the development a success in ways that generates positive returns (Okem and Bracking, 2019). It should have put in place all the mechanisms first to facilitate smooth rolling of the project to avoid delays in commencement. The municipality should have put township plans for approvals and mechanisms of rental collection from properly planned backyard housing since it is mandated with servicing the development. This could have avoided the creeping informal structures which now adorn the development.

Disbursement of subsidies from relevant departments was not timely and the delays caused double costs to the developments and exposed them to informal settlers. Since the developer was tasked with seeing that all serviced land is built, it would have been wise to provide the company with social sector beneficiaries upfront to enable smooth transfers and avoid the risk of unintended beneficiaries. The City of Johannesburg was meant to provide land, bulk infrastructure, planning approvals and urban management, yet lacked the capacity to provide enough social facilities such as clinics, trading areas, multipurpose centers for the size of the area. In this instance, different arms of government were remiss in the timely fulfilment of obligations. As a consequence, the private partner was not able to seamlessly commence and continue construction such that both parties might enjoy their investment returns.

5.6 Summary

The Cosmo City development attracted considerable NIMBY opposition during its building period and so it is suitable for this study as a compelling case. To note is that the development achieved the status of being of mixed housing typologies but did not achieve a racial mix. The study identified a research gap in that there is need to evaluate an after effect of such developments as a contribution to future housing policy. This enables ways to think around minimising NIMBY opposition to mixed income housing.

CHAPTER 6: QUANTITATIVE ANALYSIS AND RESULTS ON COSMO CITY MIH CASE STUDY

6.1 Introduction

This chapter presents analysis and results from the quantitative study of the effects of the Cosmo City MIH development on neighborhood house prices. Informed by theoretical models explained in chapter 3 to solve for housing as an immediate problem, it was essential to involve practitioners who were knowledgeable of the Cosmo City MIH development in Johannesburg.

6.2 Presentation of Data

Use of secondary data made it possible to achieve some degree of reliability as explained by Straub, et al (2004, p. 10) who points out that ‘reliability is an attempt to find proximal measures of the true scores that perfectly describe the phenomenon’. Data collected from seven different suburbs increased external validity of the study to an extent that generalizability is possible.

Lightstone Property Company, based in Johannesburg, South Africa, provided the main quantitative data used for this study. The data set contains property prices, from 1995 to 2016 shown in Figure 6.1. Data cleaning included reconciling total transaction value or purchase price of one or more properties on the same title deed after correcting for obvious 'finger trouble' and typing errors. Apart from increased crime and traffic congestion, the main challenge faced by the neighborhoods of the Cosmo City MIH development was declining house prices. Observations that were considered irregular, awkward, unlikely, or doubtful were removed from the data set. Outliers were removed in house prices that were due to typing errors cross checking with plot sizes and number of bedrooms. This reduced the sample size to 14,927 from 15 314 total transfers. 65

secondary data variables were collected for each of the 14,927 sales transactions of the 'population' other than a 'sample' (Appendix B2). This means normality test of the error terms were not necessarily compelling.

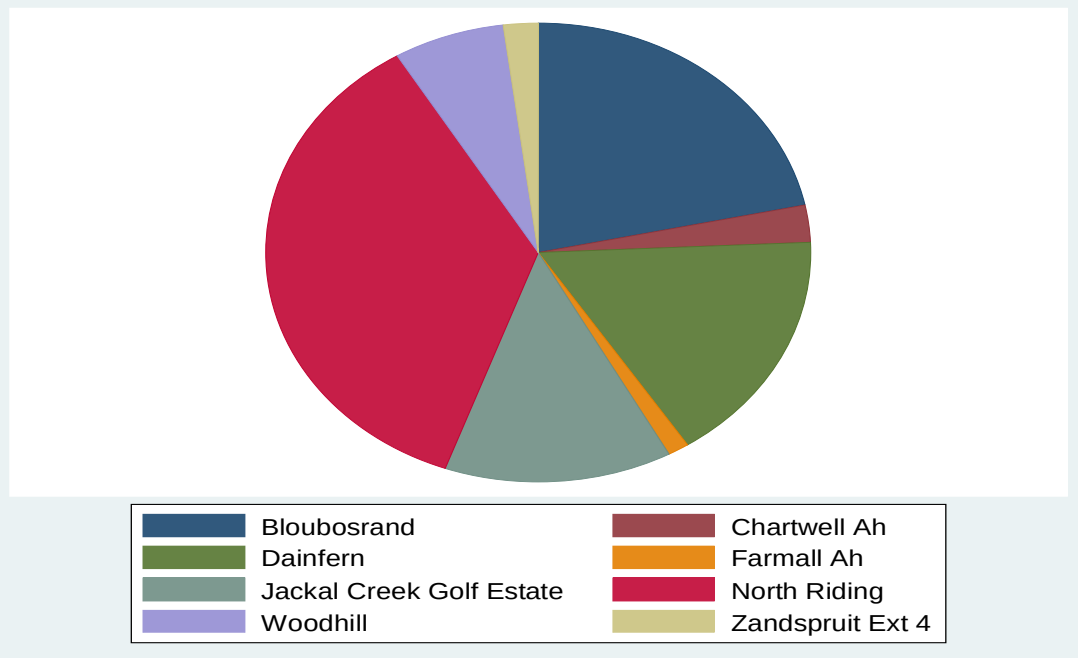


Figure 6.1: House Sales Data Contribution per Suburb
Source: Own compilation

Most data came from North Riding, followed by Bloubosrand, Dainfern, Jackal Creak, Woodhill Golf Estate, Chartwell, Zandspruit, and lastly Farmall.

House Price (Pi)

House Price (Pi) is the independent variable. The study chooses house prices at point of sale rather than at title-registration date in order to capture current market prices that are not lagged. Figure 6.2 shows that the Cosmo City MIH neighborhood experienced higher sales numbers following its construction.

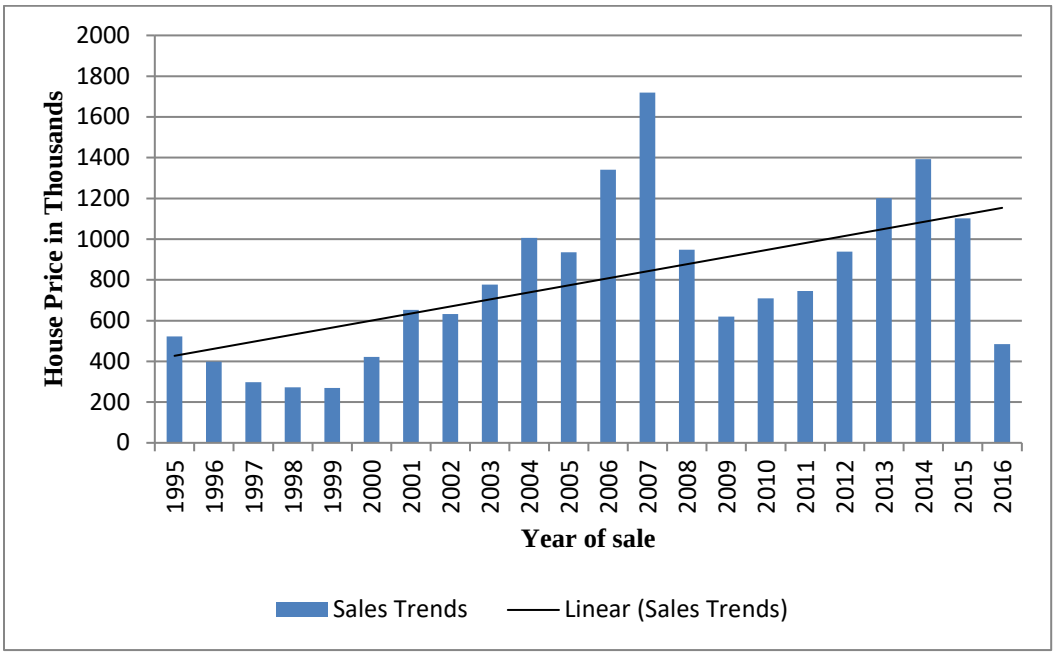


Figure 6.2: Sales Trends in the Neighbourhood of the Cosmo City
Source: Own compilation

In addition, Figure 6.3 shows clear decrease in house prices from the year 2002 and this is an indication that the pressure in selling in the area is likely to have pushed prices down. This is possibly due to the Cosmo City MIH development after the court case in 2000 ruling for the Cosmo City development and occupation in 2005. As a control suburb in Pretoria, a different location, Woodhill Golf Estate shows increasing house prices on average. In contrast, Dainfern Golf Estate shows a delayed reaction to the Cosmo City MIH development, but a decreasing trend.

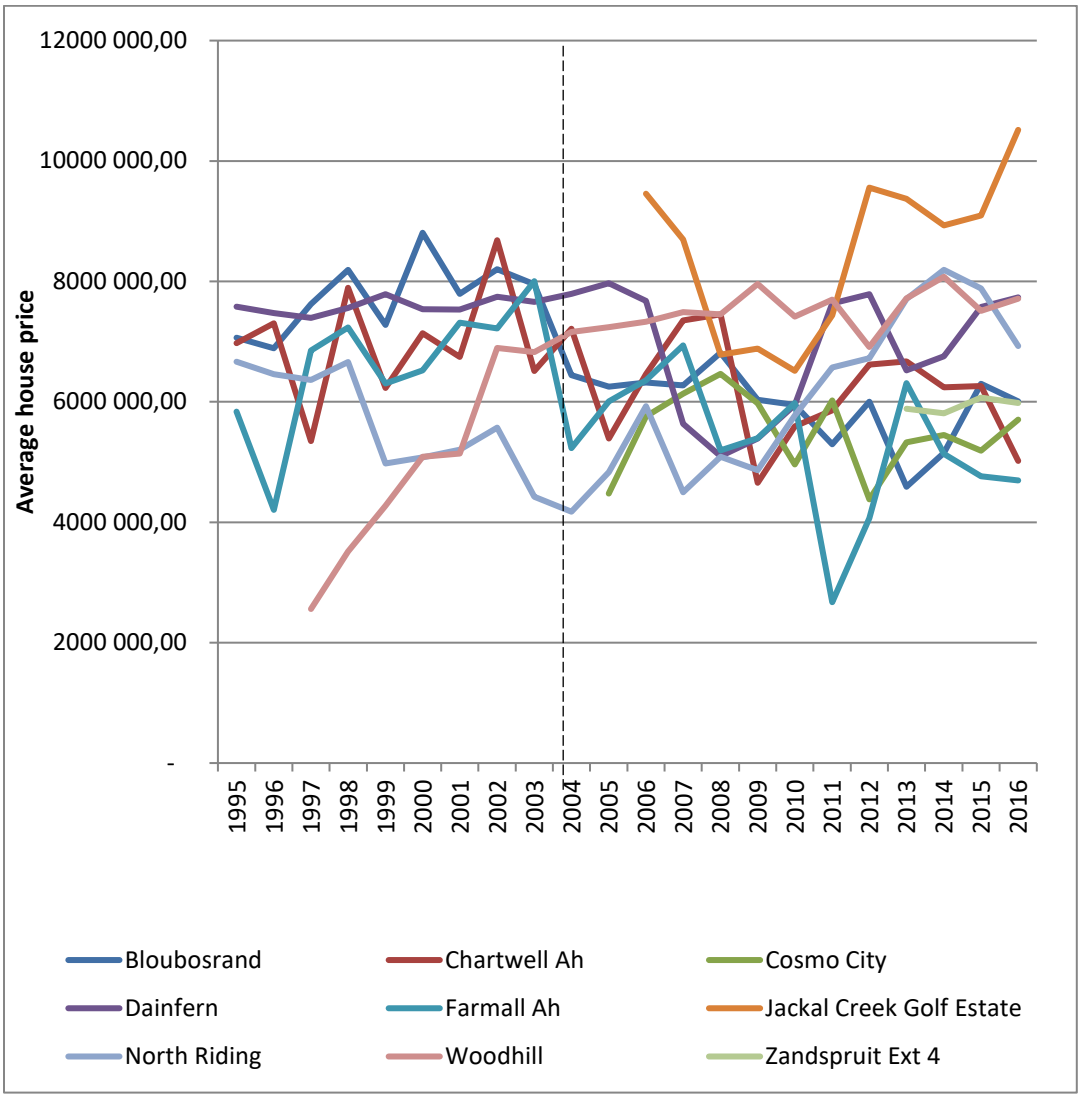


Figure 6.3: 1995 -2016 House Prices Cosmo City MIH
Source: Own compilation

The map in Figure 6.4 shows that most houses sold in the time under study were the medium to large houses. This shows that during this period, homeowners in larger homes were more likely to sell their houses compared to those living in lower income neighbourhoods.

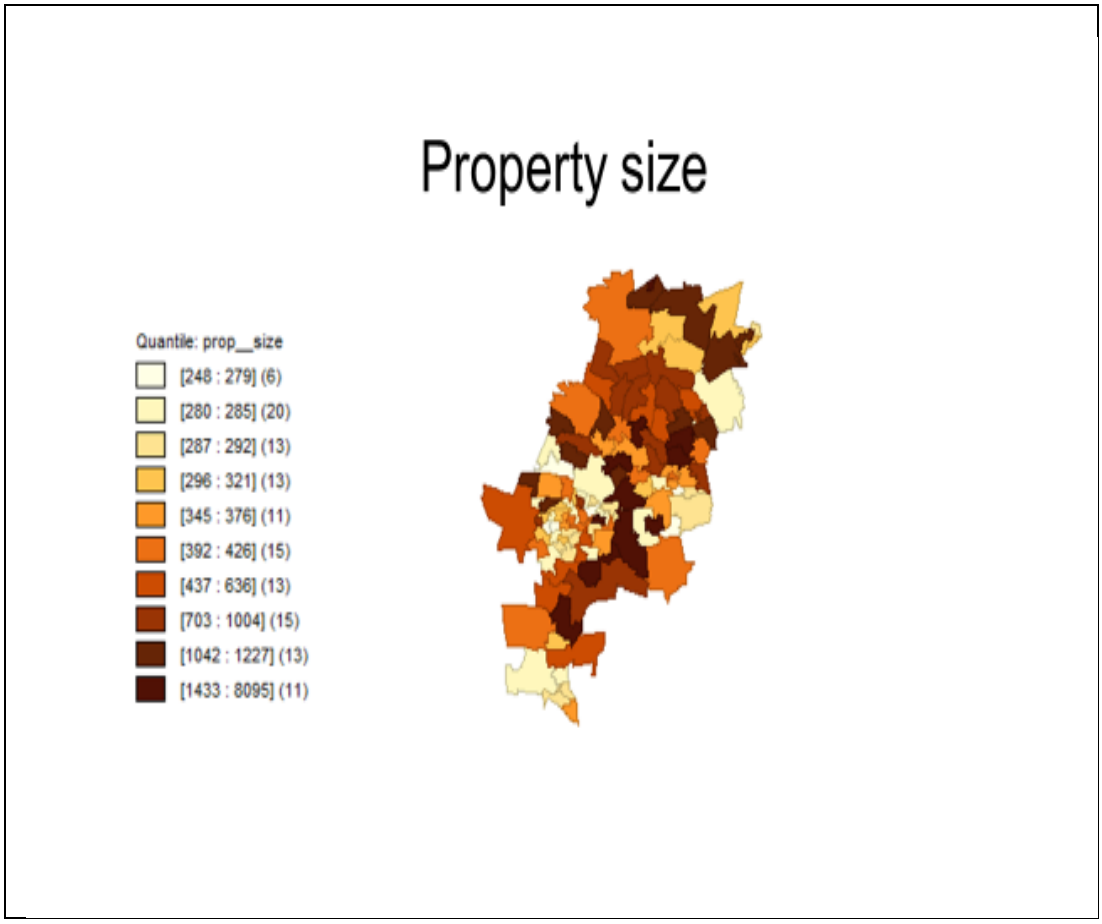


Figure 6.4: Property Sizes in Cosmo City Neighbourhood
Source: Own compilation

Distance Contours

While this study is devoted to investigating how an MIH development is viewed or evaluated in South Africa, there is a need to investigate the critical point in distance at which the effect is close to zero. This investigation tested hypothesis A2 specified in 1.8. To model this, the distance from Cosmo City variable was categorized into 9 contours from 1.281 meters to above 8.281 meters as shown in Table 6.1. The distance variable is a real number, which contains decimals, which takes in houses located within the specified radii as contours. Contour 1 includes houses that are within a

radius of 1, 281 km followed by houses located within 2.281 km in contour 2 until contour 0 which includes houses that are located out of 8.281 km range. There is a 1 kilometer range between the contours.

Table 6.1: Distance Contours

	Upper bound categories (Kilometers)	Distance	Description
1	1.281	Maximum	46,649.43
2	2.281	Minimum	1.281.33
3	3.281	Range	45,368.11
4	4,281	Categories	9
5	4,281		
6	6,281		
7	7,281		
8	8.281		
0	> 8.281		

Source: Own compilation

Race Variable

Figure 6.5 shows how the race factor was captured for the seller and buyer in the neighborhood of Cosmo City MIH data. Empirical studies have shown that neighbourhoods with more people of colour experience reduced house prices (Kotz, 1999). A categorical variable captured the number of individuals who are Black African, White, Indian, or Asian and Coloured. Race White was chosen to be the reference point with these sub-categories WB = 0, B =1, BW= 2. The number of homebuyers is shown in the Y-axis while the race of the buyer is shown on the X-axis.

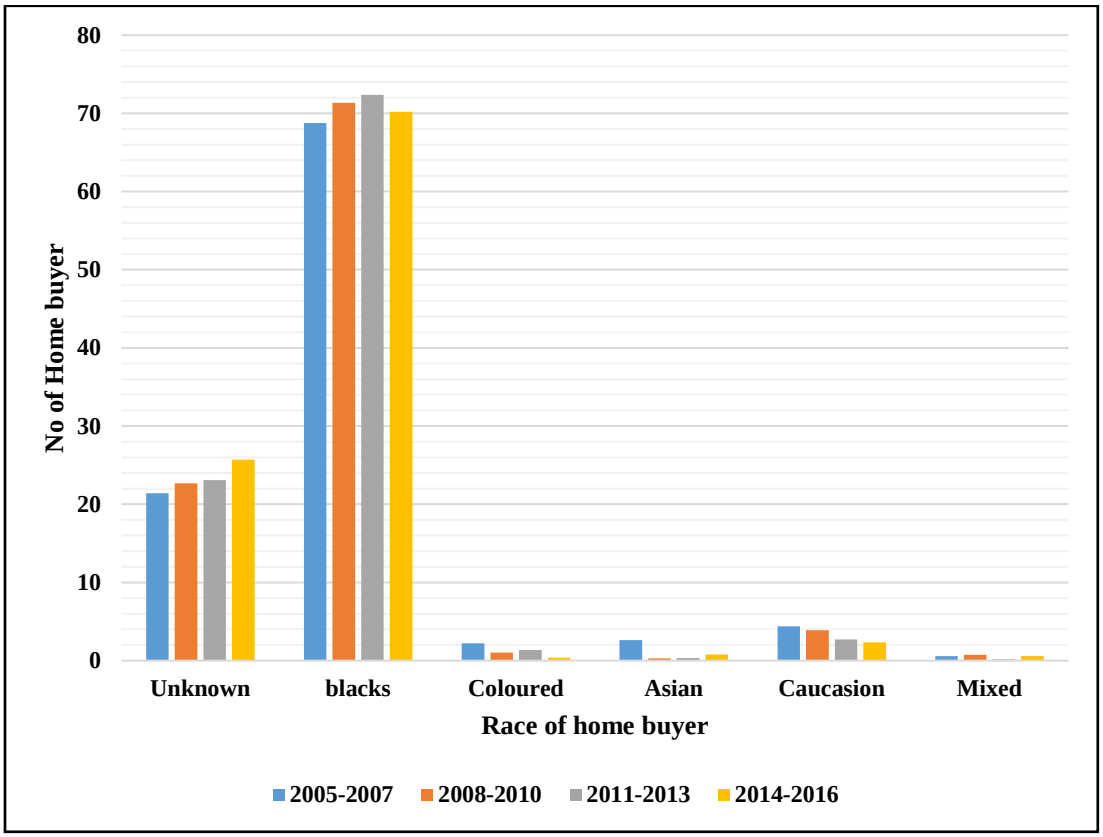


Figure 6.5: Racial Mix of House Buyers in Cosmo City MIH 2005 – 2016
Source: Own compilation using Lightstone property data set

The figure shows the racial mix of the Cosmo city MIH development over time showing it was mainly black people who resided in this development from its inception in 2005 to 2016. Fewer Caucasian and Coloured residents also reside in the newly built area. Interestingly, Asian residents were more common in 2005-2007 and disappeared from 2008-2013, then became visible again in 2016. The analysis reflects an unbalanced evolution of the racial mix in the Cosmo MIH development which was most heavily populated by black residents. Thus, the above analysis is an indication of the need to improve MIH developments, which can attract a diverse racial mix. The other variable to consider is how income groups who resided in the Cosmo MIH development over the same period.

Income Variable

Figure 6.6 from GEODATA analysis indicates that households which are middle-income where most households earn between R25, 600 to R34, 000, generally occupy the neighborhood of Cosmo City MIH. There are pockets of households that earn no income, especially households that live in informal settlements. The white pockets represent areas where households live in informal settlements with no employment or income.

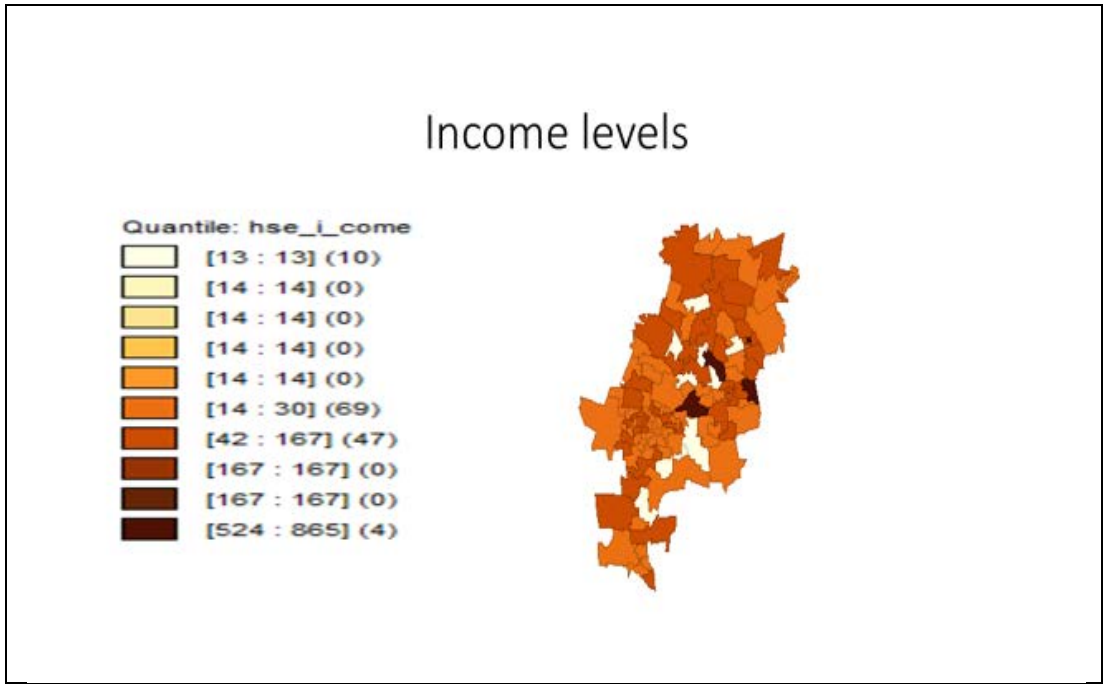


Figure 6.6: Income Quantile in the Cosmo City MIHS Neighbourhood
Source: Own compilation

Table 6.2 shows that Cosmo City MIH is predominately a middle income neighbourhood with 30.19% earning R25, 600 to R 34,000. The frequencies for the lowest income and highest income are 1.52% and 1.92% respectively. The missing income groups such as R34, 000 to R42, 500 indicate that most of the households in the data set did not have incomes in these income groups.

Table 6.2: Income frequency table

Monthly income group	Frequency	Percentage	Cumulative
R3,200 - R6,400	264	1.52	1.52
R6,400 - R12,800	994	5.72	7.23
R12,800 - R19,200	776	4.46	11.7
R19,200 - R25,600	1,315	7.56	19.26
R25,600 - R34,000	5,249	30.19	49.45
R42,500 - R51,000	4,826	27.75	77.2
R85,000 - R102,000	334	1.92	79.12
>R102,000	3,144	18.08	97.2
Not Classified	487	2.8	100

Source: Own compilation

Figure 6.7 below shows the mix of income structure of residents in the Cosmo City MIH development categorized from C to F. C is the lowest income group with residents who earn between R 3, 200 to R6, 400 per year, and F is the highest income group for those who earn between R19, 200 to R25, 600 per year. The table shows that the share of residents occupying C and D is declining over time while the share of high-income residents in income groups E and F is on the increase.

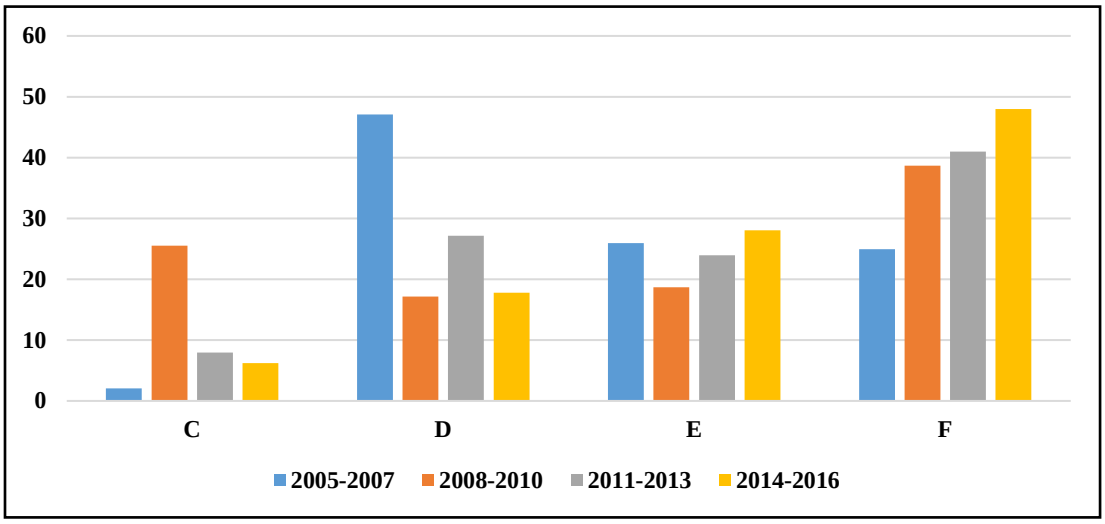


Figure 6.7: Mix of Income Structure in Cosmo City MIH 2005 – 2016
Source: Own compilation using Lightstone property data

This suggests that it is mostly the low and the middle-income residents that reside in the MIH in homes other than those of high-income households. This outcome can also be interpreted as indicative of the replacement of the low-income groups by middle-income groups in the Cosmo City MIH development. In as much as an MIH should mix low, middle, and high-income groups, evidence from Cosmo City MIH development shows the nonexistence of high-income groups and the replacement of low-income groups by middle-income groups.

Crime Variable

High crime levels reduce house prices significantly. Variables for the number of residential crimes per 1000 households in the suburb and the total number of crimes per 1000 households were used. It is worth noting the high likelihood that crime variable is correlated with the race factor (McNulty and Holloway, 2000). A categorical variable captured the race variable as follows. The number of residential crimes greater than 250 for the suburb =2, 290 = 3 and 373 = 4. Figure 6.8 shows that crime exists in almost all the neighbourhoods of Cosmo City MIH.

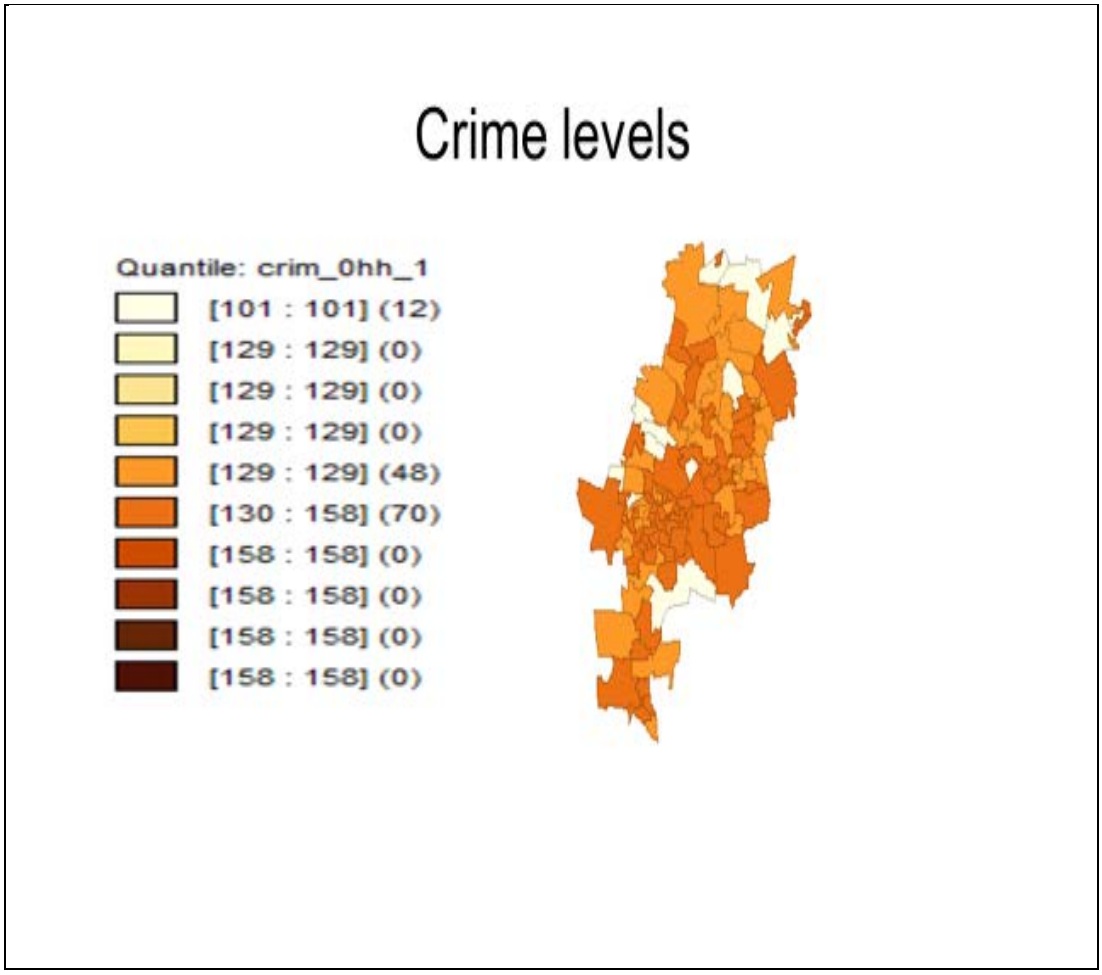


Figure 6.8: Crime Levels in the Neighbourhood of the Cosmo City
Source: Own compilation

The Age of the House Variable

Newer houses are preferred to older houses hence there is a price factor for age. It is however important to control for the fact that some older houses are renovated and command higher prices than newly built ones. The case study area contains older houses as shown by the denser colour in Figure 6.9

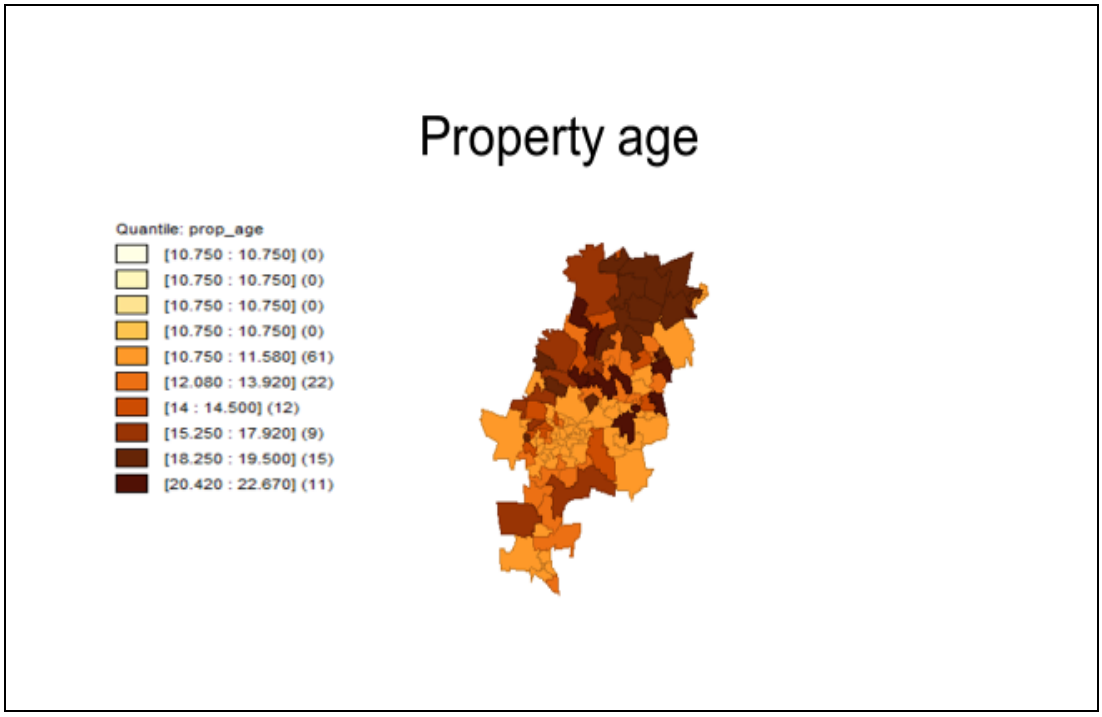


Figure 6.9 The Property Age in the Neighbourhood of the Cosmo City MIH Development
Source: Own compilation

Time Dummy Variable

A time dummy variable was used to control for the time effect of the Cosmo City MIH development on its neighborhood house prices. The dummy variable captured before and after the development was completed (one = if property sale took place after 1 October 2005, 0 = otherwise). This coding was based on the purchase date availability and if it was not available, then the registration date was used. The hypothesis is that, from 1995 to 2005, people liked the land on which Cosmo City was built compared to the time after occupation.

The Auto Regressive Term (ART)

The spatial dependency between variables as explained in Tandon (2012) is controlled for by using an Auto Regressive Term (ART) for the comparative sales effect. This study used a unique ID for the property and the transfer combination with title deed number of the transfer and the registration date of the transfer at the Deeds Office; the date on which the offer to purchase agreement was signed for the property. The purchase date, if available, otherwise the registration date of this property transfer was used to calculate the ART.

Literature recommends the inclusion of a spatial ART in the hedonic model to capture the fact that there is a lagged influence on a current house price from previously sold houses. The purchase price was associated with the previous property transfer and inflated to the current value associated with the previous property transfer. Total transaction value or purchase price of one or more properties on the same title deed after correcting obvious 'finger trouble' and typing errors was used to create the ART. The ART was incorporated to address the problem of time invariant and fixed effects. The work of Can and Megbolugbe (1997) and Du Preez (2013) recommend inclusion of the prior six months' transactions concluded for the subject property price located within a radius of 3.2 km for the calculation of the spatial autoregressive term. Brasington and Hite (2004) also recommended the inclusion of an ART. Table 6.3 shows the summary statistics of the variables used in the hedonic regressions. There are 8 contours as defined in the methodology section. With contours 5 and 6 having the highest number of sale given the high mean values of 0 .320 and 0.288 respectively. The data contains 8 suburbs with most residential houses found in Northriding and Bloubosrand. The dataset also contains 7 income groups as depicted in the table

Table 6.3: Summary statistics

Variable	Observation	Mean	Standard Deviation	Min	Max
Log of price	14,927	14.05	1.03	6.09	18.13
1. Contours	14,927	.049	.215	0	1
2. Contours	14,927	.048	.214	0	1
3.Contours	14,927	.009	.091	0	1
4.Contours	14,927	.022	.146	0	1
5.Contours	14,927	.320	.467	0	1
6. Contours	14,927	.288	.453	0	1
7. Contours	14,927	.109	.311	0	1
8.Contours	14,927	.014	.116	0	1
Suburb					
1. Bloubosrand	14,927	.220	.160	0	1
2. Chartwell	14,927	.026	.162	0	1
3.Dainfern	14,927	.165	.371	0	1
4.Farmall	14,927	.012	.111	0	1
5.Jackal Creek	14,927	.135	.342	0	1
6. North Riding	14,927	.358	.479	0	1
7. Woodhill	14,927	.066	.248	0	1
8. Zandspruit	14,927	.020	.141	0	1
Distance Informal Settlement	14,927	2349	1352.1	53.69848	5587.8
Sale Before 2005 Dummy	14,927	.336	.472	0	1
Size	14,927	1406.74	4892	30	85033
Age	14,927	15.138	6.78	.08	62.08
Distance to CBD	14,927	7337.62	1942.1	3771	13101
Distance to Shopping Centre	14,927	994.74	641.1	28	3649
Race Type	14,927	1.620	1.9	0	5
1. Income group	14,927	.020	.141	0	1
2. Income group	14,927	.020	.141	0	1
3. Income group	14,927	.012	.111	0	1
4. Income group	14,927	.026	.160	0	1
5. Income group	14,927	.351	.477	0	1
6. Income group	14,927	.323	.467	0	1
7. Income group	14,927	.032	.178	0	1
Crime rate	14,927	132.1	13.6	101	160
Bathrooms	14,927	1.12	1.28	0	9
Autoregressive	14,927	1379	23468	5.868	3.76

Source: Own Compilation, 2018

6.3 Analysis and Results

This chapter reports results of second study which broadly evaluated the NIMBY effects of a mixed income housing development in South Africa. It reports on hypothesis 1, which tested whether the Cosmo City mixed income-housing development case study had a price depressing effect on its neighborhood house prices when it was occupied in 2005 in the Randburg area of South Africa. It further reports results on hypothesis 2, which tested whether and where there exists a critical point beyond which this case study has no price depressing effect on its neighborhood. This is the 'no effect' boundary. Finally, the chapter reports on hypothesis 3, which established whether the NIMBY effects are dependent on the quality of a neighborhood. The study uses a pooled hedonic technique in estimating the effect in STATA software. As literature reveals, other studies have used spatial distance to a development as a variable in a hedonic specification where holding other variables constant gives the impact of spatial distance.

VCE (robust) command in STATA was used to make the pooled regression models robust to generate consistent, efficient and unbiased estimators according to the Gauss Markov's assumptions of the Ordinary Least Squares (OLS) (Ogwang and Wang, 2003; Gujarati, 2004). These tests include normality of the error terms, heteroscedasticity, multicolinearity, and autocorrelation. In order to interpret the results, the coefficient estimate should be statistically and practically significant. When interpreting results, other independent variables are held constant. Factorial validity examines signs of the hedonic model. The expected sign of the two MIH variables coefficient (the distance variable and the event dummy variable) are expected to be positive and negative respectively to confirm the null hypotheses already specified.

The analysis finds a statistically robust pooled cross-sectional regression model with an R-Squared of 57%. The distance contours 1 to 8 were used to test the hypothesis

that the Cosmo City MIH development effects on house prices are depressive for the 8th Woodhill Golf Estate as the furthest reference contour. This variable was also used to test if there exists a “no effect boundary.” The results of the three tested hypotheses are in Table 6.4.

Table 6.4: Regression Results on MIH NIMBY Effects on House Prices

MODEL	(1)	(2)	(3)	(4)	(5)	(7)	(8)
VARIABLES	**ART1**	**ART2**	**ART3**	**ART4**	**ART5**	**ART7**	**ART7**
1. Contour	0.798***	1.010***	1.039***	0.991***			0.413***
2. Contour	0.590***	0.718***	0.751***	0.710***			0.239**
3. Contour	0.481***	0.503***	0.468***	0.448***			0.130
4. Contour	0.130**	-0.154**	-0.140**	-0.115*			-0.201***
5. Contour	0.0111	-0.218***	-0.213***	-0.181***			-0.296***
6. Contour	0.230***	0.0627	0.0448	0.0661			-0.0465
7. Contour	0.289***	0.161***	0.154***	0.184***			0.106***
1. Bloubosrand		8.986***	9.426***	9.305***	-1.523***	-1.333***	-0.462***
2. Chartwell		10.39***	10.79***	10.61***	-0.291**	-0.508***	0.379**
3.Dainfern		9.277***	9.642***	9.506***	0.599***	0.468***	1.076***
4.Farmall		10.03***	10.44***	10.24***	-0.596***	-0.749***	0.217
5.Jackal Creek		17.38***	18.26***	18.03***	-0.912***	-0.509***	0.196
6. North Riding		17.47***	18.31***	18.11***	-0.768***	-0.538***	0.121
8. Zandspruit		10.13***	10.61***	10.41***	-1.358***	-1.386***	-0.605***
Distfrom info settlement	3.08e-05**	-6.10e-05***	-6.01e-05***	-4.53e-05**	-5.24e-05***	-1.59e-05	1.63e-05
Plot size	2.94e-05***	3.24e-05***	3.27e-05***	3.28e-05***	3.12e-05***	3.48e-05***	3.53e-05***
Age	0.0148***	0.00976***	0.00815***	0.0128***	0.0164***	0.0166***	0.0153***
Distance from CBD	-0.000146***	-0.000313***	-0.000303***	-0.000294***	-0.000124***	-5.92e-05***	-0.000192***
Dist Shop Center	3.86e-06	6.17e-05***	4.06e-05*	3.18e-05	-6.20e-05***	-7.04e-05***	6.29e-05***
Race Dummy	-0.129***	-0.133***	-0.119***	-0.0845***	-0.0862***	-0.0890***	-0.0853***
1.TRO_RaceType	-0.216***	-0.219***	-0.214***	-0.233***	-0.242***	-0.245***	-0.237***
2.TRO_RaceType	0.0257	0.0178	0.0148	0.0153	0.0241	0.0206	0.0169
3.TRO_RaceType	-0.0721	-0.0805	-0.0876	-0.0997*	-0.0913	-0.0990*	-0.105*
5.TRO_RaceType	0.0504	0.0514	0.0444	0.0288	0.0144	0.00860	0.0117
Crime_Total_1000hh	0.0273***	-0.257***	-0.271***	-0.271***	0.0115***		
Auto- regressive	9.78e-08***	9.38e-08***	9.14e-08***	8.88e-08***	9.19e-08***	9.25e-08***	9.14e-08***
1.income_group	1.258***	1.583***	1.537***	1.494***			
2.income_group	-0.247***						
3.income_group	0.706***						
4.income_group	0.651***						
5.income_group	-0.0936*						
6.income_group	0.541***	-7.930***	-8.341***	-8.316***			
Bedrooms			0.0577***				
Sales B/A Oct 2005				-0.150***	-0.155***	-0.152***	-0.145***
Bathrooms				0.0764***	0.0831***	0.0838***	0.0797***
Constant	10.37***	39.49***	40.79***	40.72***	13.90***	14.71***	14.83***
Observations	14,927	14,927	14,927	14,927	14,927	14,927	14,927
R-squared	**0.564**	**0.568**	**0.575**	**0.579**	**0.568**	**0.566**	**0.573**

Robust standard errors are in parentheses: *, **, *** show the levels of significance at 10%, 5% and 1% respectively.

Source: Own compilation

6.3.1 Results on hypothesis A1: Cosmo City MIH had a Price Depressing Effect on Neighbourhood House Prices

Results from hedonic modelling confirm that much of the NIMBY opposition experienced in South Africa is empirically substantiated with a price reduction of houses sold in the neighborhood of the Cosmo City MIH development. On average, this price reduction effect was 0.413%, 0.239%, and 0.13% and within a radius of 1.281 kilometers, 2.281 kilometer, and 3.281 kilometer respectively (contours 1, 2, and 3). This means that houses closest (1.281 kilometers) to the Cosmo City MIH development experienced 0.413% price discount. The other time dummy variable also found that houses sold after year 2005 were sold at a discount of 0.145% compared to the ones sold before it.

6.3.2 Results on Hypothesis A2: There is a 'No Effect' Boundary on NIMBY

The study investigated the point at which the case study MIH development did not influence house prices in its neighbourhoods with a coefficient of -0.201%, -0.296%. This meant that there was an inverse relationship at 3,281 Kilometers, a 'no effect' boundary point after which the Cosmo City MIH development is no longer viewed undesirably. This is a contribution to location theory showing a distance zone over which MIH developments can be built without reducing neighborhood house prices. This suggests that a compelling MIH in an affluent neighborhood does not have such an extreme effect on distressing the locational advantages of an affluent neighborhood as previously purported by high levels of NIMBY opposition against Cosmo City MIH.

6.3.3 Results on Hypothesis A3: The NIMBY Effects are Dependent on the Quality of a Neighbourhood

The study tested the hypothesis that the effects are dependent on the quality of a neighborhood in which the development is built. Indeed the effect of the Cosmo City MIH development on its individual neighborhood was different for low and high-income suburbs. This was tested using dummy variables that picked 1 for a suburb and 0 for all others. These were converted into one categorical variable for the 8 suburbs. Compared to Woodhill (control suburb), Bloubosrand and Zandspruit Extension 4 had coefficients of -0.462% to -0.605% respectively, which actually shows sales prices reduced on average in this low income neighbourhoods. The middle and high-income neighbourhoods of Chartwell, Dainfern, Farmall, Jackaal Creek, and Northriding actually increased in prices as shown by positive coefficients of 0.379%, 1.076%, 0.217%, 0.196%, and 0.121% respectively. Thus, from a suburb analysis point of view, Cosmo City MIH did not deeply adversely affect high income suburbs. This is rather surprising as most NIMBY opposition comes from high-income suburbs.

6.3.4 Results on other control variables

Control variables used in the regression analysis yield interesting results as determinants of house prices. As shown in Table 6.4, results show that informal settlements have a coefficient of +0.0000163% which is almost zero. This negligible percentage, indicates that people in this suburb do not mind being closer to an informal settlement. This could be because the variable is correlated with the distance control variables. Results clearly shows unimportant variables in determining house prices in the neighbourhood of Cosmo City MIH. The size of the house variable with a coefficient of +0.0000353% is unimportant. As the age of a house increases, its price increases by +0.0153%. People prefer to stay away from the CBD as evidenced by the fact that as proximity to the CBD decreases, the price of a house increases with

+0.000192%. Conversely, distance from a shopping center is not at all preferred with a beta value of 0.0000629%. The race dummy shows that in neighbourhoods with Black residents, house prices are discounted by 0.0853% compared to those with residents of the white race. This is also confirmed by the categorical variable with reference to Caucasian 4, 1 black = -0.23%7, 2 Coloured =0.0169%, 3 Asian = -0.105%, 5 others =0.0117%, Crime per 1000 households = -0.271% is consistent with literature in that house prices are discounted by -0.271% for incidences of crime. The autoregressive effect of 0.0000000914% is insignificant indicating that house prices are not influenced by the prices sold in close proximity in previous times. Surprisingly income does not explain price movements. Income variable was correlated with distance variable so STATA dropped it. Number of bedrooms variable was correlated with bathrooms, and so it was dropped. The 'sales after October 2005' dummy variable shows an effect of -0.145% on house prices

6.4 Summary of Results

The study concludes that the Cosmo City MIH development had a price depressing effect on its neighborhood house prices in South Africa as property owners made efforts to sell their houses. This study finds an overall negative impact on house prices across six out of seven suburbs close to Cosmo City. This is probably because South Africa represents the opposite of developed markets where most MIH developments are built in already blighted areas. Such developments have an obvious positive impact in such neighbourhoods. This is mainly because in developed countries, MIHs are developed in areas that need regeneration hence these developments are viewed positively whereas in South Africa, it is the opposite.

The impact is expected to be negative because such developments are built in affluent suburbs as a transformational tool to reverse the legacy of apartheid that removed black people from economic hubs. MIH projects in developed markets are viewed as having

the power to promote urban regeneration. This finding contrasts with literature where most research finds that MIH developments do not have a significant effect on house prices in the most developed countries as shown in Table 3.1. In developed countries, most research finds either no substantial impact or a positive impact on house prices (Pollakowski *et al.* 2005; Galster *et al.* 2006; Gornstein and Virrilli 2006; Schwartz *et al.* 2006; Obrinsky and Stein 2007; Voicu and Been 2008; Ellen 2008; Van Ham and Manley 2009; McConnell and Wiley 2010; van Gent and Musterd 2013).

There are a few research exceptions where there is a negative influence on taxable property values attributed to 'over supply' effects rather than demand effects (Newell, 2009). The quantitative research presented in this chapter used pooled cross sectional regressions on house prices and amenities as explanatory variables. Results confirms that much of the NIMBY opposition experienced in South Africa is empirically substantiated with a 0.413% price reduction of houses sold in the neighborhood of the Cosmo City MIH development. The following chapter presents findings on the implementation of investment guidelines for MIH in South Africa.

CHAPTER 7: QUALITATIVE ANALYSIS AND FINDINGS ON FUTURE MIH DEVELOPMENTS IN SOUTH AFRICA

7.1 Introduction

This chapter focused on finding ways to reduce investment risk associated with MIH developments in South Africa, which in essence should lead to reduction in NIMBY opposition. The chapter presents data, thematic analysis, and a discussion of results using empirical data obtained from observations, documents, and interviews as shown in Figure 4.6. Data analysis is guided by the predictions made in the conceptual framework presented in Figure 3.7.

7.2 Presentation of Data

Framework matrix coding showed important issues raised by participants. The guidelines posed were the ingenuity of the researcher who patched up rational thinking from data. Abductive judgements were used to create meaningful direction for ideas. Participants were expected to agree or disagree with the hypotheses and then probed further to provide an interpretive judgement that revealed issues of concern from an investor's point of view. This qualitative research used abductive logic to follow up on quantitative results and further investigate themes guiding MIH improvements using intensive semi-structured interviews. Relevant people interviewed included important stakeholders involved in MIH decision-making and management levels in investment banking, developer companies, municipalities, government officials, NGOs, and real estate agents.

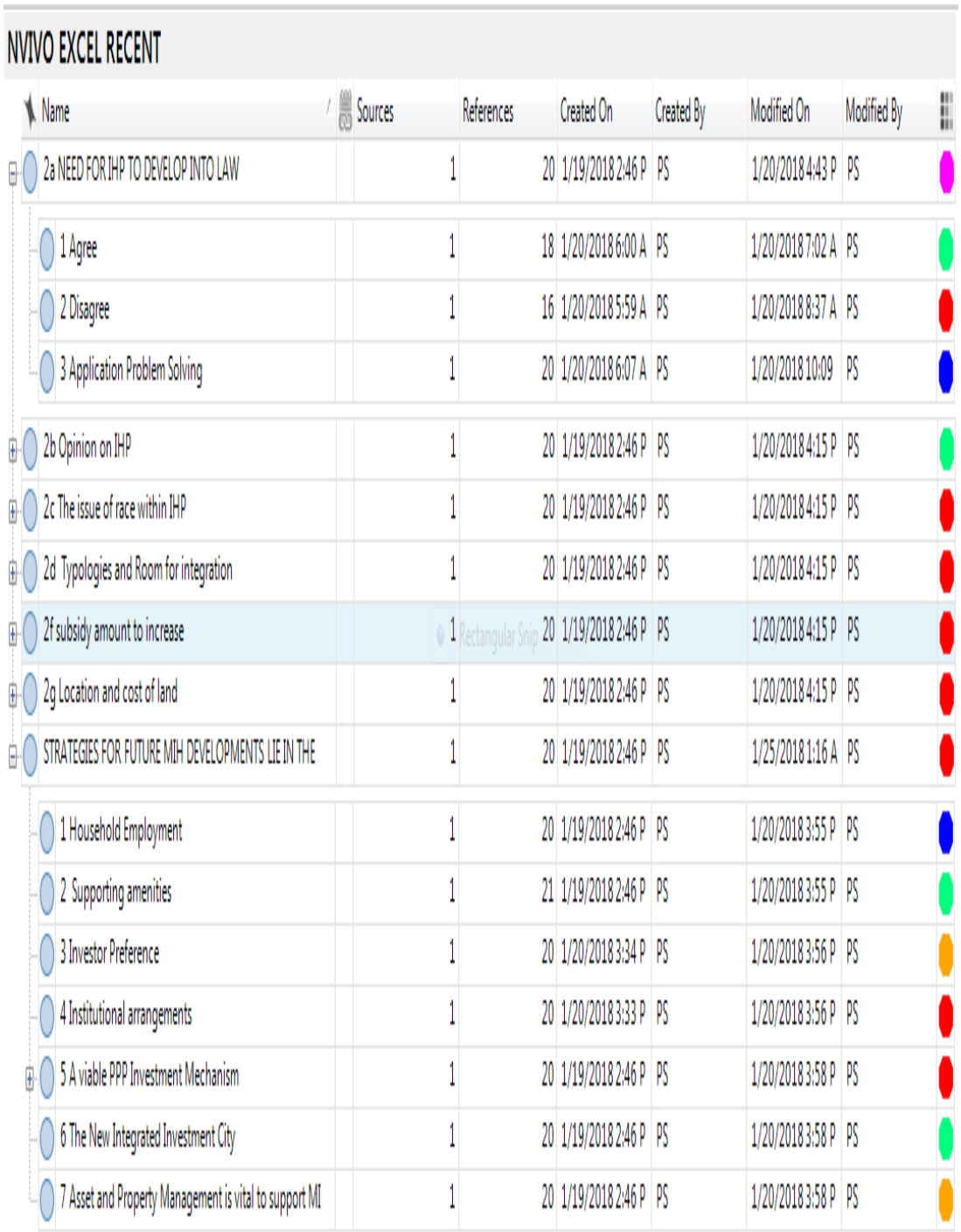
Recapping Table 3.7, which explained the conceptualization of the study and its themes, hypotheses were, formulated which informed the nodes that were input into NVIVO software as shown in Figure 7.1. These include:

- There is no need to legislate the development of mixed income housing.
- Collaboration is a better housing delivery mechanism through which MIHs can be developed, especially if the financing grants are better managed. This improves the investment value of such developments.
- Greenfield locations of MIH developments bring suitable opportunities for improved design, quality, size, and uniformity of an MIH development. This makes such houses good investment assets.
- It is possible to mix people of different backgrounds within the MIH developments regardless of race or social economic status by creating multi-typology housing units within MIH developments. This increases housing density, which is much needed for social and rental housing markets.
- A private-market oriented asset and property management strategy has potential to achieve MIH viability and sustainability.

This analysis showed nodes and sub-nodes linked with the same color. For example, the participants who disagree with IHP becoming law also agree with the idea that providing adequate and better amenities in the neighborhoods in which MIHs are built, would achieve the intended goal of building mixed income housing. This node also connects with the opinion that MIH developments would thrive better in greenfield sites than brownfield through the concept of planning gain or land value capture explained in section 3.6.1.

This data analysis fulfils objective four of the study on exploring critical guidelines necessary for future MIH developments. The objective was to explore ways to improve

on MIH developments as an effort to reduce the negative perceptions (NIMBY opposition) towards them. Thus, the study probed knowledgeable participants on how this can be achieved from 20 people involved in MIHs at management levels in developer companies, municipalities, banking officials, government officials, NGOs, and real estate agents. Of this number, the most contributors of data were participants who work as managers for their companies as shown in Figure 7.2. Managers were able to lead intellectual discussions that led to better explanations on how MIHs can be of investment value.



NVIVO EXCEL RECENT

Name	Sources	References	Created On	Created By	Modified On	Modified By
2a NEED FOR IHP TO DEVELOP INTO LAW	1	20	1/19/2018 2:46 P	PS	1/20/2018 4:43 P	PS
1 Agree	1	18	1/20/2018 6:00 A	PS	1/20/2018 7:02 A	PS
2 Disagree	1	16	1/20/2018 5:59 A	PS	1/20/2018 8:37 A	PS
3 Application Problem Solving	1	20	1/20/2018 6:07 A	PS	1/20/2018 10:09	PS
2b Opinion on IHP	1	20	1/19/2018 2:46 P	PS	1/20/2018 4:15 P	PS
2c The issue of race within IHP	1	20	1/19/2018 2:46 P	PS	1/20/2018 4:15 P	PS
2d Typologies and Room for integration	1	20	1/19/2018 2:46 P	PS	1/20/2018 4:15 P	PS
2f subsidy amount to increase	1	20	1/19/2018 2:46 P	PS	1/20/2018 4:15 P	PS
2g Location and cost of land	1	20	1/19/2018 2:46 P	PS	1/20/2018 4:15 P	PS
STRATEGIES FOR FUTURE MIH DEVELOPMENTS LIE IN THE	1	20	1/19/2018 2:46 P	PS	1/25/2018 1:16 A	PS
1 Household Employment	1	20	1/19/2018 2:46 P	PS	1/20/2018 3:55 P	PS
2 Supporting amenities	1	21	1/19/2018 2:46 P	PS	1/20/2018 3:55 P	PS
3 Investor Preference	1	20	1/20/2018 3:34 P	PS	1/20/2018 3:56 P	PS
4 Institutional arrangements	1	20	1/20/2018 3:33 P	PS	1/20/2018 3:56 P	PS
5 A viable PPP Investment Mechanism	1	20	1/19/2018 2:46 P	PS	1/20/2018 3:58 P	PS
6 The New Integrated Investment City	1	20	1/19/2018 2:46 P	PS	1/20/2018 3:58 P	PS
7 Asset and Property Management is vital to support MI	1	20	1/19/2018 2:46 P	PS	1/20/2018 3:58 P	PS

Figure 7.1: Final Nodes on How to Improve MIH Developments in South Africa
Source: Own compilation

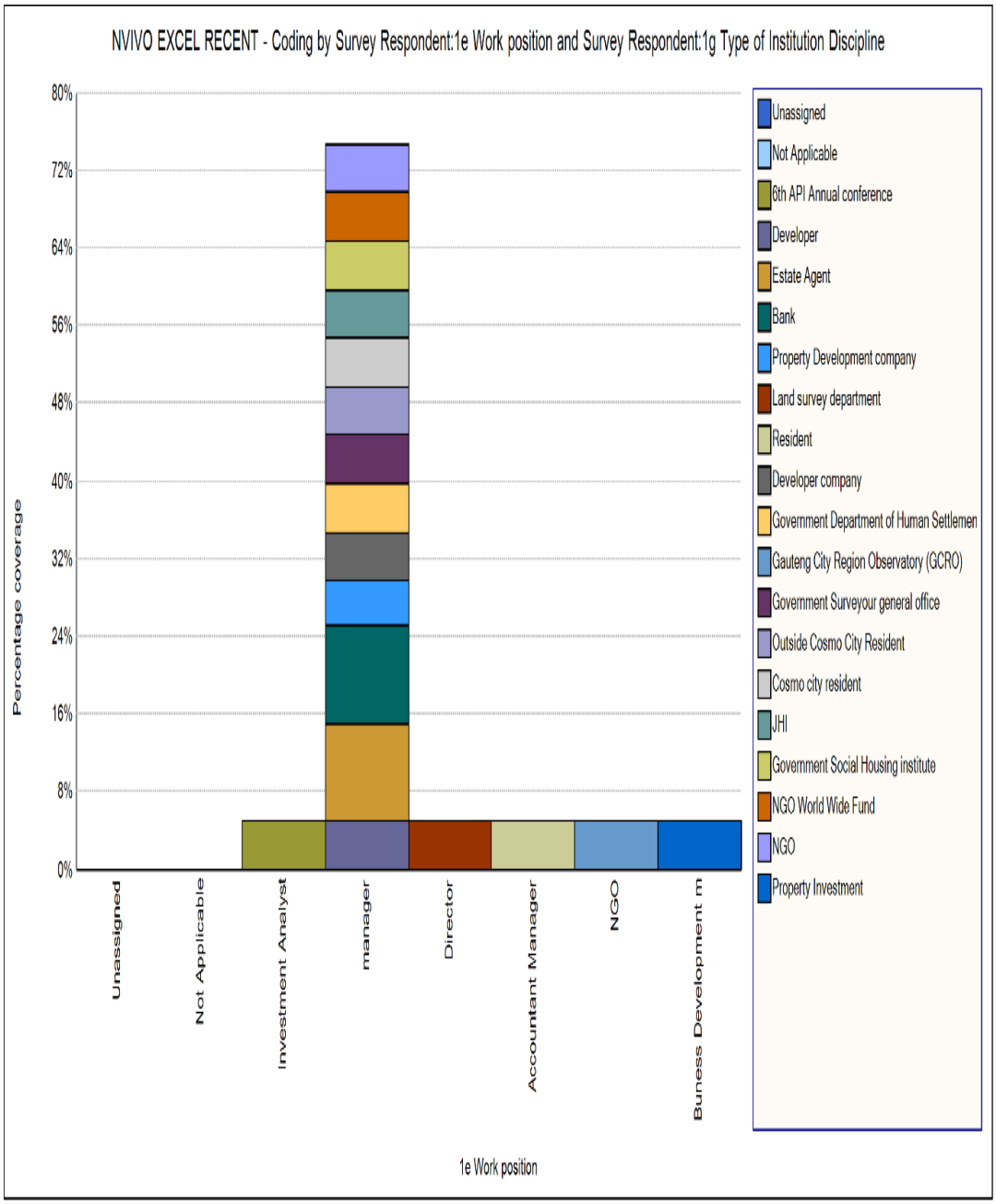


Figure 7.2: Participants by Work Position
Source: Own compilation

The managers mostly work in estate agencies and banks (Figure 7.3).

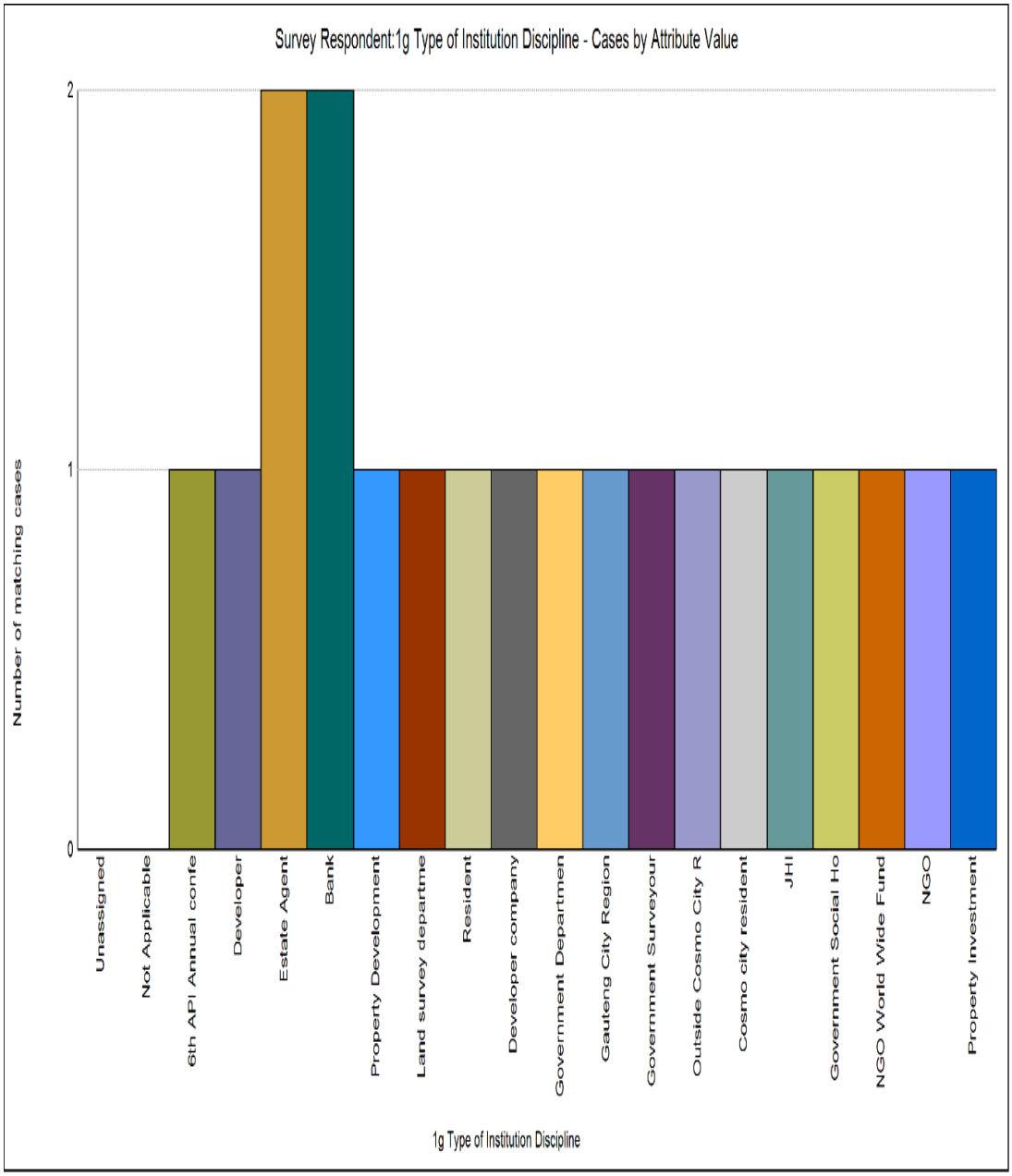


Figure 7.3: Participant W**ork** D**iscipline**
Source: Own compilation

Most of the participants were able to provide information on important aspects of MIH developments, according to the interview schedule shown on Figure 7.4. A deeper analysis was also conducted in NVivo to isolate the contribution of each participant to different issues under discussion. This is an example of how participants contributed to all questions relating to all the specified nodes. This means the data does not have gaps in the distribution of information received from the participants.

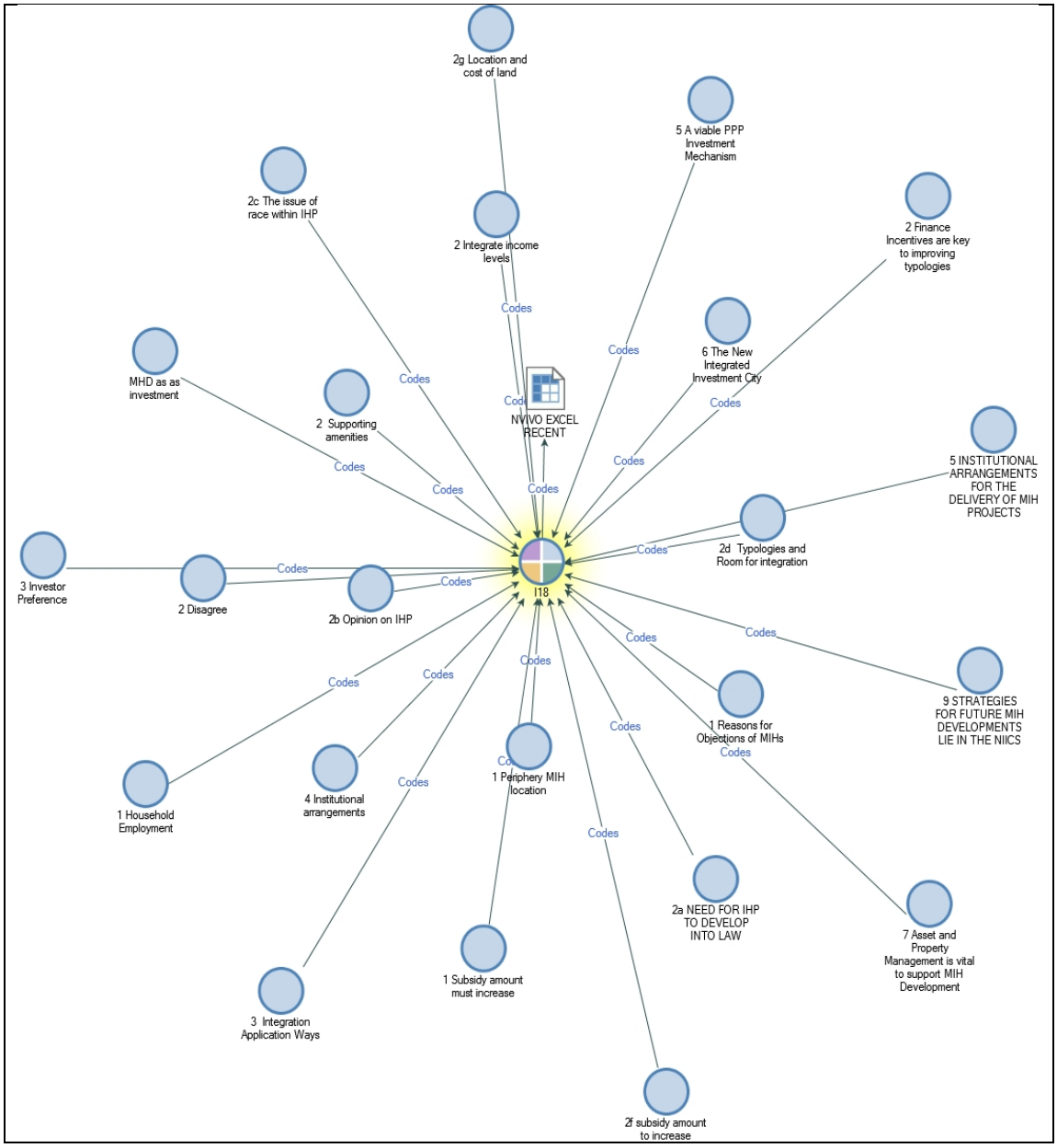


Figure 7.4: Participants' Contribution to Emergent Nodes and Sub Nodes
Source: Own compilation

Thematic Analysis

This analysis used cluster analysis, matrix coding framework, and word maps. Consideration was given in that this research followed the hypotheses speculated in the conceptual framework presented in Chapter 3, making the study as objective as possible in that the manner of data analysis was predetermined and the researcher had minimal influence on it subsequent to data collection .

An improved location of an MIH development is one that is not far from economic hubs, which bring employment opportunities, and link the development to economic and business activities. However, the success of an MIH development lies principally in the design, quality, size, and uniformity of houses within the development. Well-designed houses are a good investment asset that maintains value in the long term. Sometimes debates on MIH developments focus on whether it is possible to mix people of different backgrounds, race, religion, status, and culture, thereby making such housing a means to integrate societies. MIH developments bring increased densities through the multi-typology housing units.

The 20 participants who are knowledgeable in investment vehicles in South Africa were selected to provide semi-structured interview data. Additional data collection methods included the non-participant observation site visits and scrutiny of the archival documents. Abductive analysis is used in cases where previous studies dealing with the phenomenon are scarce or when the information is fragmented. Most interviews were audio taped and supplemented by hand written notes. The intention was to get a better understanding of how MIH developments can be improved in ways that can help reduce NIMBY opposition and improve on the investment returns' ability to attract investments.

The sources of risk include whether inclusionary housing policy should develop into law or remain policy, the delivery mechanism of MIH developments, the optimum

location, and mixing of MIH developments, including improvements in the asset and property management strategies required to make MIH developments sustainable.

7.3 Data Analysis on MIH Implementation investment guidelines

7.3.1 Cluster Analysis

Clusters of themes were created by word similarity and coded by using different colors (Figure 7.5). The question of whether IHP should develop into law or remain policy had clustering themes in red. This includes integrating races, income levels, reason for IHP objection, and the strategy for future MIH development. This showed that IHP is an active component of residential markets used by government for integration. A viable collaboration (blue) was clustered with proper asset and property management, institutional arrangements, supporting amenities, investor preference, and financial grants. This shows consensus with MIH being more of a private sector development that can be viable and sustainable with improved investor amenity preferences for the houses within an MIH development.

The green color shows the need to increase subsidy amounts within the incentive-based mode of financing. The faint grey color clusters the cost of land, infills, restitution land, location of MIH, periphery MIH location. This highlights the connection of land issues to housing and MIH development. The light blue color clusters the question of the composition of households within an MIH. This cluster shows that pepper potting; typology and integration are all significant considerations within MIH developments.

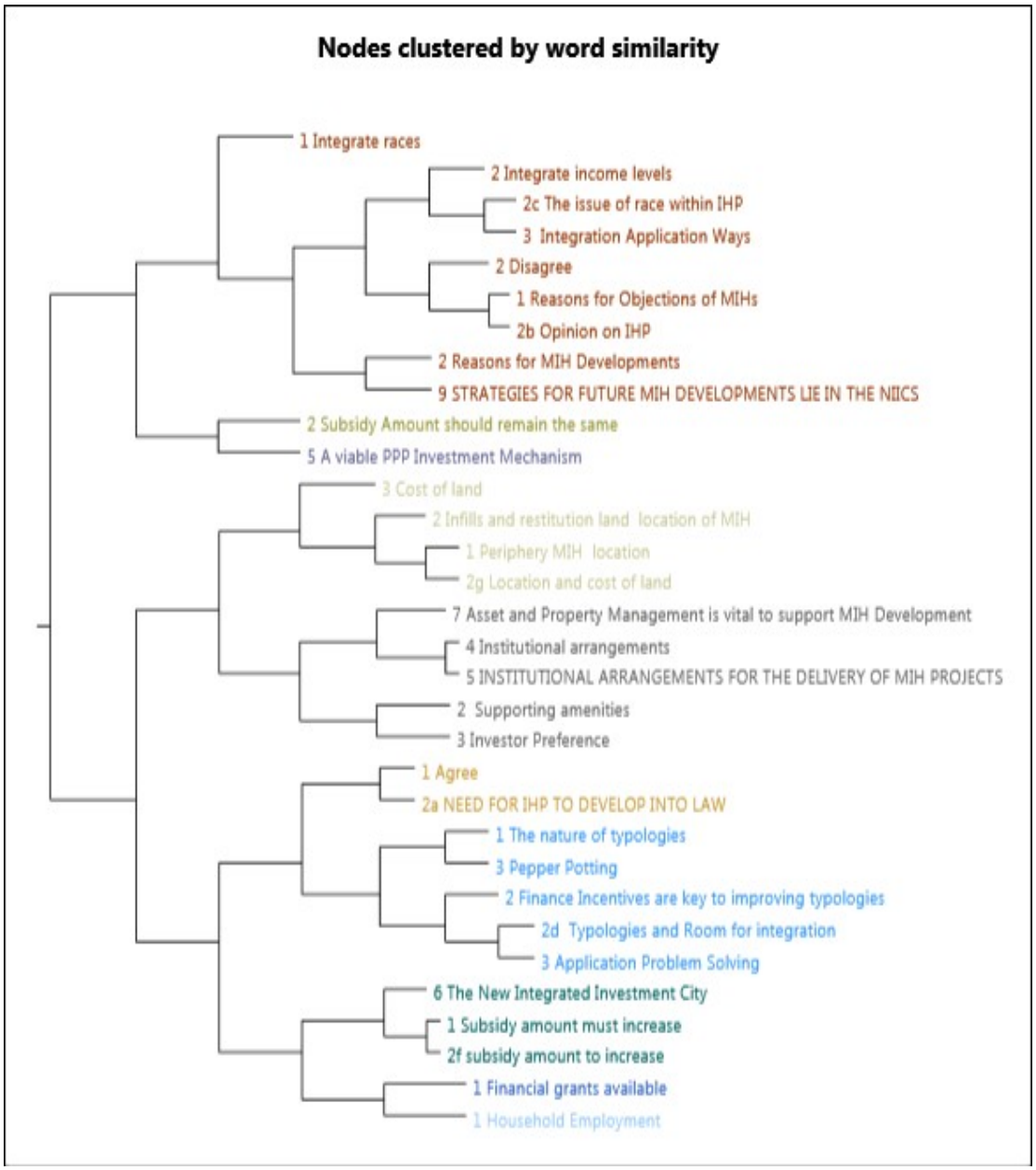


Figure 7.5: Word Similarity Cluster Nodes
Source: Own compilation

7.3.2 Framework Matrix Coding and Word Map Content Analysis

Framework matrix coding showed important issues raised by participants in an easier way. Facilitating the analysis of what each participant said and how they deviated in opinion. The query NVivo function shows what was used to construct the word cloud The word map shows that within MIH discourse, housing developments and people are the highest frequency words, land, government, MIH and lastly, the least frequently used words were rich, poor, affordable and mixing (Figure 7.6). This word cloud suggests that principally, 'MIHs developments are about housing people.' This should be the focus of MIH developments by integrating people through the affordable housing tenure.



Figure 7.6: Important I**ssues in MIH** D**iscourse**
Source: Own compilation

7.4 Validation of Findings on Interviews

Findings were validated by a Delphi method in order to reach a consensus on themes that appeared contradictory and parallel. A systematic Delphi validation method was employed to check the plausibility of the resultant guidelines. People were asked to comment on whether the guidelines put forward in the study are plausible for the implementation of MIH developments in a way that reduces NIMBY within MIHs in South Africa (Renzi, and Freitas, 2015). The Delphi process is shown in Figure 7.7.

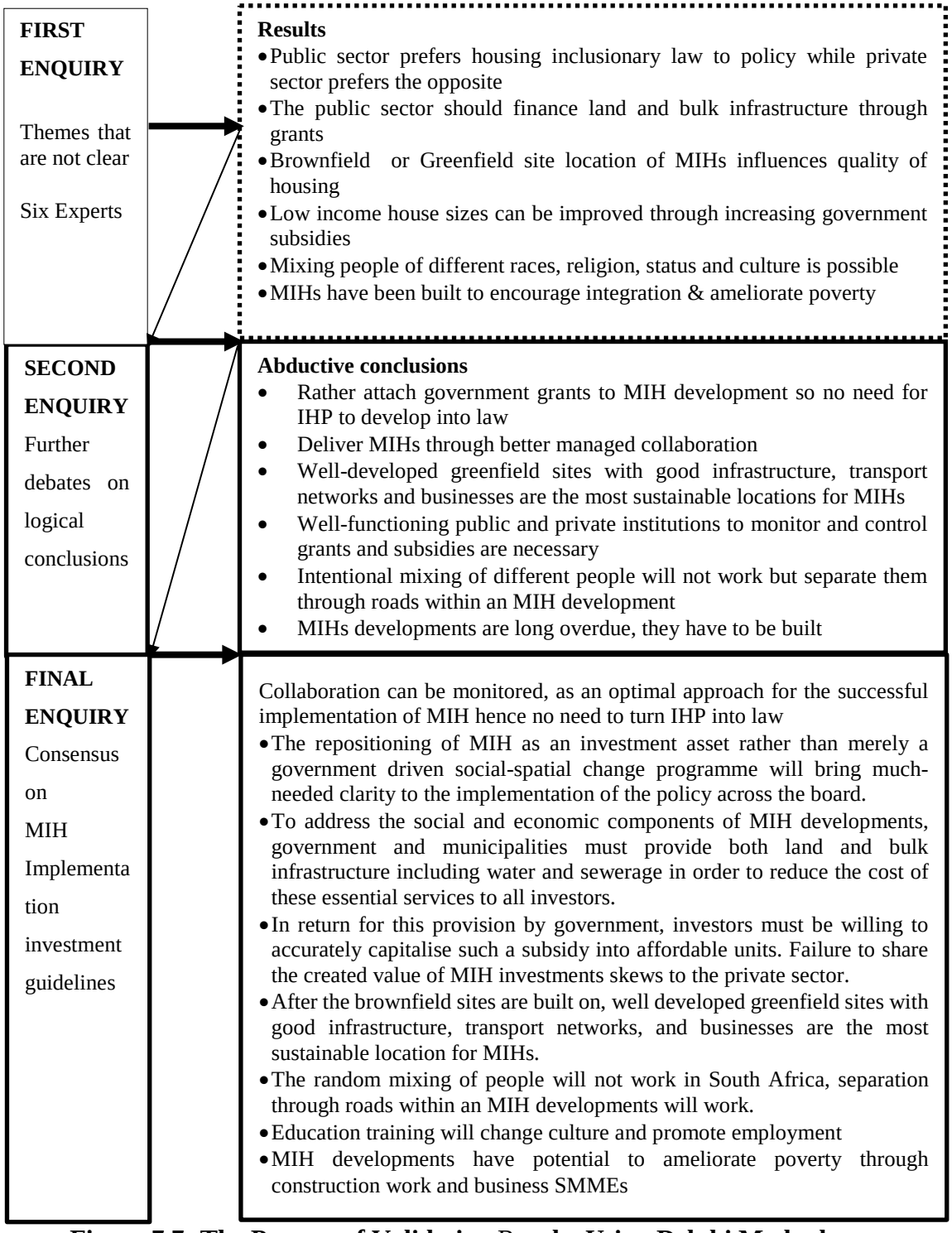


Figure 7.7: The Process of Validating Results Using Delphi Method
Source: Own compilation

7.5 Findings on MIH Implementation Investment Guidelines

7.5.1 Finding 1: IHP Should Remain Policy

Figure 7.8 shows that 70 % of participants (who are managers) see no need for inclusionary housing policy to develop into law. This confirms Khadduri and Martin (1997) who identified that mixed-income housing could exist without a special policy to create it for as long as there are ways to subside the lowest income households.

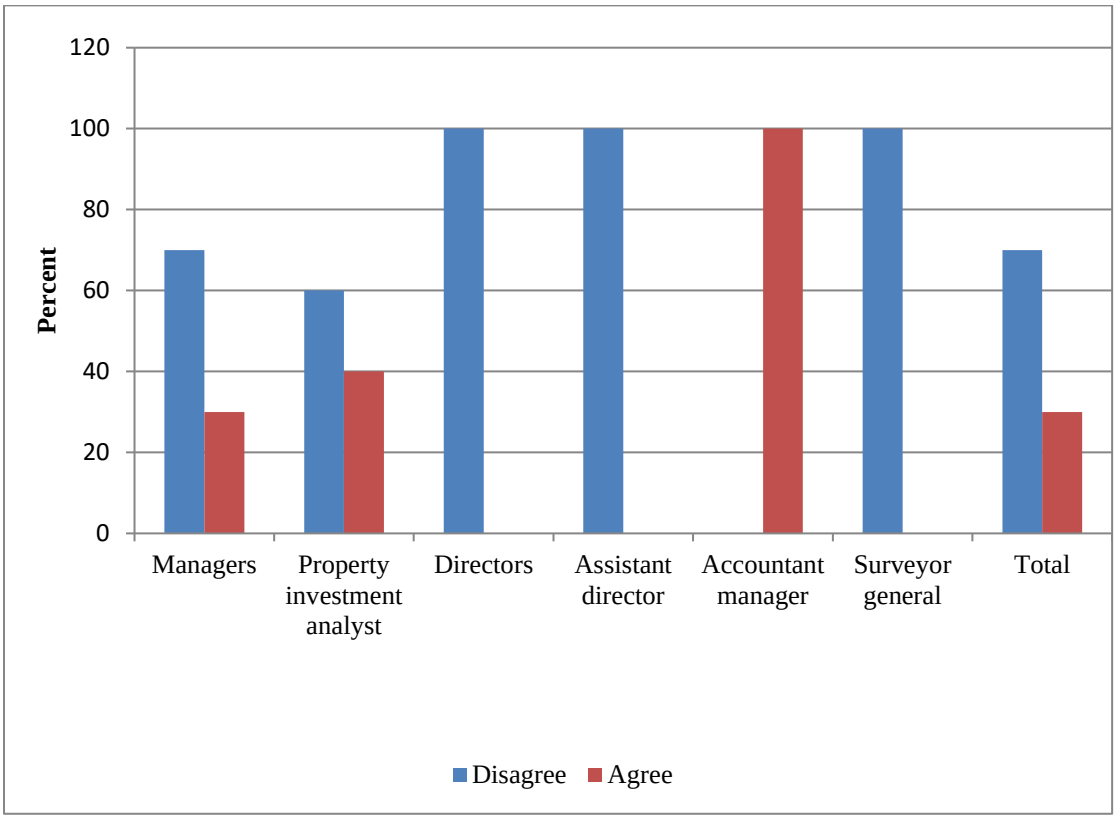


Figure 7.8: Preference on Inclusive Policy or Law
Source: Own compilation

Inclusionary housing policy suffices. Its development into law is not necessary as linking bulk infrastructure to affordable housing units acts as a negotiation tool. This is deemed sufficient to enforce MIH developments into including reasonable amounts

of low-income housing units. In agreement with Neil Klug Consultants (2014), further analysis revealed that many of the government grants are enough to motivate the inclusion of affordable housing units. Without these USDGs and HSDG and Department of Energy subsidies, MIH developments cannot generate reasonable development yields. An MIH that includes RDP, FLISP, rental, and high-end houses can easily use the Restructuring Capital Grant (RCG) and the institutional subsidy to facilitate the construction of rental stock closer to Transport Oriented Developments (TODs)

7.5.2 Finding 2: A Collaborative Housing Delivery Mechanism is best

95% of participants suggest a collaborative housing delivery mechanism is able to add clauses that make developers include affordable residential units in their new MIH developments. A pie chart in Figure 7.9 shows 95% of participants choosing collaboration rather than single government delivery mechanisms for developing MIHs.

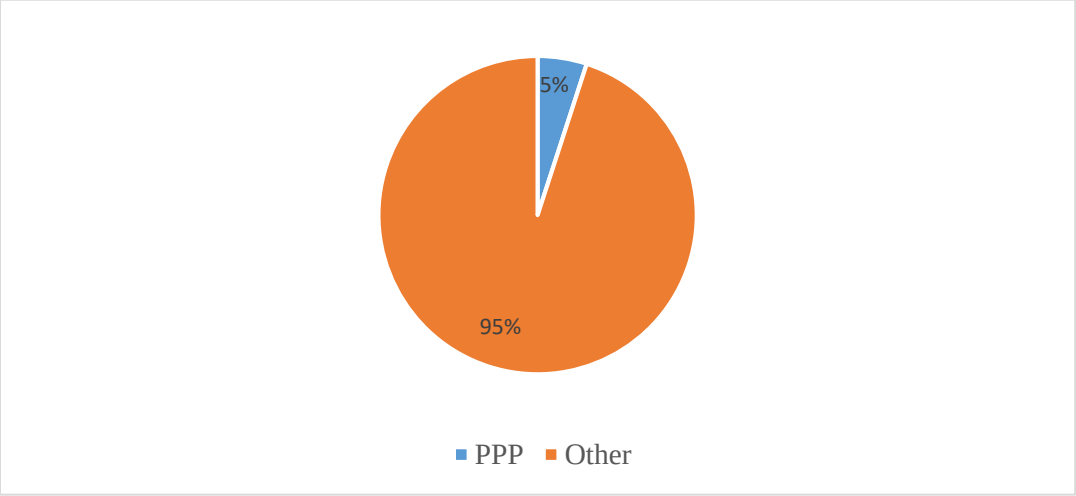


Figure 7.9: Collaboration is the Best Delivery Mechanism
Source: Own compilation

The financing incentive options embedded in this collaboration enable effective delivery mechanisms through which stakeholders influence the supply of housing and scale of an MIH development. Effective collaboration has the power to make MIH viable and sustainable as well as good investment vehicles. This enables the developer to take responsibility in ensuring that structures are built properly. The best institutional arrangement is one whereby private developers give municipalities Urban Management Grants (UMG), anticipating to recoup their capital in the long term. This helps to support the road maintenance, water, and sewerage necessary for the early stages of MIH development. This, in the long term, prepares against overburdened sewerage systems that may lead to epidemics, such as cholera outbreaks.

The only drawback is that large scale municipality structures are not easy to encourage participation in as it takes time to convince relevant stakeholders. Participant 8 explains that:

> It is even complicated (political clashes) sometimes when land sits on different municipalities whereby there is need to involve all players effectively although it gives healthy completions on the other side. Because of this, it is easier to work with smaller municipalities.

There are many players currently indicating great interest, such as World Wide Fund (WWF), Nedbank Green Trust (NGT), Gauteng Partnership Fund (GPF) and Clinton Foundation (CF) who are investing in systematic greening of social housing in order to reduce household costs by about 45% in utility bills and make affordable housing healthy, green, and resilient (GPF, 2014). A good example is Enterprise Community Partners, which invested R50 million in 2016 to build houses in low-income communities to improve health, sustainability, and resilience outcomes for residents and communities (GPF, *ibid*). Financing through bulk infrastructure, social amenities and land will open a way for government. The government then requires a number of

affordable units in exchange for its contribution. The best way to deliver housing is through collaboration where government and the private sector work together.

This confirms early findings by Khadduri and Martin (1997) that an MIH can be successful with a precise policy or law. Participants generally accepted this hypothesis. It is the financing incentive options accessible to the private sector especially the cost of land and bulk infrastructure that make inclusionary housing affordable and make MIHs viable and sustainable. These grants include the Urban Settlements Development Grant (USDG), the Social Housing Regulatory Authority (SHRA) Restructuring Capital Grant, Community Residential Units (CRU), the National Housing Finance Corporation (NHFC) and the parastatals, commercial banks, and private funding entities.

Through effective collaboration, stakeholders are able to influence the supply of housing and the scale of MIH developments. The conclusion is that an effective collaboration enables a unit in an MIH to be a good investment asset. This is because there is always an improved housing quality when the private sector plays a leading role in the developments while governments play an enabler or facilitator role in achieving a better social and financial return (Berry *et al.* 2006). Higher subsidy grants are required to improve the size and quality of housing within MIH developments and help with financing the development. The high subsidy thus guarantees uniformity of affordable housing to the receiving housing markets and enables integration within the neighborhoods in which they are built.

This is an opportunity for construction companies to collaborate with government. Government and the private sector can jointly celebrate these initiatives. Cost sharing with the private sector infrastructure improvement makes the development viable. The view is that collaboration between government and the private sector is the best approach to MIH developments that are viable and sustainable because institutional investors are keen to invest in MIH with long-term investment-holding periods.

Investors are inclining more to the idea of affordable housing to be a relatively low risk venture that offers a stable rate of return (Ferilli *et al.* 2017). This is possible through institutional arrangements.

Investors include high net worth family investors, but perhaps the most effective investment strategies are collaborative. NGOs are keen to collaborate with investors through companies that offer innovative solutions such as the International-Housing Solutions (IHS). IHS' SA Workforce Housing Fund has collaborated with property companies to fund housing developments in key locations. This kind of investment includes equity and local debt. Their newly constructed MIH properties are mainly on for sale or rent. The funds' exit from investments is expected to be through the sale of developed homes and sale or listing of its rental portfolio. Restructuring Capital Grant (RCG) and institutional subsidy enables the construction of rental stock closer to economic hubs.

One participant highlights the point that hedge funds view the affordable housing component of MIH developments as a good investment. Investors are strongly drawn to MIH developments, as institutional investors are keen to invest in MIH with a long-term investment-holding period. Within the world of finance, banks are also keen to become involved in MIH real estate development. The Human Settlements department issued a call in 2007 for banks to assist the department and many banks tendered on that provision of housing. Banks work with development partners to use city land through the land available and development agreements that focus on infrastructure and amenity provision.

A municipal manager and his heads of department form a committee with monthly meetings and convene a development planning and urban management committee. One participant explains that, "municipalities lose out on Urban Management Grants

provided, as they are expected to provide free services without sharing in profit to actually do it well."

Municipalities also are weak in revenue collection yet national government gives money to municipalities; the money may be diverted from intended housing projects to such things as gravesite upgrading. However, development grants do drain fast towards unintended projects; MIH developments are supposed to be national projects to avoid misdirected grants that happen within municipalities. With the urban management grants provided by developer companies, these companies are able to influence the budget. Developer companies are able to influence and even co-approve the budget. The other advantage of a developer company is that it has the environmental monitoring and mitigation committee for dealing with all health and safety issues. Interdepartmental committees have the power to pool project managers, education departments, and the Expanded Public Works Programme (EPWP) office that seek to use labor intensive ways in municipality projects (Human Settlements, 2016). The Department of Health also provides clinics on site. The Social Housing Regulatory Authority encourages designing high-rise developments within MIH development. Social housing focusses on rental yields needed by banks. Thus end user finance is also important in completing the investment process of housing provision.

The majority of the participants are of the viewpoint that municipalities should put building and town planning controls in place in order to remove informality within the MIH developments. Partners, such as the Old Mutual Housing Impact Fund for whom there is a possibility of profit sharing or a rate per square meter on sales, are keen to be involved. However, the new private partners require the project to be immediately viable hence; smaller projects are preferable as they release cash flows earlier than larger projects. However, the provision of equitable share funds is based on the number of informal settlements in a municipality that need adjustments. This is because a city that has fewer informal settlements will have to use its own money to support new

housing developments. The World Wide Fund funds greening of social housing so that household costs are reduced by 45% due to utility bills. Nedbank Green Trust and Gauteng Partnership Fund (GPF) are also huge players.

7.5.3 Finding 3: Greenfield Location Makes MIHs Viable and Sustainable

70% of private sector participants prefer a greenfield location for MIH development as it provides good opportunities for better designs and mixed typologies (See Figure 7.10), while all participants from the government sector are one-sided, preferring the brownfield sites.

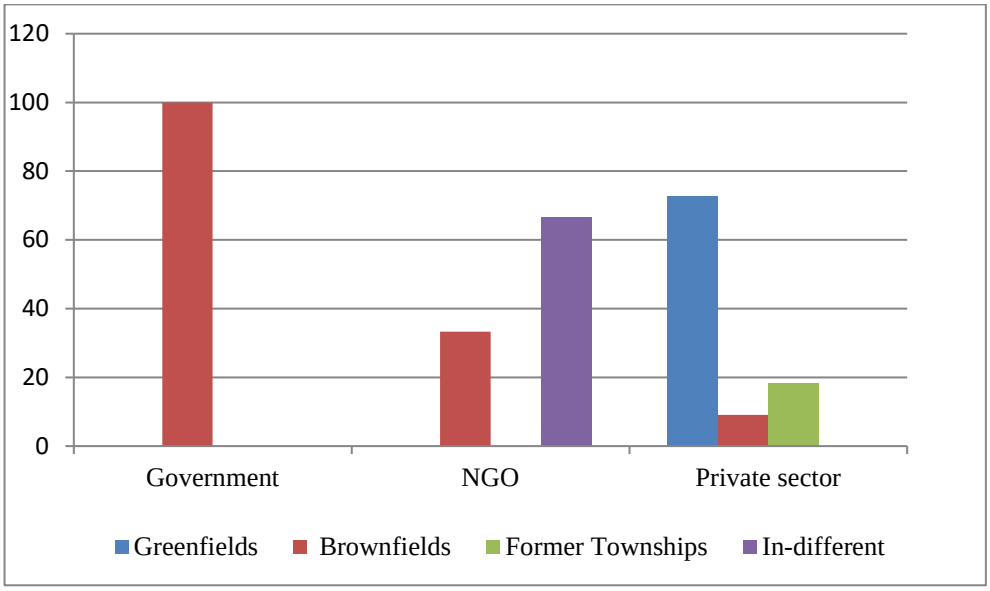


Figure 7.10: Greenfield Location Preference
Source: Own compilation

The location of an MIH development is highly contested in literature. Developers seem to insist on developing MIH on the outskirts of cities. They say this is where the market is and view an MIH development located on the periphery as more profitable, given

that the land is cheaper yielding to higher investment returns (Marais and Cloete, 2017). On the other hand, government prefers the affluent neighborhoods as a way of dismantling apartheid cities, to integrate the poor with the rich, and above all, to reinstate black people on their land, previously taken by force under apartheid. One answer to the uproar for restitution of land may be to build on this land, previously ceded under apartheid so that such developments can be made within economic hubs (UNECA, 2009). However, this cannot be a sufficient solution to the problem as land close to economic zones is more expensive and eventually will be entirely developed in the long term.

The argument is that there is nothing wrong in building MIH developments on greenfield sites for as long as there are accompanying amenities and infrastructure (planning gain) that improves the quality of life within MIH developments. This logic draws from location theory, which advances the idea that MIH developments built close to places of business, infrastructure, and transport linkages attract higher values than those that are further away. There is consensus that a new development ought to have the desired amenities such as schools and parks in order for the MIH development project to be viable. Finding ways to cross subsidise public housing units with market rate units is one strategy that works well.

One participant highlights that currently government is ‘pumping’ in services in Cosmo City MIH such as building a sizeable library and retail market. This helps sustain house prices. Cosmo city houses are often marketed as North Riding which offers insights in the perceptions of estate agents. This minor misnomer highlights the perceived importance of hospitals, clinics, shops, schools, libraries, and police stations that as vital to support MIH developments. Additionally, participants suggest that there are long term benefits in using Green Building Technology (GBT) in developing affordable housing to mitigate high utility costs (Ahmad *et al.* 2016).

7.5.4 Finding 4: Silo Preference in Mixing of Households

Figure 7.11 shows participants' preferences in terms of mixing or not mixing people by income classes. They prefer that for each development, there must contain low, middle and high-income neighborhoods not demarcated by walls, but by roads. Many people believe the success of MIH lies on how RDP subsidised housing is incorporated and how social housing is effectively managed.

The sentiment seems to be to avert the whole development regressing into a less preferred neighborhood, consequently devaluing the middle and high-income components of the development. Most participants do not see the design of an MIH development as a 'pepper potted' but 'silo' development working well in South Africa due to such reasons as increased crime. Participants suggest that the best way to deal with crime includes utilizing open plans that encourage people to walk to places of amenities and TODs. The majority (70%) of the participants suggest that poorer households should make efforts to reduce noise and dirt tendencies that often stir NIMBY against developments that include poor households.

Ijasan and Ogunro (2014) suggest a universal community based approach to solving housing problems that include street hooliganism destitution and poor roads. Thus TODs should be accompanied by improvements in infrastructure and amenities, which lead to improved quality of life with the effect of bringing business activities within MIH developments located in greenfield sites. An MIH development should focus on mixing households according to income through different typologies rather than race, religion and culture. Most participants reject the idea of an MIH development designed in the 'pepper pot' style, capable of deconcentrating poverty and possibly promoting racial integration.

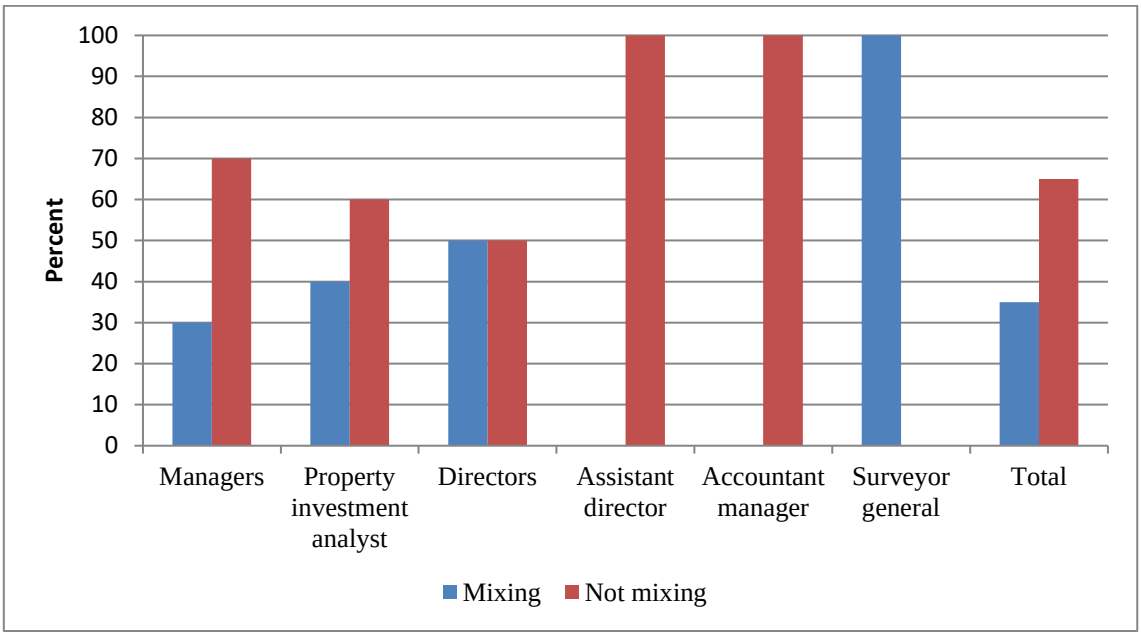


Figure 7.11: Mixing of Households in the MIH Development
Source: Own compilation

This means that if an MIH development closer to economic hubs consists of a higher percentage of poor people, it effectively means mixing the pre-existing socioeconomic backgrounds of households (Woo *et al.* 2016). Thus, it might not be easy to market the houses within an MIH development to buyers and renters. On the positive side, viable and sustainable MIH developments have the chance to increase the revenue base for municipalities. This in itself is a need for people to contribute towards municipal revenue, which further increases property values.

Unlike in South Africa, the USA uses a rental voucher system that allows for flexibility for the poor to move to the more affluent neighborhoods of their choice. This is at 30% below market rentals with the difference paid for by the government. The problem is that property owners tend to ignore the voucher holders in favor of more wealthy tenants. It is also better to have a spot for the elderly and the poor within each MIH development. Sectional title is divided into the subsidy and all market part where JOSHCO (wholly owned by CoJ) and Johannesburg Housing Company (JHC)

respectively get involved. It would seem that in order for the social housing component of an MIH development to be sustainably successful, all rental components should be demand driven.

7.5.5 Finding 5: Private Oriented Asset and Property Management Strategy

Participants suggested an improved market based asset and property management strategy that embodies investment performance measurements and makes MIH developments viable and sustainable. This means that these management skills enable such development to yield better returns with reduced investment risks. This is in agreement with Gruis and Nieboer (2011) which sees good asset management strategy as able to increase the supply of housing stock while the improved property management strategy maintains the stock.

This is especially true regarding social housing component of an MIH development. Thus, asset and property management tools are needed for the sustainability of MIH developments. Without them, MIH developments regress to low-income crime havens (Gruis and Niebor, *ibid*). Asset management is still vital for new developments in terms of land sourcing. Government agents, such as the Housing Development Agent (HDA), play a huge role in land acquisition and this is vital to reduce the cost of land that makes such housing expensive. Participant 2 points that, "Municipalities must set up occupancy certificates and effectively find better ways to collect revenue for use in these developments".

Wade (2006) highlighted the need to improve on marketing services to houses within mixed income housing. Thus, government should set up controls on regulating what can be allowed in these developments to curb informality. Such houses are easier to manage. An entity that has experience must manage these developments. A property management company is critical in supporting MIH as an investment, especially the

social rented component. Management of regulation programmes and incentive programmes is vital at development level. Training to reduce these costs is vital until the development becomes the responsibility of the city. If property is not managed properly, post development, it disturbs the viability and sustainability of MIH developments.

Government should set up controls on regulating what can be allowed in these developments. The vast majority of participants (85%) were of the viewpoint that cities may set up property management offices or oversee body corporates and use software such as Novtel and MDA software for proper reporting on electrical, general, plumbing, and structural costs. It is important to keep a good tenant- property owner relationship to ensure tenants pay their rent. This effort can even extend to cities overseeing community associations that can reduce dumping sites.

One participant says "…to avoid burst sewerage pipes, tight overcrowding controls are needed to avoid epidemics such as cholera outbreaks, there is need for controlling and monitoring buildings by City Planning departments". Motlhabane (2015) reasons that RDP housing delivery system needs to be monitored effectively to avoid unintended consequences of the housing delivery system. Body corporates may help, but it is difficult to make rules that govern common areas. Thus, training to reduce these costs is vital given that social housing (which is an integral part of an MIH development) has high maintenance costs.

7.5.6 Finding 6: MIHs Support Affordability through SMMES

Participants added another factor on the need for education and skills development for households to afford housing units within MIH developments. There is a need for skills development through Small Medium and Micro Enterprises (SMMEs), given that the MIH projects span many years. Skills such as building officers, plumbing, brick laying

and even the soft skills can be trained for these developments. This, however, requires good monitoring to ensure the quality of housing units is not compromised. Employment generation to support MIHs makes a new area development the only way possible. The issue is how to move industries to the greenfield MIH developments. There are long-term benefits in using Green Building Technology (GBT) that can mitigate high utility costs when developing affordable housing. About 50 % of the participants talked about sustainable green wages to ensure inclusion of workers into mainstream economic development.

How wealth is distributed is crucial in the form of increased wages. Thus, there is need for more funds into informal trading. There is need to educate stakeholders on such skills in the form of debt management as a way to back up affordability of housing investments within MIH developments. This might help to address the historical non-payment of housing loans and service payment boycotts highlighted by Tomlinson (2007) as a major drawback for the success of social housing. It is also beneficial that stock exchange listed development companies are transparent to enable better assessment of risk to the residential markets investor (Boshoff and Gert, 2013)

7.6 Summary

The built environment experts pointed to an interesting emerging theme. Residential real estate does not render high-performance returns compared to other real estate investment classes (office, retail, and industrial) in terms of the risks taken. It is through collaboration that MIHs become viable and sustainable. Alone, neither the public nor private sectors are without NIMBY opposition challenges. Successful MIH developments have the capacity to break stigmatization around MIH developments being low-income focused, as these should be developed as vibrant green mixed uses. Overall, this may have an effect on reducing the NIMBY syndrome and this may lead to house price stabilization. Without MIH developments adapting, it seems possible

that very poor households in South Africa's major cities will remain in the same miserable housing and poverty situation. Stats SA (2017) show that over 30,4 million South Africans still lived in poverty in 2015, based on an Upper-Bound Poverty Line (UBPL) of R992 per person per month in 2015 prices. The last chapter presents the general conclusions, discussions, and recommendations advanced from this research study.

CHAPTER 8: CONCLUSIONS & RECOMMENDATIONS

8.1 Introduction

The aim of the study was to investigate the effects of mixed income housing developments on neighborhood house prices and establish investment guidelines for improving future inclusive MIH developments. NIMBY opposition is identified as anything that opposes land-use change and increases risks of home ownership; this study looked at NIMBY opposition from mixed income housing developments (Fischel, 2001). Risks mostly feared by homeowners are the ones that lead to devaluation in house prices as the land use changes. In South Africa, NIMBY opposition to MIH developments is one of the sources of this risk. This ultimately translate into delays in the development processes of housing. This broadly reduces investment funds towards the much needed housing developments as it becomes very cumbersome and risky for investors. Thus, the study endeavored to investigate the extent to which NIMBY opposition to mixed income housing developments affects residential markets and how to improve on future developments in the context of South Africa.

In order to achieve that, a mixed methods approach enabled all the set objectives to be fulfilled in two parallel empirical investigations. Thus, this chapter presents conclusions on MIH effects on house prices, including the 'no effect' distance point and the 'varying effect per suburb's quality' to fulfil objectives 3a, b, and c. The study further concluded on what investment improvements are necessary to improve future MIH developments to fulfil objectives 4a, b, c, d and e. Using triangulated conclusions from all the fulfilled objectives, the study gives a set of recommendations that aims to reduce NIMBY opposition and guide future investments in MIH developments in the context of South Africa. Finally contributions to residential real estate's body of knowledge and implications to housing policy are given.

The study uses a mixed methods approach in two parallel empirical investigations to cover the multi-dimensional aspect of housing. Before reviewing literature specific to mixed income housing effects on house prices in Chapter 5, Chapters 2 reviewed literature on housing policy and the delivery approaches necessary for MIH developments. This preamble, Chapter 2 argues that neither government nor private sector can deliver MIH successfully on their own. Moreover those MIH developments built in South Africa so far are highly contested in courts as manifestation of NIMBY opposition against them.

This led to an empirical enquiry through study A which investigated whether a compelling case of an MIH development built in South Africa has indeed had a price depressing effect on the neighbourhood as might be inferred from in high levels of NIMBY opposition. Hedonic analysis was conducted in Chapter 6 as a quantitative study and the results showed negative effects of the Cosmo City MIH development on its neighborhood house prices. Hence, it became necessary to investigate how the negative effects of a compelling MIH can be minimized in future developments; this was the focus of second study. Findings from these two studies led to the general conclusions.

8.2 NIMBY and Investment Risks in Mixed Income Housing

To fulfil the first objective, Chapter 2 used in depth literature reviews on the evolution of housing policy by looking at some selected developed and developing countries. From this chapter, the conclusion that the ideal housing policy is clearly linked to the ‘financial feasibility’ of private developers in providing affordable housing units was drawn. This makes inclusionary housing in South Africa viable and sustainable even if it remains the duty of national housing policy to provide housing to the lowest income

households. Thus, the economic and social effects of housing policies, initiatives, and programs need careful assessment and monitoring to fulfil this public sector goal.
Given the pitfalls associated with public sector provision especially lack of funds and inefficiencies caused by corruption, the ideal housing policy is one that fosters collaborative Public Private Partnerships capable of building good quality housing assets that maintain future investment value. As final products, these new neighborhoods have capacity to lessen NIMBY opposition in ways that promote sustainability in future MIH developments.

8.3 The Nature of Cosmo City MIH

Chapter 5 described Cosmo City MIH to contextualize its case study relevance to fulfil objective 2. It was not surprising that homeowners in these neighborhoods proffered significant opposition to the development, given that it is mainly the advantaged races that occupy its neighbourhood. The neighbourhoods that opposed the Cosmo City MIH development were predominantly affluent neighbourhoods with amenities and well developed transport networks. Thus, it was anticipated that such households might sell their homes and leave the area after the Cosmo City MIH development was completed. This then was going to depress house prices, hence the empirical investigation using it as a case study. The Cosmo City MIH development is evidence that MIH developments can be built in South Africa. There is however need to monitor the kind of collaboration that delivers such projects.

8.4 Cosmo City MIH Effects on Neighbourhood House Prices

Objective 3a was fulfilled quantitatively by using ‘pooled cross sectional’ hedonic techniques in measuring the effects of Cosmo City MIH on its neighborhood house prices. As shown in Section 1.3, the gap in literature is that the negative perceptions on MIH developments in South Africa. These negative perceptions often lead to NIMBY opposition basing largely on little evidence, yet this syndrome has great bearing on the

viability and sustainability of these developments and residential developments as a whole. In order to stimulate and enhance private sector investments, there is need to reduce NIMBY opposition because it elevates investment risk.

The quantitative research presented in Chapter 6 pooled house prices and amenities as explanatory variables. Results confirm that much of the NIMBY opposition experienced in South Africa is empirically substantiated with a price reduction of houses sold in the neighborhood of the Cosmo City MIH development. On average, this price reduction effect was 0.413%, 0.239%, and 0.13% within a radius of 1.281 kilometers, 2.281 kilometers and 3.281 kilometers respectively (contour 1, 2, and 3). This means that houses closest (1.281 kilometers) to the Cosmo City MIH development experienced a 0.413% price discount. The other time dummy variable also found that houses sold after the year 2005 were sold at a discount of 0.145% compared to the ones sold before it.

In this model, control variables used in the regression analysis yielded interesting results as determinants of house prices. As results show, most of the locational factors such as distance to informal settlements, CBD and shopping centers had little to do with house prices in the suburbs. The study also shows that homes inhabited by Blacks are assessed as 0, 0853% less valuable than the same housing stock inhabited by Whites. There are relatively high discounts on house prices due to incidences of crime.

The comparable sale effect measured by the autoregressive was negligible. This indicates that house prices in the study area not influenced by the prices of houses sold in close proximity in previous times. Surprisingly income does not explain price movements. Income and number of bedrooms seem to be correlated with distance variable and so it made sense to drop them in some regressions. Surprisingly, the race variable was found to influence house prices in the neighborhood of the Cosmo City MIH development consistent with the notion that racial discrimination is often cited as the reason for high levels of NIMBY opposition. Triangulating from arguments in

chapters 2 and 4, the conclusion is that racial discrimination cannot be ignored in efforts to build inclusive housing. Perhaps reducing the 'social ills' associated with low-income people (who happen to be black in South Africa) may be the long-term solution to mixed income developments. Overall, the first study confirmed the hypothesis that the Cosmo City MIH development case study had price-depressing effects on its neighborhood as property owners make efforts to sell their properties to move to other places without MIH developments. This gave the expectation that 'minor' adjustments on MIH developments can reduce NIMBY opposition on future MIH developments.

8.5 The 'No Effect' Critical Boundary

As objective 3b, the study investigated the point in distance at which the case study MIH development does not influence house prices in the neighborhoods as explained in the methodology section 4.1.2 and Figure 4.2. The critical distance testing done in the model 4 reveals that the Cosmo City MIH development had no significant effect after approximately 3.281 kilometers.

This is a point where the case study MIH development did not influence house prices in its neighbourhoods with a coefficient of -0.201%, -0.296%, which meant that there was an inverse relationship at this point. This is the 'no effect' boundary point after which the Cosmo City MIH development was no longer viewed undesirably. This is a contribution to location theory showing a distance zone over which MIH developments can be built without reducing neighborhood house prices. This suggests that a compelling MIH in an affluent neighborhood does not have such an extreme effect on distressing the locational advantages of an affluent neighborhood as previously argued by high levels of NIMBY opposition against the Cosmo City MIH development. It was also important to investigate if the NIMBY effects vary with the quality of the receiving neighborhood.

8.6 NIMBY Effects are Dependent on the Quality of the Receiving Neighbourhood

To fulfil objective 3c, the study looked at how the impact varies across different neighbourhoods. The study indeed found that the effect of the Cosmo City MIH development on its individual neighborhood was different for low and high-income suburbs. This was tested using dummy variables that picked 1 for a suburb and 0 for all others. The conversion of these dummy variables into categorical variables made it possible compare results to Woodhill (control suburb). Bloubosrand and Zandspruit Extension 4 had coefficients of -0.462% to -0.605% respectively, which shows that sales prices reduced on average in these low-income neighbourhoods.

While the middle and high-income neighbourhoods of Chartwell, Dainfern, Farmall, Jackaal Creek, and Northriding actually increased in prices as shown by positive coefficients of 0.379%, 1.076%, 0.217%, 0.196%, and 0.121% respectively. Thus, from a suburb analysis point of view, high-income suburbs were not deeply affected by the Cosmo City MIH development. This is rather surprising as most NIMBY opposition comes from high-income suburbs. It is possible that high income people are more likely to stay put in their preferred suburbs than poor people. Objective 4 looked at ways through which MIH developments can be improved by discussing the five investment guidelines.

From this empirical analysis, the study refutes high levels of NIMBY opposition to inclusive housing as baseless given the minimal effects of the Cosmo City MIH development on house prices of 0.413% on house prices. Thus, if all residential markets embrace inclusive housing in all South African regions, there is a higher chance that house prices will eventually stabilize across residential markets regardless of NIMBY opposition. The study further looked at ways to reduce NIMBY opposition to mixed

income housing developments such that they will be successful and sustainable in increasing housing supply and ameliorating housing shortage.

Second study fulfilled objective 4 through a parallel study which sought to find ways of dealing with sources of investment risk in the development of mixed income housing. These were explained in Chapter 2. They include:

- Inclusive housing regulation
- The kind of housing delivery approach
- The location of an MIH development
- The nature of mixing households in terms of design, race and socio-economic status of households
- Asset and property management strategic orientation.

These elements were hypothetically tested in Chapter 7 with 20 participants plus 6 Delphi extra independent participants in Figure 7.7. Each guideline is explained in section 8.6.1 through to 8.6.5.

8.6.1 Non Obligatory Inclusive Housing

The contentious question on whether MIH development should be legislated or remain policy was investigated to fulfil objective 3a. The conclusion is that there is no need for IHP to develop into law if the delivery of MIH is done through a comprehensive incentive based system whereby the financial contributions made by government through bulk infrastructure promote better investment returns. Transferring the policy development into law is not necessary as linking bulk infrastructure to affordable housing units acts as a negotiation tool sufficient to enforce MIH developments into including reasonable amounts of low-income housing units.

This way, MIH developments will be able to achieve the social and economic goals of inclusive housing. Government and municipalities may essentially provide both land and bulk infrastructure and sewerage systems in order to reduce the cost of these essential services to developers. This enables the private sector to build better housing that maintains investment value in the future. Secondly, the study investigates the appropriate delivery approaches for a viable and sustainable MIH.

8.6.2 Private Sector Oriented Collaboration in Delivering MIHs

Objective 3b examined the most viable and sustainable delivery model for MIH developments between public and private provision. The study concluded that a collaboration is the most ideal housing delivery model that reduces risks of failure regarding mixed income housing. This collaboration is able to reposition MIH developments as an investment asset rather than merely a government driven social-spatial change programme. This view can bring the much-needed improvement funding in MIH developments to improve the quality of housing and create a means to reduce NIMBY opposition. Raising funds through partnerships provides workable solutions towards housing finance shortages where the public sector negotiates for these exchange units of affordable housing for the financial and bulk infrastructure contribution. Cost sharing with private sector infrastructure improvement makes the development viable as investors incline more to the idea of affordable housing as a relatively low risk venture that offers a stable rate of return.

The chapter recommends that a collaboration is the most ideal housing delivery model that can be used to build mixed income housing. This repositions MIH developments as an investment asset, rather than as a mere government driven socio-spatial change programme. This can bring about the much-needed funding for MIH developments to improve the quality of housing, and create a means by which to reduce NIMBY opposition. Raising funds through partnerships provides workable solutions with

regard to housing finance shortages, where the public sector negotiates for these exchange units of affordable housing for its financial and bulk infrastructure contribution. Certain investor types are drawn to MIH developments, as institutional investors are keen to invest in residential developments with a long-term investment-holding period (Nurick, *et al.* 2018). The private sector, and NGOs such as International Housing Solutions, the SA Workforce Housing Fund, Clinton Foundation, and Banks, to mention a few, may work with development partners to use city land for MIH developments through institutional agreements. Giving title deeds to houses in an MIH development provides transparency in ownership, which may link households to mainstream mortgage finance and general credit facilities to make housing affordable in South Africa.

These collaborations can involve communities in the delivery of housing within the MIH concept. Literature has shown that governments have proved to be inefficient, slow, bureaucratic, and corrupt in providing quality housing developments that are investment assets. Similarly, the private sector has proven to be too self-serving when contracted for the provision of large-scale projects. However, when the two entities leverage their combined efforts, the resultant MIH developments, such as Cornubia in Durban, South Africa, are better than the previous RDP housing constructed by government alone. Moreover, there is evidence that community-based approaches to housing enable delivery of housing that is appropriate to the communities. Suggestions for further research include what challenges are associated with collaborative housing delivery models in South Africa.

This can be complemented by giving title deeds to houses in an MIH, which provides transparency in ownership, which may link households to mainstream mortgage finance, and general credit facilities that makes housing affordable in South Africa. It is also important to investigate the appropriate location for MIH developments in South Africa.

8.6.3 Greenfield Sites Bring Better Value for Future MIH Developments

The conclusion on 'location' as a source of investment risk is that Building MIHs in greenfields is the optimum location for MIH developments. This should be accompanied with good infrastructure such as roads, schools, and hospitals, transport networks, and businesses. This fulfills objective 3 c. This is because the brownfields will eventually be 'built up', in the long term. Government subsidy and grants may help the private sector build quality and bigger houses, especially for the low-income component of MIH. Thus, the value of this government investment must be shared in low-income housing units; otherwise, the total MIH investment value skews to the private sector (Simbanegavi and Ijasan, 2017). The issue of mixing race and social economic status in an MIH development is also a source of risk.

8.6.4 'Silo' Kind of Mixing Reduces Investments risk

Objective 3d concluded that people in South Africa welcome the concept of living together regardless of race mixing, especially when MIHs are built with improved amenities, traffic, and security services. What makes MIH developments viable and sustainable entails mixing households in separate low, medium, and high-income submarkets demarcated by roads within one MIH development rather than scattering poor households in the development. This does not necessarily separate people by race but by income. This way, households with differing income levels may upgrade and downgrade as their financial positions change. Thus, MIHs will be able to achieve inclusive housing proposed in 'inclusionary housing policies, programs, and initiatives discussed in chapter 2. Such well-functioning MIH developments will have NIMBY reducing characteristics and can be a means to help reduce concentrated poverty.

However, ‘silo and salt’ rather than ‘pepper potting’ low income type of mixing households is preferred in South Africa. This is where low, middle, and high-income buildings are not demarcated by walls, but by roads within a development. This is the best way to deal with crime where utilizing open plans that encourage people to walk to places of amenities and TODs increases visibility and accessibility to housing. An MIH should focus on mixing households according to income levels through different typologies rather than race, religion and culture. The final guideline is that appropriate adjustments to asset and property management strategies can lead to ensuring sustainability of MIH developments by enabling competitive resource allocation and income collection methods thereby making MIH developments viable.

8.6.5 Private-Sector -Oriented Asset and Property Management Strategy

The last objective 3e investigated ways to adjust asset and property management strategies to achieve viability and sustainability in MIH developments. The conclusion is that asset and property management strategies that focus on improving the ‘ direct investment performance’ of MIHs both at ‘estate’ and ‘house’ levels are ideal for making MIHs successful without which a development might blight down into low-income housing. Even if these strategies are normally used in private sector housing markets, asset management strategies increase the supply of quality housing stock while the property management tools maintain the stock, especially of the social housing component of an MIH. It is better for MIH developers to source government land for MIH developments as this makes such projects viable. This is a good strategy, which enables government’s effort to provide housing for low-income people in inclusive MIH developments in a more sustainable manner.

8.7 Recommendations

The study recommends that the best way to reduce NIMBY is to do it right in the beginning. This includes delivering MIH developments through collaborative and community based Public Private Partnerships with a bias towards the private sector, with strict monitoring independent body. Thus to a greater degree the study provides guidelines on responsible residential investing as a positive means to reducing perceived risk in residential markets that seek to build inclusive housing. This maximizes the possibility of stimulating investment funds into residential markets and reducing housing shortage in South Africa through the following guidelines:

1. The repositioning of MIH as an investment asset rather than merely a government driven social-spatial change programme will bring the much-needed clarity to the implementation of inclusive housing policy across the participating stakeholders.
2. It is better to apply an incentive based inclusionary housing policy that is more market oriented so that the private sector can do what is best at and the public sector to provide the much more needed regulatory and monitoring guidance.
3. To address the social and economic components of MIH developments, government and municipalities must provide both land and bulk infrastructure, including water and sewerage, in order to reduce the cost of these essential services to all investors.
4. In return for this provision by government and other investors must be willing to accurately capitalize such subsidies invested by government into affordable units. If this ‘sharing’ is not done properly, the created value of MIH investments skews to the private sector, creating housing shortage conundrum.
5. Collaboration is required to deliver better housing within the MIH concept. Chapter 2 and 3 showed that governments have proved to be inefficient, slow, bureaucratic and often corrupt in providing quality housing that are investment assets. Similarly, the private sector has proven to be too self-serving when contracted for the

provision of large-scale projects. However, when the two entities leverage their combined efforts, the resultant MIH developments, such as Cornubia in Durban, are better than the previous RDP housing constructed by government alone. Moreover there is evidence that community based approaches to housing enables delivery of housing that is appropriate to the communities they are built in.

6. A comprehensive feasibility study is recommended for revealing preferences for the earmarked MIH to be successful. Compensation for house price reduction due to such MIH developments within the receiving neighborhoods might not work well for developing countries, due to competing developmental goals that they face. What could work is compensation in the form of improving infrastructure, such as roads to reduce traffic, building new schools and new hospitals and shopping centers to reduce pressure for services and amenities.
7. Improving security services through new efficient police services and neighborhoods surveillance cameras may help curb fears and apprehensions towards MIHs, which are mostly occupied by low income people and the associated crime problems.
8. Future MIH developments should be in the form of mixed use located in Greenfields in a way that brings other forms of real estate, such as retail space and industrial space. These needs to be well designed by planning experts to make sure all components of the MIHs are functioning well.
9. New and future MIH developments are recommended to bring along infrastructure and amenities in the Greenfield locations to make them comprehensive self-sustainable neighborhoods. The argument is that complementing MIHs with improved infrastructure, transport linkages, business incentives, and supporting social amenities such as clinics and schools, parks in the receiving neighbourhoods makes any a location a preferred, as the location is likely to attract higher investment values and maintain them in the future.
10. While investors can be indifferent to new MIH location, greenfield location provides a chance to also compensate for the outskirt location by bringing in the

preferred amenities. The location makes MIH developments viable as efficient transport networks link them closer to economic hubs. In the end, it is expected that housing markets will reach a point of saturation and this may break the NIMBY stigmatization associated with MIHs (Szibbo, 2016). Best of all, the NIMBY syndrome is likely to diminish, and property prices and investment returns will stabilize at an equilibrium price level. MIHs may generate positive externalities, which in the long-term, improves the neighborhood property values.

11. It is recommended that municipalities must work with asset and property management companies or employ the strategies to access land and bulk infrastructure. Grants such as the Urban Settlements Development Grant (USDG), the Social Housing Regulatory Authority (SHRA) Restructuring Capital Grant, Restructuring Capital Grant Quantum, and Community Residential Units (CRU) can be used to fund MIH developments.
12. A more income-based approach is recommended as criterion for developing multi-tenured MIHs that do not default into racial demarcations.
13. Intentional mixing of different people may be successful in the ‘rented component of MIHs’ in South Africa where young people can learn to work and live together in equal racial MIH environments.
14. It is recommended that MIH developments provide opportunity for skills development through Small Medium and Micro Enterprises (SMMEs), training people as building officers, plumbing, bricklayers, and even the soft skills. This kind of engagement may open employment to help tenants pay rents and mortgage payments to reduce defaulting on payment within the mixed tenure developments.

8.8. Research Contribution

8.8.1 Contribution to Real Estate Industry

The study used investment theory to provide a set of ‘direct’ investment guidelines as recommendations on how to reduce high NIMBY levels currently experienced against mixed housing developments in South Africa as the case study of Cosmo City had ‘minimal’ effects (0.41%) on its neighbourhood house prices (1995 -2016). The guidelines provide fundamental basis on improving future MIH developments and overall residential developments making housing a viable and sustainable asset. The study provides a solution on inclusionary policy where linking bulk infrastructure and land provision to affordable housing units acts as a negotiation tool for government with private developers. This should be sufficient to indirectly include low-income housing units.

When government provides the land and bulk infrastructure, it reduces the cost of essential services to developers in ways that make residential investments viable. This stimulates the private sector to build better housing that maintains investment value in the future and yield competitive financial returns. The improved infrastructure, transport linkages, and social amenities do complement the recommended greenfield location of future MIHs where the ‘land value capture’ brings about the idea of ‘smart’ cities. This location has the potential to circumvent the shortage of land trajectories closer to CBDs. The argument is that when an MIH brings its own set of amenities to any location, that location becomes preferable and is capable of attracting higher property values in the future. This makes real estate investors indifferent to where the mixed income housing is located.

8.8.2 Implications for Housing Policy

i. The incentive based IHP needs tight monitoring and evaluation to ensure government grants and subsidy-calculated funds are converted into low-income housing within the MIH development. This boosts the much needed supply of housing.
ii. The policy implication is that there is need for a cautious continuity of future MIH developments as there still remains individual people who do not believe in mixing poor and rich people through mixed income housing developments, view held by aristocrats from as early as 1500s era.
iii. In the short term, urban regeneration programmes can include use of undeveloped restitution land to build required housing closer to economic hubs, following which greenfields can be used.
iv. Mixed-use developments in greenfield location enables the design of housing into good quality housing which maintains value in the future.
v. Municipalities will benefit from MIH developments by working with competent asset and property management companies to ensure the built MIH neighborhoods do not regress/blight down into low income neighborhoods

8.9 Suggestions for Further Research

Due to limited data and time constraints, important questions have remained relevant to be answered in the future beyond the findings and guidelines garnered from this study. These include:

i. Future research may explore issues, problems, and challenges faced by households living within the mixed income developments. This gives a bottom-up view of how actual households live in their neighborhoods. On the other hand, it offers ideas as to what price determinant factors fall short in the improvement of future developments from the experiences of people living in mixed neighbourhoods.

ii. Future research on trends in house prices and values of houses within the development may shed light on monitoring and evaluation of the already built mixed income developments.

iii. Future research that uses longitudinal data in the form of repeat sales with counter factual properties is a different methodology worth investigating.

iv. Research into innovative financing approaches such as ‘Tax Increment Financing’ (TIF) and ‘Equity Tax ‘especially to help with mixed income developments in greenfields, as they require new infrastructure.

v. Research into options for sourcing land for affordable housing provides an extended view on the acquisition of greenfield sites as recommended in this study.

vi. Research on how to reduce affordable housing mortgage risk may help the new proposed Human Settlements Development Bank. Such research would help with understanding end-user finance to low income households.

vii. Research into other mixed income housing developments may provide further insights into what amenities should be included in future MIHs specific to location for them to be successful in South Africa.

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APPENDIX A: DATA AND ANALYSIS

A.1: Interview Guide Questions

QUESTIONS TO PROFESSIONAL PEOPLE WHO ARE KNOWLEDGEABLE IN MIXED INCOME HOUSING DEVELOPMENTS.

Please put a tick in the boxes and write in provided space for answers.

Section A: Background Information

Date_____Informant number: _____

1a. Gender: F ☐ M ☐

1b. Race: Black ☐ White ☐ Indian/Asian ☐ Colored ☐

1c. Age rage: (Below 30) ☐ (31 -40) ☐ (41 -50) ☐ (51- 61) ☐ (61-70) ☐ (Above 71) ☐

1d. Please your sector, Government ☐ Private ☐ NGO ☐

1e. Please indicate your work position

_____

1f. Please indicate years of experience

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2. INCLUSIONARY HOUSING POLICY

a. In view of your investment assessment of MIH, what is your opinion on whether IHP should develop into law or remain policy?

3. HOUSING DELIVERY APPROACHES TO MIH DEVELOPMENTS

a. Given your experience in residential developments, how best can MIH developments be financed in a way that makes them viable and sustainable?

4. THE OPTIMAL LOCATION AND DESIGN OF MIH DEVELOPMENT

a. What is your opinion on the best location and design of MIH development in terms of the quality, size, and uniformity of the low-income housing component of MIH?

5. THE COMPOSITION OF HOUSEHOLDS IN AN MIH

a. Based on your experience, what is your view on the degree of mixing within an MIH development regarding composition of race, religion, status, and culture of households?

6. THE KEY INVESTMENT GUIDELINES FOR MIHS

a. In your view, what recommendations can you make regarding the guidelines that MIH developments can follow and make them sustainable through asset and property management.

THE END

A.2: Summary Table of Explanatory Variables (3 pages)

Field	Description
PROP_ID	Primary Key for a Property
Suburb_ID	The Lightstone Suburb identifier.
Suburb	Lighstone's Suburb Classification
Prop_type	Property Type: (E=Erf, H=Holding, F=Farm, U=Scheme unit)
SCH_Name	Scheme Name
Estate_Name	Estate Name
Prop_RptSize	The reporting cadastre (for FH) or unit size (for SS).
PROP_RptAUR	The estimated most accurate area under roof (AUR) for the property from various possible sources.
PROP_NbrBedrooms	The number of bedrooms.
PROP_NbrBathrooms	The number of bathrooms.
PROP_GarageCnt	The number of garages (sourced from third party data).
PROP_ServantRoomsCnt	The number of servant rooms (sourced from third party data)
PROP_DistFromSchool	The minimum distance in square metres from the subject property to the nearest school.
PROP_DistFromHospital	The minimum distance in square metres from the subject property to the nearest hospital.
PROP_DistFromChurch	The minimum distance in square metres from the subject property to the nearest place of worship.
PROP_DistFromCBD	The minimum distance in square metres from the subject property to the nearest CBD.
PROP_DistFromShoppingCentre	The minimum distance in square metres from the subject property to the nearest shopping Centre.
PROP_DistFromCosmo	The minimum distance in square metres from the Cosmo City.
DistDiepsloot	The distance in metres from the property to the Diepsloot informal settlement
DistKyaInf	The distance in metres from the property to the Kya Sands informal settlement
DistZandInf	The distance in metres from the property to the Zandspruit informal settlement
DistPlastic	The distance in metres from the property to the Plastic View informal settlement
PROP_DistNearestInfSettlmnt	The distance in metres to the nearest informal settlement.
NearestSettlmnt	The nearest informal settlement
PROP_Age	The estimated age of a property in years using its first known registration date (PROP_FirstRegDate).
PROP_TRF_ID	Unique ID for the Property/Transfer combination
TRF_Titledeed	Title Deed Number of the Transfer
TRF_RptRegDate	The Registration date of the transfer at the Deeds Office
TRF_RptPurchDate	The date on which the offer to purchase agreement was signed for the property.
TRF_RptPurchRegDate	The Purchase Date if available, otherwise the registration date of this property transfer

Field	Description
TRF_RptPurchPrice	Total transaction value or purchase price of one or more properties on the same title deed after correcting obvious 'finger trouble'/typing errors. Additionally 0 values for TRF_PurchPrice are nullified.
TRF_RptPurchPrice_Current	The purchase price (TRF_RptPurchPrice) inflated to current value
SaleNumber	The sequential sale number of the property (not 100% accurate as Lightstone has data that is not 100% complete going back in history).
SaleBeforeOct2004	1=Property Sale took place before 1 October 2004, 0=otherwise. Based on the purchase date - if not available then the registration date was used.
PROP_FirstRegDate	The properties first registration date (not 100% accurate as Lightstone does not have 100% of the deeds transaction going back in time)
PROP_FirstPVTRegDate	The properties first registration date to a private individual (not 100% accurate as Lightstone does not have 100% of the deeds transaction going back in time)
TRF_PropCnt	Number of non-garage properties on the transfer
TRF_TRE_Type	The types of transferees for the transfer (NOTE all transferees involved on this title deed/TRF_ID): 1=All private, 2=All non private, 3: Mixture private/non-private, 4=Unknown
TRF_TRO_Type	The types of transferors for the transfer (NOTE all transferos involved on this title deed\): 1=All private, 2=All non private, 3: Mixture private/non-private, 4=Unknown
PROP_TRF_TRE_RaceType	The summarized race type of all the transferees involved on this property transfer. 0=Unknown, 1=Black, 2=Coloured, 3=Asian, 4=Caucasian, 5=Mixed.
PROP_TRF_TRO_RaceType	The summarized race type of all the transferors involved on this property transfer. 0=Unknown, 1=Black, 2=Coloured, 3=Asian, 4=Caucasian, 5=Mixed.
TRF_RptRegDate_PREV	The registration date of the property transfer that took place prior to this record (Note that this information is only populated for market related, non-land previous property transfers).
TRF_RptPurchDate_PREV	The purchase date of the property transfer that took place prior to this record. (Note that this information is only populated for market related non-land previous property transfers).
TRF_RptPurchPrice_PREV	The purchase price associated with the previous property transfer.
TRF_RptPurchPrice_PREV_Current	The purchase price inflated to current value associated with the previous property transfer.
Hh	Number of households in the suburb
Adults	Number of adults in the suburb
kids_0_17	Number of individuals aged 0-17 years in the suburb
adults_18_29	Number of individuals aged 18-29 years in the suburb
adults_30_39	Number of individuals aged 30-39 years in the suburb
adults_40_49	Number of individuals aged 40-49 years in the suburb
adults_50_59	Number of individuals aged 50-59 years in the suburb
adults_60plus	Number of individuals aged 60 years and over in the suburb
hh_race_blk	Number of individuals in the suburb who are Black African
hh_race_wht	Number of individuals in the suburb who are White
hh_race_ind	Number of individuals in the suburb who are Indian or Asian
hh_race_col	Number of individuals in the suburb who are Coloured
race_node	Most prominent race in the suburb. The first character describes the predominant race group of the EA (B=Black; W=White; C=Coloured; I=Indian/Asian) and the 2nd character describes the 2nd most prominent race group in the EA if it accounts for at least 20% of the population

Variable	Description
hh_income_subrange	Most prominent income group in the suburb. The following bands are given A: <R1600, B: R1,600 - R3,200, C: R3,200 - R6,400, D: R6,400 - R12,800, E: R12,800 - R19,200, F: R19,200 - R25,600, G: R25,600 - R34,000, H: R34,000 - R42,500, I: R42,500 - R51,000, J: R51,000 - R68,000, K: R68,000 - R85,000, L: R85,000 - R102,000 and M: >R102,000
HSE_INCOME_No_income	Number of households in the suburb with no annual income
HSE_INCOME_R1_R4800	Number of households in the suburb with an annual income of R1-R4,800
HSE_INCOME_R4801_R9600	Number of households in the suburb with an annual income of R4,801-R9,600
HSE_INCOME_R9601_R19600	Number of households in the suburb with an annual income of R9,601-R19,600
HSE_INCOME_R19601_R38200	Number of households in the suburb with an annual income of R19,601-R38,200
HSE_INCOME_R38201_R76400	Number of households in the suburb with an annual income of R38,201-R76,400
HSE_INCOME_R76401_R153800	Number of households in the suburb with an annual income of R76,401-R153,800
HSE_INCOME_R153801_R307600	Number of households in the suburb with an annual income of R153,801-R307,600
HSE_INCOME_R307601_R614400	Number of households in the suburb with an annual income of R307,601-R614,400
HSE_INCOME_R614001_R1228800	Number of households in the suburb with an annual income of R614,001-R1,228,800
HSE_INCOME_R1228801_R2457600	Number of households in the suburb with an annual income of R1,228,800-R2,457,600
HSE_INCOME_R2457601Plus	Number of households in the suburb with an annual income of R2,457,601 or more
HSE_INCOME_Unspecified	Number of households in the suburb with an unspecified annual income
DWL_Brick_house	Number of houses or brick/concrete block structures on a separate stand or yard or on a farm in the suburb
DWL_Traditional	Number of traditional dwelling/hut/structures made of traditional materials in the suburb
DWL_Flat	Number of flats or apartments in a block of flats in the suburb
DWL_Cluster	Number of cluster houses in complex in the suburb
DWL_Townhouse	Number of townhouses (semi-detached house in a complex) in the suburb
DWL_Semi_detached_house	Number of semi-detached houses in the suburb
DWL_Backyard	Number of houses/flats/rooms in backyards in the suburb
DWL_Informal_backyard	Number of informal dwellings (shack, in backyards) in the suburb
DWL_Informal	Number of informal dwellings (shack, not in backyard, e.g. in an informal/squatter settlement or on a farm) in the suburb
DWL_Granny_Servants_quarters	Number of rooms/flatlets on a property or larger dwelling/servants quarters/granny flat in the suburb
DWL_Caravan_Tent	Number of caravans/tents in the suburb
DWL_Other	Number of dwellings classed as other in the suburb
DWL_Unspecified	Number of unspecified types of dwelling in the suburb
DWL_Not_applicable	Number of non-applicable dwelling types (collective living quarters and other institutions) in an area
Crime_Res_1000hh	The number of residential crimes per 1000 households for the suburb
Crime_Total_1000hh	The total number of crimes per 1000 households for the suburb
Street_Number	The street number of the address where available.
Street_Name	The street name of the address where available.
Street_Type	The street type of the address where available.
Crime_Res_1000hh	The number of residential crimes per 1000 households for the suburb
Crime_Total_1000hh	The total number of crimes per 1000 households for the suburb
Street_Number	The street number of the address where available.
Street_Name	The street name of the address where available.
Street_Type	The street type of the address where available.

Source: Lightstone Company (2016)

APPENDIX B: INFORMAL SETTLEMENTS

B.1: Diepsloot Informal Settlement

Google Coordinates (-25.9475117, 8.0099291)

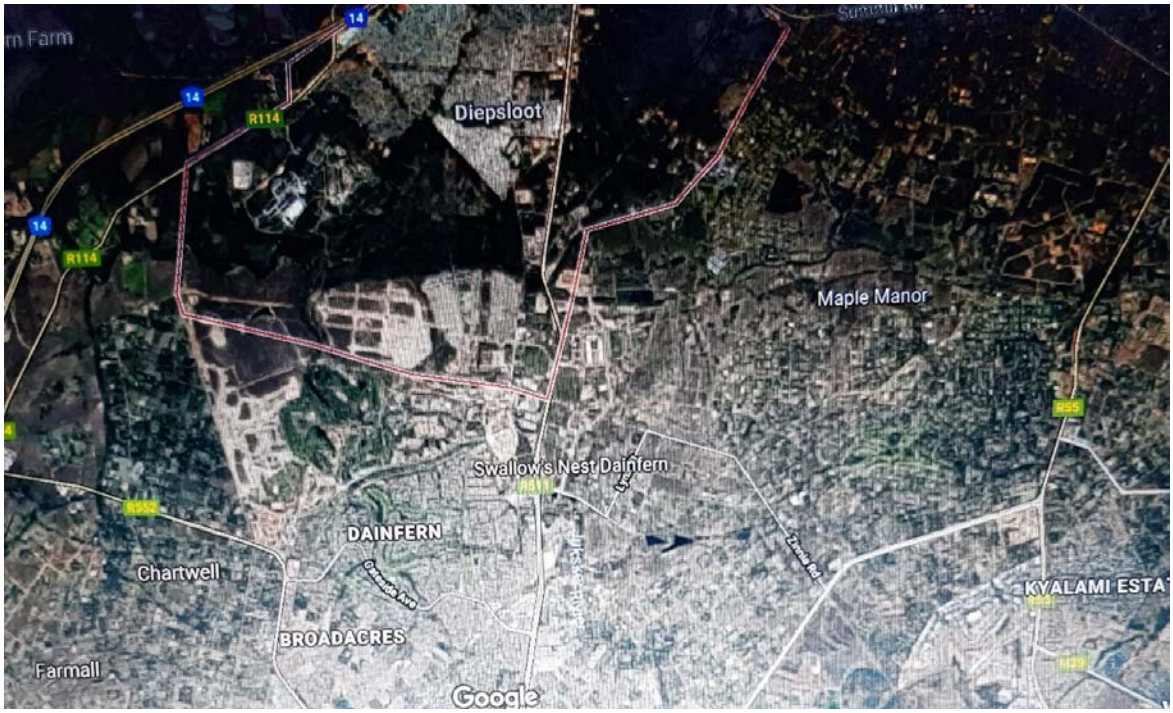


Figure B.1: Diepsloot Informal Settlement Closer to Dainfern Golf Estate
Source: Google Maps, 2016

B.2: Plastic View Informal Settlement

Google Coordinates (-25.823040, 28.317594)

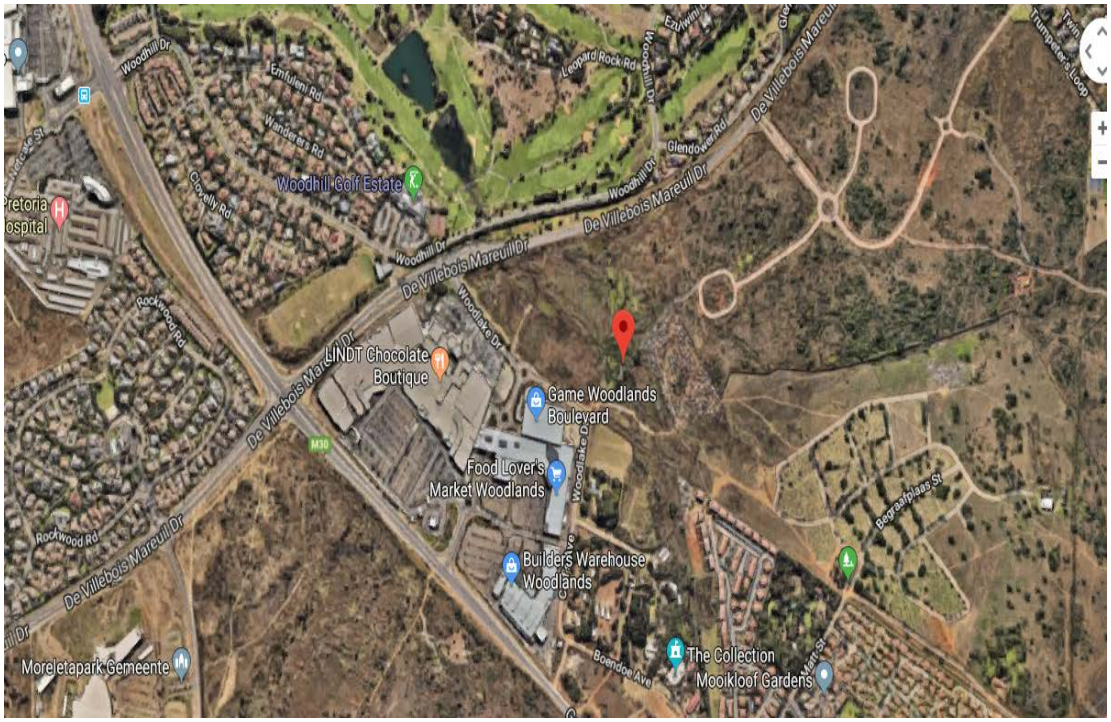


Figure B.2: Plastic View Informal near Woodhill Golf Estate in Pretoria
Source: Google Maps, 2018

B.3: Zandspruit Informal Settlement

Google coordinates (-26.053301, 27.910734)



Figure B.3: Zandspruit Informal Settlement near Zandspruit Formal Suburb
Source: Google Maps, 2016

B.4: Kya Sands Informal Settlement

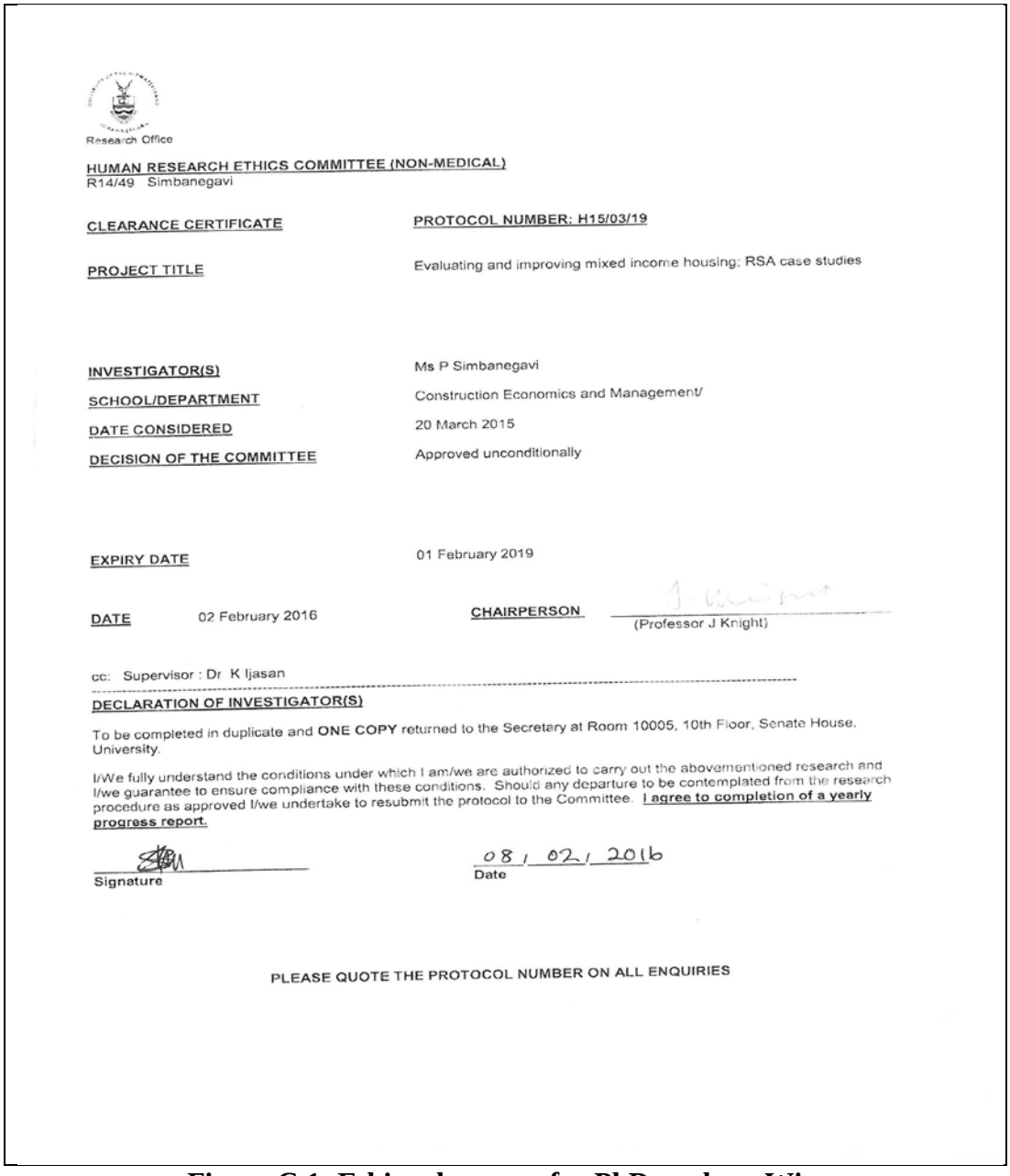
Google coordinates (-26.024465, 27.962854)

(Agnes Avenue Separates the Informal from Bloubosrand Suburb)



Figure B.4: Kya Sands Informal Settlement in Bloubosrand
Source: Google Maps, 2016

APPENDIX C: STUDY CLEARANCE



Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Simbanegavi

CLEARANCE CERTIFICATE	PROTOCOL NUMBER: H15/03/19
PROJECT TITLE	Evaluating and improving mixed income housing: RSA case studies
INVESTIGATOR(S)	Ms P Simbanegavi
SCHOOL/DEPARTMENT	Construction Economics and Management/
DATE CONSIDERED	20 March 2015
DECISION OF THE COMMITTEE	Approved unconditionally
EXPIRY DATE	01 February 2019

DATE 02 February 2016 CHAIRPERSON (Professor J Knight)

cc: Supervisor : Dr K Ijasan

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

Signature 08/02/2016 Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

Figure C.1: Ethics clearance for PhD study at Wits

THE END