BUQS 7027A: Research Report

An Evaluation of Factors for the Successful Implementation of Human Settlements Mega Projects in Gauteng Province, South Africa

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Abstract

Housing, especially for the urban poor and low-income households, remains a huge problem in South Africa. Despite the South African government instituting various programs aimed at delivering to those in need, housing backlog in South Africa still prevails - with an estimated 2.1 million households lacking housing currently.

In an effort to fast track the reduction of the housing backlog, the government announced a shift in housing policy from small public housing projects to mega projects that would deliver thousands of housing units that include social and economic amenities. Proponents of the human settlements mega projects (HSMP) contend that they will address the imparities of the government's housing provision programmes experienced during the first 15 years of democratic South Africa by delivering more housing units, whilst using fewer projects, reducing governance challenges, improving government's capacity and ensuring budget spending.

Though the phenomena of mass housing is not new to South Africa, there appears to be a paucity of published literature on the factors that lead to their successful implementation.

This research sought to determine which factors may lead to the successful implementation of HSMPs. It uses the Gauteng province as a case study and evaluate implementation performance, implementation methods used and identify challenges experienced during the implementation of HSMPs. To achieve above objectives, a literature review was conducted and data was collected using interviews with senior officials from the Gauteng Department of Human Settlements (GDHS), the Gauteng Partnership Fund (GPF) as well as with the senior executives from two private property development companies involved in the implementation of these Gauteng HSMPs.

An evaluation of the performance to date of HSMPs reveals that the implementation of these projects is not as per initial targets set out by the GDHS.

The turnkey development project delivery strategy used to deliver these projects is found to be beneficial when compared to the traditional method previously used to deliver housing. However, the financial sustainability of the government's provision of free subsidised housing remains questionable.

Eight challenges with implementation of the Gauteng HSMPs were identified key of which are; inadequate planning by government prior to the implementation of the projects, poor coordination between government departments, lack of bulk infrastructure funding and capacity and the poor performance by developers. This research proposes solutions to these challenges as factors that may lead to the successful implementation of HSMPs.

Keywords: Mega Projects, Human Settlements Mega Projects, Low Cost Housing, Affordable Housing, Subsidised Housing, Gauteng Department of Human Settlements

Declaration

I declare that this research project is my own work. It is submitted in partial fulfillment of the degree Masters of Science in Building at the University of the Witwatersrand.
I further declare that this research project has not been previously submitted for any other degree or examination in any other University and that I have obtained the necessary authorisation and consent to carry out this research.

……………..………………… Date: 23 September 2021
Lwandile Pasiwe

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Acronyms and Abbreviations

BNG	Breaking New Ground
CSF	Critical Success Factors
CMR	Construction management at risk
DB	Design and Build
DBB	Design, Bid and Build
DFBOT	Design, Finance, Build, Operate and Transfer
DHS	Department of Human Settlements
DFO	Design, Finance and Operate
FE	Formative Evaluation
FFC	Financial & Fiscal Commission
FLSP	Finance Linked Subsidy Programme
GCR	Gauteng City Region
GFIP	Gauteng Freeway Improvement Project
GPF	Gauteng Partnership Fund
GCRO	Gauteng City Region Observatory
HDA	Housing Development Agency
HSDG	Human Settlements Development Grant
HSMP	Human Settlement Mega Project
IRDP	Integrated Residential Development Programme
NHF	National Housing Forum
PPP	Public Private Participation
RDP	Reconstruction and Development Programme
SHI	Social housing institutions
SHRA	Social Housing Regulatory Authority
Stats SA	Statistics South Africa
UIMs	Urban Integrated Mega projects
USDG	Urban Settlements Development Grant
WBG	World Bank Group

Chapter 1: Introduction

1.1 Background to the Study

There has been a rise in community protests taking place in various townships of South Africa. The central demand by protesters in these protests has been the demand for the provision of housing by the government. some of the existing literature show that there are four times more protests over housing than any other service in South Africa (Msindo, 2018).

The right to housing is enshrined in Section 26 of the Constitution of South Africa, which guarantees the right to access to adequate housing to all citizens and mandates the state to take reasonable legislative and other measures within its available resources to achieve the realisation of this right. The provision of adequate housing is a key priority for the South African government and as such, the post-apartheid South African government has implemented various programs for the provision of housing, focusing especially on the poor and low-income households, since 1994. Despite these efforts, there is still a huge housing backlog, which currently is estimated at 2.2 million nationally. The demand far exceeds the capacity at which the government can supply due to the high rate of urbanization, migration, population growth, the high unemployment rate and rising poverty levels (Iwegbuna, 2019). The Gauteng province is South Africa’s economic hub and many flock to the province in search of employment opportunities. The Gauteng province is also the biggest contributor to the housing backlog.

According to Pretorius (2019) close to 3.3 million housing units have been built by the South African government from the 1994/1995 financial year to December 2018. Statistics South Africa’s 2017 General Household Survey further revealed that 2.2 million households lived in informal structures that are not erected according to approved plans (Pretorius, 2019). Pretorius (2019) further states that the housing backlog is estimated to be growing by 178 000 units a year.

The failure by the government to deliver the required scale is attributed to various factors, including delays in township establishment processes, infrastructure constraints and the limited availability of well-located and affordable land (Financial & Fiscal Commission, 2013).

In an effort to fast track the reduction of the housing backlog in South Africa, the government announced a shift in housing policy in 2014. This policy shift identified the need to provide housing through mega projects (Ballard & Rubin, 2017). The incumbent minister of Human Settlements in 2014, Lindiwe Sisulu, announced that there would be a phasing out of small public housing projects and that housing would be exclusively delivered through mega projects that would deliver thousands of units (Ballard & Rubin, 2017).

These human settlements mega projects consist of more than 10 000 residential units per development and unlike previous initiatives by the government, which focused only on low-income residents, these mega housing developments would also attractmiddle- and higher-income residents (Ballard & Rubin, 2017). These housing megaproject developments would include the state-subsidised market segment, that accommodate households earning below R3 500 per month; the gap market, for those earning between R3 500 to R18 000 per month; and the open market, which caters for those earning above R18 000 per month. The housing tenure would be mixed- tenure dwellings comprising of ownership housing, rental housing and social housingand the buildings would be mixed typology housing inclusive of free standing and multi-story walk-ups (Gauteng Partnership Fund, 2018).

Proponents of the shift in policy direction towards housing mega projects, in the national and provincial government, argue that they will deliver more housing units whilst using fewer projects, reduce governance challenges and improve the governments declining capacity to deliver housing and ensure budget spending (Ballard & Rubin, 2017).

The policy on delivery of housing through mega projects in South Africa has been met with much skepticism by various researchers. Ballard & Rubin (2017) argue that the construction of housing mega projects is not the “silver bullet” to resolve the housing backlog and that the majority of the housing mega projects proposed by the Gauteng

Provincial Government will be located in the urban periphery and pose the risk of perpetuating the apartheid government's spatial design and patterns of inequality, thereby creating enclaves of poverty with limited economic activity. Ballard & Rubin (2017) further adds that based on past experience, larger housing projects take up to decades to plan and end up delivering far fewer housing units than initially planned as evident from housing mega projects, such as the Cosmo City in Johannesburg, the N2 Gateway project in Cape Town, and Cornubia in Durban. Rubin (2018) also arguesthat the implementation of large housing projects is associated with various delays.

1.2 Problem Statement

In an effort to fast track the reduction of the housing backlog in Gauteng, the provincial government has announced the delivery of housing through the implementation of large-scale housing mega projects (Ballard & Rubin, 2017).

At the launch of the Gauteng Human Settlement Mega Projects (GHSMPs) by the Gauteng premier in April 2015, the premier announced that these project would deliver 700 000 housing units within four years (Turok 2016). The total number of serviced stands and houses delivered since their inception in the 2017/2018 financial year is in the region of 21 689 housing opportunities. The implementation of these projects is now in its third year and this number is far lower that the commitment of 700 000 housing units within 4 years announced during the launch of these projects.

Globally, mega projects have become a popular mechanism for the delivery of public infrastructure. They are increasingly being seen as the solution to service delivery problems (Little, 2011). However, existing literature on mega projects also indicates that their implementationis plagued with numerous challenges, which include delays or non-completion, large cost overruns, overstating of benefits during their initiation, lack of public participationand transparency, the absence of clear objectives and the lack mechanisms for measuring how they are met and how poor performance is penalised (Kennedy, 2015).

1.3 Rationale for Research

Numerous studies have been conducted on mega projects both internationally and locally. These include studies by Brooks (2014), Kennedy (2015) and Flyvbjer (2017) internationally and in the South African context studies have been conducted by Parrock (2015), Khatleli (2016) and Reboredo (2019). The majority of the available academic literature on mega projects tends to focus large single infrastructure projects such as transit systems, energy and water infrastructure projects, sports arenas, highways and airports. There is a paucity of research on the utilisation of mega projects as a tool for the delivery of housing.

Though the phenomena of housing mega projects or mass housing is not new to South Africa, there appears to be a paucity of published literature on the factors that lead to their successful implementation. Research has previously been conducted on the following previously completed pilot mixed-income and mixed-use mass housing projects in South Africa: Cosmo City and Fluerhof in Johannesburg, the N2 Gateway project in Cape Town, and Cornubia in Durban. In this regard, research by Okechukwu Onatu (2010) sought to investigate public-private partnership (PPP) in housing developments and to appraise mixed-income housing developments along racial and social grounds in Cosmo City in Johannesburg. Mnisi & Karam (2020) similarly examined the impact of subsidised affordable housing development on surrounding property values in Fluerhof, Johannesburg. Jordhus-Lier (2015), investigated the resistance by informal settlement communities to the development of the large scale housing project, the N2 Gateway in Cape Town. Research conducted by Mzolo (2016), which sought to evaluate the implementation process and to identify the challenges experienced in implementation of the Cornubia Housing Programme (Phase 1A) in Kwazulu Natal Province. Mzolo (2016) found that the Cornubia Housing Project had met most of the programme evaluation guidelines and requirements for the successful implementation of a large scale housing program. Mzolo (2016) also found that the challenges experienced during the implementation of the project included challenges associated with topographical and geotechnical issues, noise pollution, industrial strike action and housing allocation issues. Their research also identified corrective actions required for the successful implementation of the project. The study by Mzolo (2016) was limited on one project that was located in the Kwazulu Natal Province, this study will expound the research by Mzolo (2016) by focusing on multiple large scale housing mega projects located in the Gauteng Province.

Subsequent to the announcement of the policy shift by the national minister of Human Settlements in 2014, Gauteng Provincial Government (GPG) launched a new policy entitled “Mega Projects: Clusters and New Cities” (GCRO, 2015). This policy encompassed the planned implementation of a R100 billion corridor investment that aims to deliver more than 800 000 houses within 31 megaproject residential developments spread across five development corridors in Gauteng (GPF, 2015). Several of these projects are currently under construction and to date there is no published empirical research on the implementation of these housing mega projects. However, literature by Ballard (2017); Ballard & Rubin (2017); Harrison & Todes (2017) and Turok (2015) provide speculative analysis of the possible negative ramifications should these projects be implemented. The annual reports published by the Gauteng Department of Human Settlements (GDHS) for the 2017/2018, 2018/2019 and 2019/2020 financial years have reported an underperformance in the targets for delivery of housing targets by these projects.

This research will seek to evaluate the implementation of housing mega projects in Gauteng, identify the challenges experienced during implementation and ultimately determine which factors lead to their successful implementation. This will provide guidance to government officials and private developers on how best to implement future projects of this nature. The goal of this research is to contribute to the existing body of literature on efforts by the South African government for addressing the housing challenge.

1.4 Research Questions

Primary Research Question

- Which factors may lead to the successful implementation of housing mega projects in the Gauteng Province?

Secondary Research Questions

- What has been the performance of the implementation of housing mega projects in Gauteng based on the initial targets?
- What strategy is used to implement housing mega projects and whether it has been effective?
- What have been the challenges experienced in the implementation of housing mega projects?

1.5 Research Objectives

- To evaluate the performance of housing mega projects.
- To identify the implementation strategy that has been used to execute housing mega projects and to ascertain if it has been effective
- To determine the challenges experienced in the implementation of housing mega projects.

1.6 Research Assumptions

This research is grounded on the following assumptions:

- There is a shortage of housing in South Africa.
- To date, the GPG has not achieved the targets it has set out for the implementation of housing mega projects. The Gauteng Department of Human Settlements Annual Report for the 2017/2018 financial year reports that seven mega projects were launched by the Premier and of these only five were under construction as of February 2018. The report further states that a number of mega projects that form part of the pipeline remain in the planning stage and this has impacted the achievement of the Provinces' targets to clear the housing backlog prevalent across the province.
- Most public infrastructure is provided by using the traditional procurement method and this has been the case for the provision of public housing projects in South Africa. The implementing strategy has been largely through the state contracting with contractors to build housing (Regan, 2012). However, there have been numerous problems associated with this model. Infrastructure projects test government budgetary, technological and institutional capacity and over the past two decades, governments have turned to alternative

procurement methods to build and operate infrastructure (Trebilcock & Rosenstock,2015). Mega projects around the globe have encountered difficulties in delivery. Timeand cost overruns starting from the design phase, through start-up phase, the construction phase, and then delivery phase have categorised mega-project progressions; delay stemming from the planning phases and implementation during construction phase, are particularly problematic (Albishri, 2015). However, housing mega projects in South Africa are faced with additional challenges which are unique to the housing market due to historical spatial planning and socio-economic factors.

1.7 Research Scope and Delineations

This study will focus on the implementation of housing mega projects initiated by Gauteng Provincial government subsequent to the announcement of the policy shift by the Minister of Human Settlements in 2014. These projects are spread across five development corridors in the province, namely:

- The Central Development Corridor – which encompasses the City of Johannesburg Metropolitan.
- The Eastern Development Corridor – which encompasses the City of Ekurhuleni Metropolitan.
- The Northern Development Corridor – which encompasses the City of Tshwane Metropolitan.
- The Western Corridor – which encompasses the West Rand district
- The Southern Corridor – which encompasses Sedibeng district

This study excludes the high-end private sector led mega projects in Gauteng such as Waterfall City and Stein City, which have recently been constructed and cater only for high-income households.

1.8 Research Framework

Figure 1.1 is a graphical representation of the conceptual framework of this research.

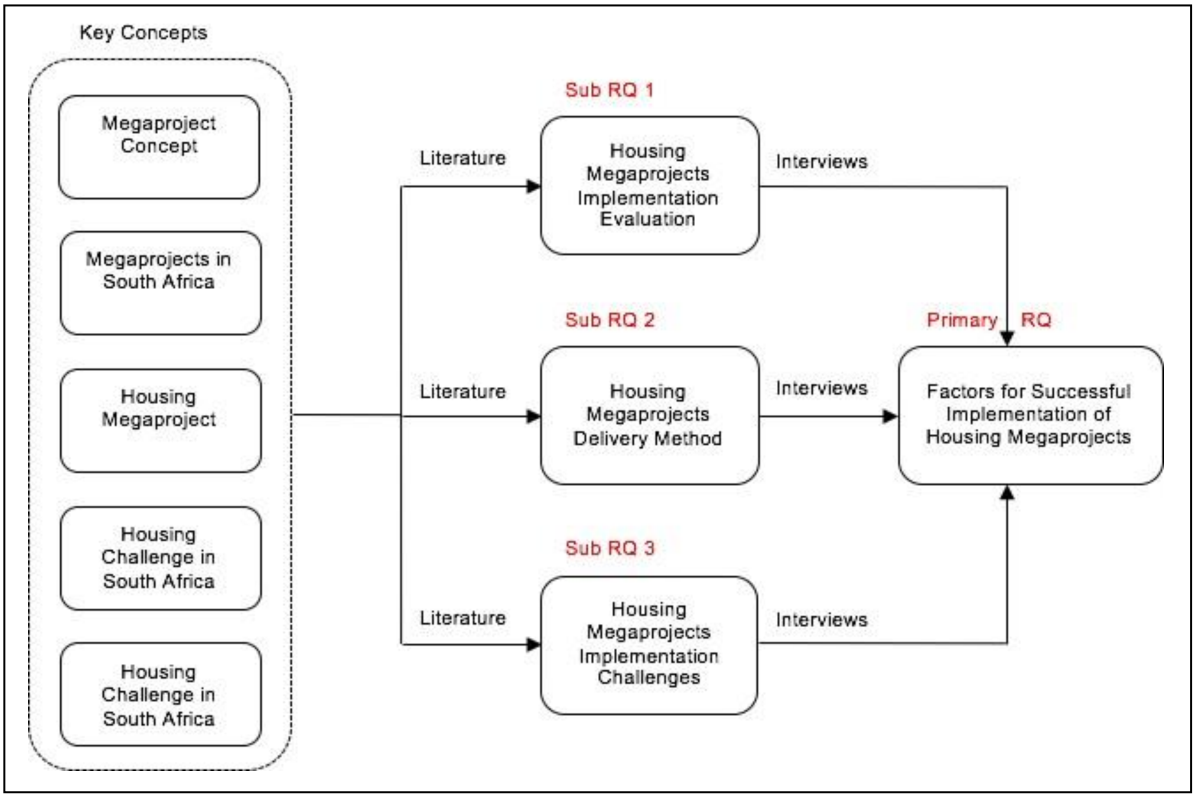

Figure 1.1 Research Framework

1.9 Outline of the Chapters

The chapters in this research report are structured as follows:

Chapter One provides the background to the research. It also presents the research questions, research objectives, scope and delineations and research assumptions.

Chapter Two is a review of literature, which was used to address the key concepts and objectives of the research topic.

Chapter Three presents the research methodology adopted in this research and how the research data was collected and analysed.

Chapter Four presents the analysis of the data collected through interviews.

Chapter Five presents a discussion of the findings from the analysed data.

A summary and conclusion of the study, as well as recommendations for futureresearch are presented in Chapter 6.

Chapter 2: Literature Review

2.1 Introduction

This chapter reviews literature pertaining to the implementation of housing mega projects. The chapter starts by defining key concepts relevant for the study. The key concepts include mega projects, mega projects in South Africa, housing as a form of megaproject, the housing challenge in South Africa, the housing challenge in Gauteng and the concept of low and affordable housing. This section is followed by a review of legislation and policy governing housing delivery in South Africa. The literature in the subsequent sections of the chapter is structured in order to firstly address the three research sub questions, that are firstly, an evaluation of mega projects performance, secondly a review on the strategies used to implement mega projects, and thirdly, the challenges experienced in the implementation of mega projects. The chapter concludes with a synthesis of the findings from the literature reviewed.

2.2 Definition of Key Concepts

2.2.1 Concept of Mega projects

According to Flyvbjer (2017) mega projects are defined as "large scale, complex ventures that typically cost one billion dollars or more, take many years to develop and build, involve multiple public and private stakeholders, are transformational and impact millions of people". Flyvbjer (2017) further explains that the word is derived fromthe Greek word "megas", which means great, large, vast, big, high, tall, mighty and important. In scientific terms, the word mega means a million. If the scientific meaning is applied, then the word mega projects would refer to million-dollar projects. This is the case as for more than a hundred years the largest projects in the world were in the millions. However, projects in recent times have a cost of several hundred billions with some even reaching trillions. The term mega has generally become an adjective to indicate something very large and hence the term megaproject came into use for very large projects (Flyvbjer, 2017).

Brookes (2014) traces the early origins of mega projects to the construction of the Great Wall of China. Construction of the wall was first ordered by Emperor Qin Shi Huang around 221 Before Christ. The wall runs over 21 000 km from the east of China and was constructed over a period of tens of centuries by millions of workers. The wall's initial purpose was for defending invaders from entering China. Later it grew to be used to regulate trade and for providing a means of transport along its length (Brookes, 2014).

Mega projects are used as a delivery model for goods and services in sectors such as infrastructure, water and energy, information technology, industrial processing plants, mining, etc. (Flyvbjer, 2017).

Another key feature of mega projects is that they are often the result of public investment and are a large share of public budgets, which is why they have a high political profile and are politically sensitive. They involve many stakeholders who want to play a role in developing or operating mega-projects. These stakeholders may be from the public sector, representing different levels of government - local, regional, national and from the private sector (Priemus & van Wee, 2013).

Kennedy (2015) refers to the emergence of literature that distinguishes between "new" and "old" types of mega projects. The "new" types of mega projects are defined as projects that are flexible and diverse rather than singular and monumental and involve the creation of mixed-use spaces (Kennedy, 2015). This was also identified by Orueta & Faintein (2008), who note that the "new" types of projects tend to be in locations which, as a consequence of urban restructuring, have lost their previous uses, but have potential to be once again profitable. Orueta & Faintein (2008) further note that they are generally developed within the context of public-private partnerships are frequently mixed-use, tend to introduce new methods of financing, and involve greater collaboration between the public and private sectors. According to Kennedy (2015), the "old" mega projects primarilytend to be monumental singular structures that are state-initiated, state-financed andare aimed at the creation of public goods.

Flyvbjerg, Holm, & Buhl (2002) contend that the majority of mega projects overrun on costs due to lack of realism in initial estimates, fall behind on schedule, fail to deliver the intended deliverables for the project, changes in specifications are not sufficiently, taken into account, contain an element of technological innovation with associated high risk and are characterised by conflict and poor cooperation between stakeholders.

2.2.2 Mega project Implementation in South Africa

Mega projects are known for their appeal as catalysts of growth, development and socio-economic transformation. They have been implemented in South Africa in sectors such as energy, transportation, manufacturing, urban infrastructure and housing (Roberto, 2019).

Reboredo (2019) notes mega projects have been a staple of South Africa's development initiatives since the early twentieth century as the main vehicles for macro-level politico-economic initiatives and development. Ballard and Rubin (2017) further describe the 'big project' mentality within the South African government, which proposes mega projects as a 'silver bullet' to solve various problems.

Desai (2015) traces the upsurge in the uptake of mega projects in South Africa as the result of the wariness of employers in hiring staff during the world financial crisis. This resulted in the state having to take the lead in creating an environment for jobs, which meant state funding of huge infrastructure projects, with the private sector being engaged to complete them. This resulted in the Gautrain, 2010 World Cup stadia, the industrial complex at Coega, the world's third and fourth largest coal-fired electricity generators (Kusile and Medupi), mega-dams, and expansions to airports, ports, roads, and pipelines. The impetus for megaproject construction comes most often from the South African government and by virtue of their scale, they are often launched with much fanfare and grab media headlines. Their announcement is usually accompanied by captivating computer-generated images even when they are still hypothetical (Ballard, 2017).

Four mega projects implemented in recent history in South Africa include: the 2010 Soccer World cup Stadia, the Gauteng Freeway Improvement Project (GFIP), the Medupi and Khusile Power Stations and the Gautrain Rapid Rail Link. A brief discussion on the implementation of these projects is provided below as a gauge of how megaproject implementation has fared in South Africa in recent times.

2010 FIFA World Cup Stadia: The awarding of the 2010 FIFA World cup to South Africa resulted in ten stadiums needing either to be upgraded or newly constructed for the event. Although all stadia were completed on time to host the mega event, nearly all projects were behind schedule and experienced cost overruns.

Gauteng Freeway Improvement Project: The Gauteng Freeway Improvement Project and its associated e-Tolling scheme is another important megaproject that was initiated in the Gauteng province to alleviate traffic congestion through the upgrading of roads, the overhauling of 34 interchanges and the introduction of four new fly-overs (Khatleli, 2016). This project was completed at a cost of over R20 billion and came in at a staggering 254% over budget (Parrock, 2015). Though the project was completed, there is ongoing contestation between SANRAL, the government, the Organisation Undoing Tax Abuse (OUTA), and the general public over payment of toll fees by the end-user. Parrock (2015) asserts that the project was a failure in terms of financial sustainability, which is attributed to poor cost underestimation, overestimated revenues, potential economic multipliers and negative economic effects. Another key mistake that was made in the project was a lack of public engagement in the planning phase, which has led to the massive discontent towards the project, by members of the public, once the toll fees were published.

Kusile and Medupi Power Stations: Kusile and Medupi Power Stations are coal-fired power plant projects implemented by Eskom to meet its declining capacity, which had started to show signs of inability to cope with the demand of the growing economy (Khatleli, 2016). Both Kusile and Medudi have come under fire as being badly designed and poorly constructed. The projects are years behind schedule, are faced with drastically rising costs and are reported to be failing in their power generating capacity, only achieving a rate of 40% at best. Contributing factors to these problems are attributed to the hasty start of the project, insufficient scoping, inadequate risk management and poor interfacing and project management (Tshehla, 2019).

Gautrain Rapid Rail Link: The Gautrain Rapid Rail Link project consisted of the construction of a rapid railway system linking Pretoria to Johannesburg and OR Tambo International Airport in the Gauteng Province. Thomas (2013) argues that even though the completed project provided legitimate benefits to the people of Gauteng, the project suffered from various problems. These include: escalating upfront and operational costs, perpetuating mobility-related exclusion, the prioritising of the wealthy, as opposed to poor citizens in its use of public funds and the lack of consideration of alternative options for a more effective and integrated transportation plan.

2.2.3 Housing Mega projects

Academic literature on mega projects tends to focus on large single infrastructural developments such as public transit systems, sports arenas, highways, airports and electricity power stations. Large-scale Housing developments, which comprise of housing units of over 10 000 are a form of mega project. The available literature refers to these developments as new town developments. Kheyroddin & Ghaderi (2019) describe new town developments as self-contained settlements, which are built from scratch, are large enough to contain different housing types and public facilities, include recreational and cultural amenities, and offer employment opportunities for its residents.

New town developments were established with the aim of providing a model residence against overcrowding of the major cities in the first half of the twentieth century. In addition to alleviating densely populated metropolitan areas, after the end of World War II, they were used for creating new settlements and industrial towns, establishing new capitals and utilizing the facilities of less developed and undeveloped areas (Kheyroddin & Ghaderi, 2019). In the United Kingdom, the establishment of new towns was one of the policies used for population deconcentration and creation of employment. In the 1960s, due to the expansion of the urban area, self-reliance and job creation were paid more attention in new town creation. At that time, new towns were created near those areas capable of growing. However, due to the economic conditions and the high cost of construction, there was a gradual reduction in new town development (Kheyroddin & Ghaderi, 2019).

According to Kheyroddin & Ghaderi (2019), there has been an upsurge in the construction of new towns in developing countries in the past two decades. China has more than 100 planned new towns of which several have already been constructed. Five new towns have been developed in South Korea around Seoul and two new towns have been built in Cambodia. There are several new towns that have been constructed recently in Singapore including Tengah New Town, which features a car-free town centre and Jurong Lake District.

New town building in India has picked up in recent years. It is estimated that more than 200 new towns ranging from hundreds to thousands of acres around Mumbai, Delhi, Chennai and Kolkata, are being constructed and or awaiting approvals (Shanan & Sattar, 2016).

New satellite towns in Africa are mostly in the planning stages and include Eko Atlantic City in Lagos Nigeria, which was intended to alleviate congestion problems and respond to decaying infrastructure. Similarly, Appolonia and Hope City have been designed in Accra, Ghana. In Nairobi, Kenya 15 new towns have been proposed to decongest the city and to stimulate economic development in the region. Two of these new towns – Tatu City and Konza Techno City in Kenya - have reached advanced construction stages. Further new town projects in Africa include Roma Park in Zambia, Kilamba in Angola and Kimboni in Tanzania (Kheyroddin & Ghaderi, 2019).

In the South African context, the shift towards large-scale developments is attributed to the need to address imparities and the rectification of past housing policy interventions that were characterised as being sporadic and uncoordinated (Sutherland, Sim, & Scott, 2015).

The Gauteng city-region (GCR) has a long history of large-scale developments, which were both private and public sector led. Historically, there were three major forms of megaproject type developments in the region. Harrison & Todes (2017) summarise these as follows:

- Private sector led mining-related developments in the Witwatersrand which involved large amounts of capital investment and were associated with large-scale residential developments.
- Planned development of new towns, in support of state-created industry, in the

area to the south of Johannesburg which became known as the Vaal Triangle.

- Townships established in the apartheid era behind the homeland boundaries on the edge of the GCR.

In the early post-apartheid period, there have been a number of integrated mass housing developments that mirror the characteristics of the housing mega projects referred to in this study. These projects include N2 Gateway in the Western Cape, Lufhereng in Gauteng and Cornubia in KwaZulu Natal. The South African government has used various terms to describe these developments, which include mega housing projects, catalytic projects, mega cities and mega human settlements. Many of these developments are associated with the idea of new town or city development. For the purposes of this study, these developments will be referred to as Human Settlements Mega projects (HSMP).

According to Shepard (2019) the governments of developing countries' governments have sold the new town development idea as a 'silver bullet' to cure various urban and economic issues, such as overcrowding, pollution, traffic congestion, housing shortages, lack of green space and economic stagnation. Shepard (2019) further notes that as well as being less complicated and cheaper than retrofitting and extending existing cities, building new cities is seen by these governments as being more profitable as developing countries that are undergoing reconstruction, tend to have economies that are driven by the real estate and construction sectors.

2.2.4 The Housing Challenge in South Africa

The South African landscape is shaped by the spatial legacy of apartheid racial segregation and exclusion of certain communities from social and economic opportunities. As a result of the policies of the apartheid era, the housing market inherited by the new South African government in 1994 was marred by severe inequality and abnormalities (Cross, 2008). The main housing problem in South Africa is the shortage of accommodation for the urban poor and low-income households.

The post-apartheid South African government has instituted various programs to deliver housing to the poor and lower-income households. The South African government is reported to have built 3.2 million homes from 1994 to 2018. As depicted in Figure 2.1, there was an upward growth in the homes built in the period between 1994 to 1999. However, after reaching a peak in 1999, this rate has slowed, particularly in the period between 2013 to 2018 (BBC, 2019). The housing backlog has increased from an estimated 1.5 million in 1994 to an estimated 2.1 million currently, which according to the Department of Human Settlements (DHS, 2018) translates to approximately 12.5 million people still in need of houses in South Africa. This number is estimated to be growing at 178 000 units per year (Msindo, 2018). Cross (2008) notes that between 1994 and 2004, the government invested R27.6 billion in housing and more than 1.6 million houses were delivered in this period. Whilst initiatives by the government have insured the delivery of housing to millions of South Africans, the insufficiency to meet new demand brought by new entrance into the housing market has resulted in the growing backlog (Ibid.).

South Africa is experiencing continuing urbanisation, which has led to a big increase in informal dwellings, particularly in urban areas. Continuing population growth and rural-urban migration are the leading factors to the growing housing backlog in South Africa. The United Nations estimates that 71.3% of the South African population will live in urban areas by 2030, reaching nearly 80% by 2050 (Cooperative Governance & Traditional Affairs, 2016).

High levels of unemployment and relatively low average wage levels also add to the housing shortage and as a result, a large number of South Africans cannot independently provide for their own housing needs (Bradlow, Bolnick & Shearing, 2011). Additional factors that hamper the delivery of housing can be summarised as follows:

- Fragmented housing policy and administrative systems (Fuller Centre of Housing, 2014).
- Poor configuration of housing plans and funding streams at all levels of government (Cross, 2008).
- Inadequate contribution from the financial sector in the financing of low-income

housing due to the poor repayment record of low-income housing beneficiaries (Ibid.).

- Slow transfer of state-owned land to municipalities (Cross, 2008).
- The lack of suitable land (Ibid.).
- The lack of capacity in local government and municipal departments, which resulted in significant under spending and significant amounts of money being returned to National Treasury (Ibid.).
- Housing projects in the past have been plagued with corruption and poor supply chain management (Bradlow, Bolnick, & Shearing, 2011).

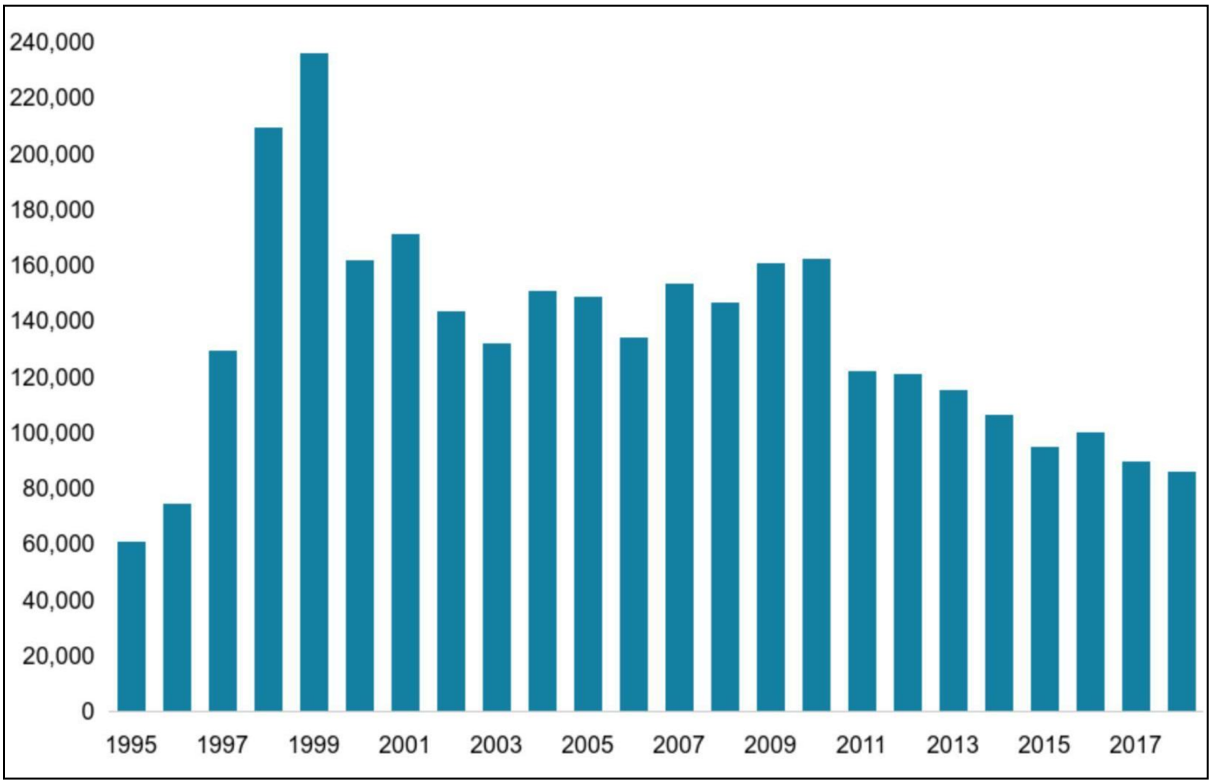

Figure 2.1: Number of Housing Units Built Per Year – 1995 to 2018
Source: BBC (2019)

2.2.5 The Housing Challenge in Gauteng

The Gauteng province is the economic hub of the country and due to people migrating to the province in search for work, it has the highest number of housing required compared to all the other provinces in South Africa (Msindo, 2018).

According to Statistics South Africa (StatsSA, 2015) the population estimate for Gauteng in 2015 stood at almost 13.2 million, accounting for 24% of the national population and thus making it the most populated province in South Africa. The population continues to grow because of immigration and natural growth. Only 56% of people living in Gauteng today were born in the province (Department of Human Settlements, 2018).

The Gauteng department of Human Settlements (GDHS) has made strides in providing housing to the poor and it is estimated that 31% (1.23 million) of all Reconstruction and Development Programme (RDP) houses in South Africa are found in the province, which is more than the number of houses provided in Kwazulu-Natal and Western Cape Provinces combined (GPF, 2018).

The Premier of Gauteng, Mr. David Makhura, announced, during the 2019 state of the province address, that 1.2 million government-subsided houses had been delivered in the Gauteng province since 1994, however, there is a housing backlog estimated at about 1 million in the province (Makhura, 2019). This number suggests that Gauteng is the biggest contributor to the country's housing backlog as a result of the province being the economic hub of South Africa.

2.2.6 Low Cost and Affordable Housing

Field (1997: 802) defines affordable housing as "housing that is made available to those that cannot afford to pay rent or monthly ownership costs, without some special intervention by government or special housing providers".

Othman & Abdellatif (2011:276) additionally state that "housing can be considered affordable for a household if a household can acquire use of the housing unit (owned or rented) for an amount that does not exceed thirty percent (30%) of the household income".

Drawing on the above definitions, affordable housing, in the South African context, denotes housing provided to poor and low-income households through various vehicles depending on the eligibility. The delivery of affordable housing in South Africa is supply-side driven and the government has several programs to assist poor and low-income households. The Breaking New Ground (BNG) program is a full subsidy that gives households earning less than R3 500 a month and meet certain eligibility requirements for full ownership of housing. The social housing programme provides a partial subsidy for medium density rental apartments to households earning R1 500 to R15 000 a month. Housing in this programme is delivered through accredited social housing institutions. The Finance Linked Individual Subsidy Programme (FLISP) is a subsidy intended to help households earning between R3 501 and R22 000 a month to access private mortgage funding to acquire a home in the affordable market. The subsidy can be used as a deposit in order to reduce monthly bond repayments. Di Lollo & Drummond (2019) point out that very few households have been able to access this subsidy with only 2 295 FLISP subsidies allocated to beneficiaries in 2017/2018, against an annual target of 5 000. The slow uptake of this subsidy is attributed to insufficient awareness about the programme; the lengthy bureaucratic process for application; lack of available housing stock for income earners earning below R 22 000; even when there is housing stock available, there is a lack of financing options for households to purchase these houses (Di Lollo & Drummond, 2019).

2.3 Legislative and Policy Framework

The post-apartheid government of South Africa has instituted a number of policies and national housing programmes in order to address the issue of inadequate housing across the country. This section will provide an overview of the legislative and policy framework governing housing delivery and leading up to the housing mega projects policy paradigm.

2.3.1 Time Line of Key Housing Policy in South Africa

Table 2. 1 presents a timeline of the key housing policy initiatives initiated since the dawn of democracy in South Africa.

Table 2.1: Timeline of Key Housing Policy in South Africa

Date	Policy
1992-1994	**The National Housing Forum** The NHF was a multi-party non-governmental negotiating forum, which comprised of business, political, development, and civic organisations aimed at debating how housing should be delivered in South Africa with respect to the role of the public sector versus the private sector. The recommendation was that government would facilitate delivery by providing a framework for housing provision and the private sector would construct housing by applying for subsidies on behalf of beneficiaries. This led to the adoption of the once-off capital subsidy scheme for households with an income of R 3500 per month.
1994	**The Housing White Paper is promulgated** The Housing White Paper was developed from the NHF negotiations and set out the framework for the National Housing Policy. It set out the framework for the construction and Development Programme (RDP) which set the goal of the construction of one million houses within five years.
1997	**The Housing Act no 107 of 1997 replaces all previous housing legislation** The Housing Act sets out the general principles of housing in South Africa. It clarifies the roles and responsibilities of the three spheres of government namely National, Provincial and Municipal.
2000	**Introduction of the National Housing Code** The National Housing Code set out the underlying policy principles, guidelines and norms and standards which apply to the National Housing Programmes. The Code is binding on provincial and local spheres of government
2004	**Introduction of Breaking New Ground (BNG) Policy** The BNG policy builds on the housing policy outlined in the 1994 White Paper and outlines a comprehensive plan for the development of sustainable human settlements. The priorities of the plan are to: • Accelerate delivery of housing within the context of sustainable human settlements. • Ensure housing delivery as a catalyst for job creation and economic growth. • Provide quality housing and to turn homes into assets. • Progressive eradication of informal settlements
2008	**Housing Development Agency (HDA) Act promulgated** The HDA was established to facilitate and fast track the development of large scale, sustainable human settlements with social and economic infrastructure. Its functions include: • Ensuring the availability of land for development • Facilitating the structuring of projects and overseeing their implementation • Facilitating government funding and subsidies for developments • Facilitating the planning and proclamation process • Facilitating bulk and internal infrastructure and social infrastructure development
2008	**The Social Housing Act (16 of 2008) promulgated** The Act aims to establish and promote a sustainable social housing environment and defines the functions of national, provincial and local governments in respect of social housing, allows for the undertaking of approved projects by other delivery agents with the benefit of public money and gives statutory recognition to social housing institutions (SHIs). It further provides for the establishment of the Social Housing Regulatory Authority (SHRA) and defines its role as the regulator of all SHIs that have obtained, or are in the process of obtaining, public funds
2009	**Revised National Housing Code published** The National Housing Code, first published in 2000 was revised following adoption of Breaking New Ground in 2004. Some of these programmes included in the Code were updated or removed, and new programmes included. The programmes included in the National Housing Code include: the Project Linked Subsidy, the Individual Subsidy Programme, the Consolidation Subsidy Programme, the Provision of Social and Economic Facilities, the Emergency Housing Programme, the Integrated Residential Development Programme (IRDP), the Enhanced People's Housing Process, the Informal Settlement Upgrading Programme, the Community Residential Unit Programme, the Institutional Subsidy Programme, the Social Housing Programme, Rural Subsidy: Communal Land Right and the Residential Housing Assistance Programme)

Source: Adapted from Rust 2008 and Tissington (2011)

2.3.2 Key Housing Programmes

In the succeeding section, the key programmes relevant to the Gauteng HSMP are discussed. These include the Project linked Subsidy Programme, the Individual Subsidy Programme, and the Integrated Residential Development Programme (IRDP).

2.3.2.1 Individual Subsidy Programme

An individual subsidy provides qualifying beneficiaries to buy an existing house. The subsidy is paid directly to a financial institution or seller. The programme is available to beneficiaries who have a combined monthly household income below R3 500, who have never received a subsidy from the government, and who have never owned residential property (Department of Human Settlements, 2018).

2.3.2.2 Finance-Linked Individual Subsidy Programme (FLISP)

FLISP is specifically intended for the market segment whose income is inadequate to qualify for a home loan, but exceeds the maximum limit applicable to access Government's "free basic house" subsidy scheme. This market segment, generally known as the "affordable/gap" market, earns between R3 501 and R15 000 per month. Households in this segment, if buying a home for the first time, may apply for a FLISP subsidy. The subsidy attaches to the beneficiary and not to the property. This is used to decrease the mortgage bond and applies only to people who have never been assisted by the Government. It is disbursed as a once-off subsidy.

2.3.3.3 Integrated Residential Development Programme (IRDP)

The IRDP was introduced to the National Housing Code to replace the project linked subsidy programme and provides a tool for planning and developing integrated projects. It does away with the requirement found in other policy programmes to identify subsidised housing recipients up front and provides for both subsidised, as well as finance-linked housing, social and rental housing, commercial, institutional and other land uses to be developed (NDHS, 2009).

According to the NDHS (2009) the IRDP is designed as a two-phased delivery mechanism where Phase 1 entails:

- All the necessary planning and land acquisition required to secure well located land
- Legal processes to obtain township establishment, environmental approval and other necessary approvals
- The design of the layout of the project for different typologies of housing, sites for schools, community facilities, shops and business sites and parks and open space

The installation of internal services (NDHS, 2009). Phase 2 comprises of:

- The construction of houses for qualifying housing subsidy beneficiaries
- The sale of stands to non-qualifying beneficiaries
- The sale and development of commercial and social interest sites.

2.3.4 Policy Shift to Mega projects

According to Turok (2015) the shift in housing provision by government from sporadic projects to the mega projects approach was first mentioned by Human Settlements minister Lindiwe Sisulu in her budget vote speech of July 2014 (Sisulu, 2014). According to the mega projects approach, all housing would, going forward, be delivered in large-scale projects of more than 10 000 units. The reason given was that this would help deliver more housing for the available budget and would assist in achieving the aims of integrated human settlements (Ballard & Rubin 2017).

According to the Gauteng Partnership fund (GPF 2015) mega projects emerge as a corrective measure for the implementation deficiencies encountered in the first ten to fifteen years of the democratic South Africa. The deficiencies included:

- The housing programme was lacking in integration and coordination
- RDP houses continued to perpetuate apartheid patterns as they were built away from economic centres
- They have been associated with major corruption, and poor supply chain management.
- The capacity limitations of municipal and provincial governments led to the returning of funds back to National Treasury by the Department of Human Settlements.

These HSMPs consist of more than 10 000 residential units per development and unlike previous initiatives by the government, which focused only on low-income residents, these mega housing developments would also attract middle- and higher-income residents (Ballard & Rubin, 2017).

The developments are designed to be mixed use and are inclusive of housing, social amenities, open spaces, economic, commercial and industrial opportunities (GPF, 2018). They also include housing for different income segments which includes BNG housing for the state subsidised market segment to accommodate households earning bellow R3 500 per month; social housing rental units for the “gap market” which those earning between R3 500 to R18 000 per month; and bonded housing which caters for those earning above R18 000 per month (GPF, 2018).

The housing tenure would be mixed tenure dwellings comprising of ownership housing, rental housing and social housing and the buildings would be mixed typology housing inclusive of free standing and multi-story walk-ups (GPF, 2018).
The definition articulated by the Gauteng Premier, quoted by GPF (2018), provides guidance on the characteristics of mega projects as follows:

- “Mega Projects are big in size” (Ibid.).
- “Mega Projects have a high impact spatially, socially and economically to the beneficiaries” (Ibid).
- “Mega projects must be highly coordinated amongst the relevant sister departments to the Department of Human Settlements. These include Roads and Transport; Education; Economic Development; Community Safety; Sport, Arts, Culture and Recreation; Health; and Social Development” (Ibid.).
- “Mega Projects are coordinated as a sustained, long term development of new post-apartheid cities that are intrinsically linked to one another spatially, socially and economically” (Ibid.).

Figure 2.2 is a graphical presentation of the attributes of HSMP. Table 2.2 presents the key role players in HSMP as adopted from the Gauteng Department of Human Settlements Concept paper titled “New Mega Cities Turn Around of Human Settlements In Gauteng City Region” dated February 2015.

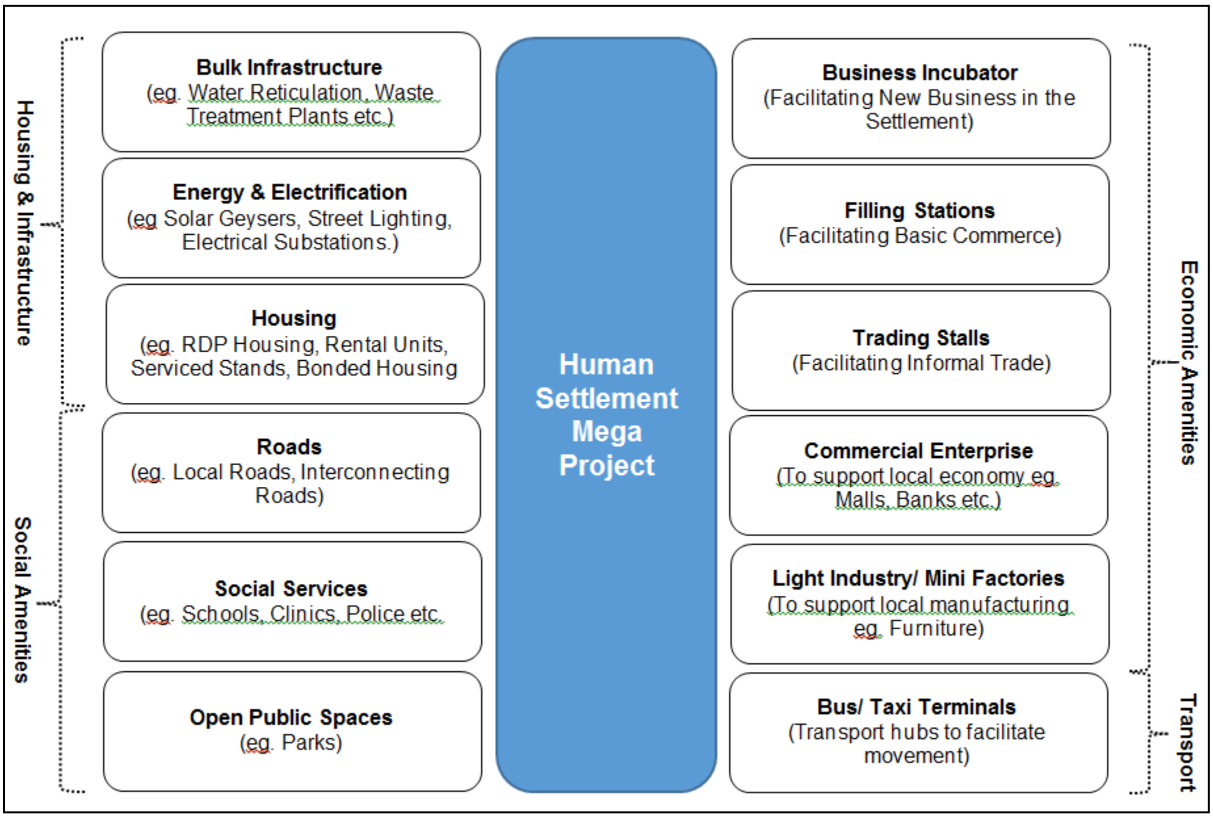

Figure 2.2: Human Settlement Mega Project Attributes

Source: GDHS (2015)

Table 2.2: Mega Human Settlements Key Role Players

ROLE PLAYER	RESPONSIBILITIES
NDHS	• Policy Directives • Funding • Performance Oversight
GDHS	• Approves MPs • Signs Subsidy Agreement with developers • Signs Turnkey Development Agreement with developers • Signs Tripartite Implementation Agreement with Municipalities and developers • Develops and updates the Gauteng HS Spatial Master Plan • Implements and maintains the IDMS • Provides subsidies for applicable housing typologies in MPs • Provides 10% of HSDG grant for bulk infrastructure in mining towns, particularly the West Rand District • Provides 2% of HSDG grant for bulk infrastructure in the Sedibeng District • Beneficiary administration and issuing of title deeds in respect of government subsidised housing units

ROLE PLAYER	RESPONSIBILITIES
HDA	• Implements national catalytic priority projects
GPF	• Revenue generation for MPs
SHRA	• Manages and implements social housing projects, including in MPs
Municipalities	• Township establishment and approvals • USDG and other Grant Funding • Signs SLAs with developers • Signs SLAs with developers
GDID (infrastructure development)	• Government Precincts – including magistrate courts and regional offices of Home Affairs, SARS and SASSA
GDRT (roads and transport)	• Regional Roads and Public Transport facilities
GSACR (sports, arts, culture and recreation)	• Parks, Open Spaces and other social amenities
GDED (economic development)	• Township and Rural Economic Revitalization and Food Production, including Telecommunication facilities
GDBE (basic education)	• Schools and other education infrastructure
GDCS (community safety)	• Community Policing and By-Law Enforcement
GDoH (health)	• Community Health Centres and Hospitals
GDSD (social development)	• Community Support and Early Childhood Development
Provincial Treasury	• Special Funding, Governance and Compliance

Source: GDHS (2015)

Ballard & Rubin (2017) trace the origin of the megaproject approach to housing within the Gauteng Province to June 2014 when the Gauteng premier, David Makhura, announced the need to modernise and transform housing development in the province, during his first state of the province address. This was followed by the MEC for Human Settlements and Cooperative Governance and Traditional Affairs who briefed a housing consultant to develop a concept paper for HSMPs. Further details on the change in policy direction towards mega projects was uttered by the premier during his second state of the province in February 2015 (Ibid.). The premier then launched the Gauteng HSMP at an event held in April 2015 at the
Gordon Institute of Business Science in Johannesburg. At this launch event the premier committed his admiration to the delivery of 700 000 houses in four years through the HSMPs spread across the five development corridors in Gauteng (ibid). This event was followed a month later by a call for tenders inviting private-sector developers to come forward with proposals to develop these HSMPs (ibid).

Both Turok (2016) and Ballard & Rubin (2017) highlight the absence of a policy framework to explain the concept and rationale for the HSMPs. However, Turok (2016) notes that the language used by Premier David Makhura to describe these mega projects in his 2014 and 2015 state of the province addresses bears resembles to the language underpinned in the IRDP encapsulated in the National Housing Code. The

IRDP provides a tool to plan and develop integrated settlements that include all the necessary land uses and housing types and price categories to become a truly integrated community. The Programme, in particular, provides for the planning and developing an integrated project that provide housing, social and economic needs of different income categories. It does away with the requirement found in other policy programmes to identify subsidised housing recipients up front and provides for the development of subsidised, as well as finance linked housing, social and rental housing, commercial, institutional and other land uses. Owing to the holistic planning and development approach, the instrument also provides for substantial economies of scale to be realised (Department of Human Settlements, 2009).

According to GPF (2018) 31 of housing mega projects have been earmarked for the Gauteng Province at a budgeted amount of R100 billion. These projects are spread across five development corridors in the province, namely:

- The Central Development Corridor: which encompasses the City of Johannesburg Metropolitan.
- The Eastern Development Corridor: which encompasses the City of Ekurhuleni Metropolitan.
- The Northern Development Corridor: which encompasses the City of Tshwane Metropolitan.
- The Western Corridor: which encompasses the West Rand district
- The Southern Corridor: which encompasses Sedibeng district

Figure 2.3 is a map indicating the locations of the HSMP under the five development corridors. Harrison & Todes (2017) argue that while some of the projects might be close to the existing urban fabric, others are planned to be on the periphery and beyond.

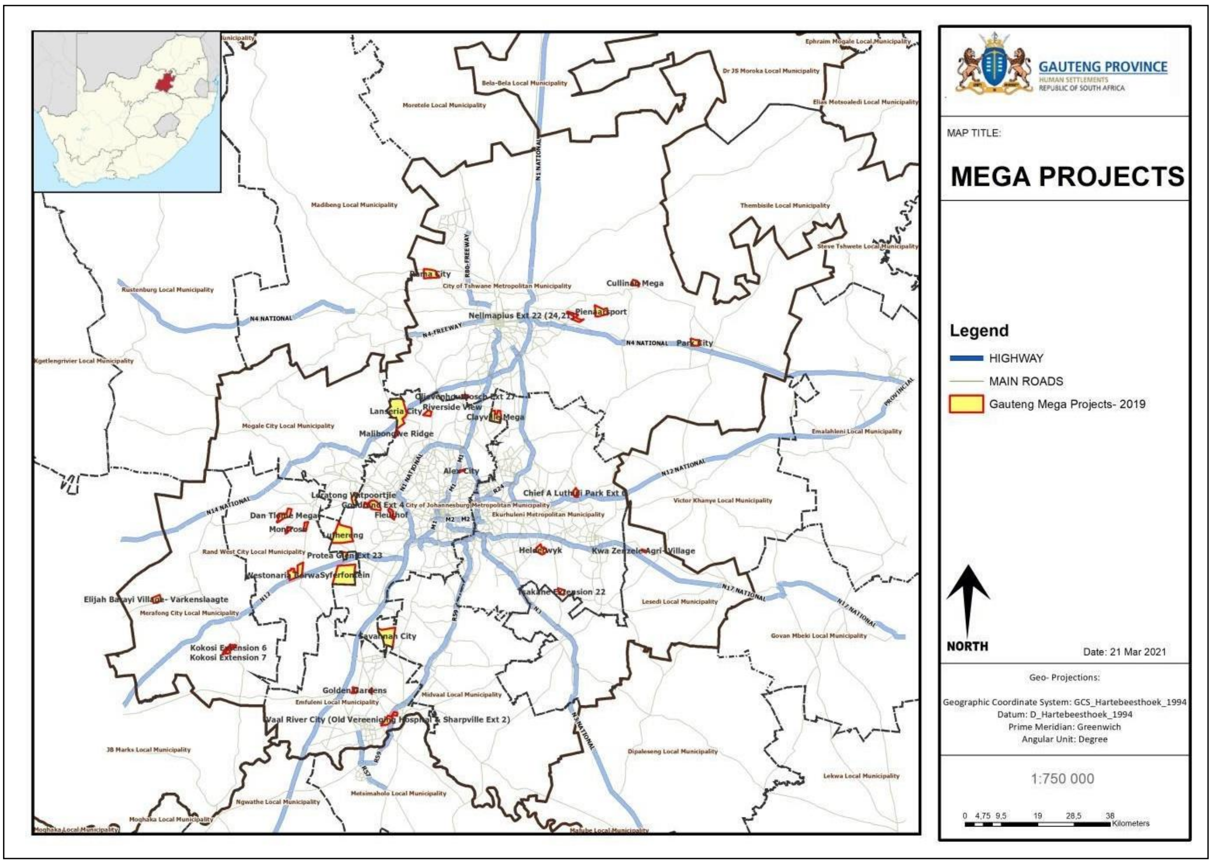

Figure 2.3: Location of Gauteng Human Settlement Mega Projects

Source: GDHS (2021)

2.4 Housing Mega projects Implementation Evaluation

This section firstly aims to provide an understanding of what evaluation is. This is followed by an overview of literature on its application in housing projects, and thereafter, the evaluation of the performance of HSMP follows.

2.4.1 Definition of Evaluation

In the contexts of public policy assessment, the OECD (2004:19) defines evaluation as “the systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation and results. The aim is to determine the relevance and fulfillment of objectives, development efficiency, effectiveness, impact and sustainability.”

“An evaluation of a development intervention ideally seeks to identify the factors of success or failure, to assess the sustainability of results and impacts, and to draw conclusions that may inform other interventions” (OECD, 2004:19). Lim & Mohamed

(1999) argue that there are two types of success in projects: micro-level success and macro-level success. Micro-level is concerned with the traditional triangle of whether the project is on time, within budget, and according to specifications. Contractors and consultants are normally concerned with micro-level success. Macro success is more concerned with long-term gains of the project and the end users and project beneficiaries tend to look at success from the macro viewpoint.

The definition of evaluation by Gooler (1980) emphasises the need for evaluation to occur in the early phases of a development intervention, and should not be seen as an activity which only occurs later on in the project.

The OECD (2004:18-20) further distinguishes between ex-ante evaluation, ex-post evaluation and formative evaluation. “Ex-ante evaluation is performed before implementation of a development intervention”. “Ex-post evaluation is performed after a development intervention has been completed”.

2.4.2 Evaluation of Mega projects

Mega-projects around the globe have encountered difficulties in delivery. Over-time, cost overruns starting from the design phase, through to start-up, the construction phase, and then delivery have categorised mega-projects progression; delays stemming from the planning and implementation phase, are particularly problematic.

The one-of-a-kind nature as well as the complex causal relationships and high degree of scientific, political and institutional uncertainties render mega projects particularly challenging objects of evaluation (Albishri, 2015).

The aspects of cost, time and scope are usually the popular criteria against which projects are evaluated as they can be easily measured. The relevance of the project and its effects, whether it attains its goals and objectives measured in terms of effectiveness, including impact and sustainability are much difficult to measure and can only be verified at a later stage, after the project has delivered its results (Zidane, Johansen, & Ekambaram, 2013). Zidane, et al. (2013) identify the following measurement criteria in order to develop anevaluation framework for mega projects:

efficiency, effectiveness, sustainability, relevance and impact.

Efficiency – OCED (2000) defines efficiency as “a measure of how economically resources or inputs are converted to results”. Zidane, et al. (2013) further expound on this definition adding that it is question of doing things correct and the producing outputs that are in accordance with the agreed scope, time, cost and quality.

Effectiveness – OCED (2000) defines effectiveness as “the extent to which the development intervention’s objectives were achieved, or are expected to be achieved, efficiently in a sustainable fashion and with a positive institutional developmentimpact.”

Sustainability – OCED (2000) defines sustainability as “the continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time.”

Relevance – OCED (2000) defines relevance as “the extent to which the objectives of a development intervention are consistent with beneficiaries’ requirements, country needs, global priorities and partners’ and donors’ policies.”

Impact – OCED (2000) defines impact as “the positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.”

2.4.4 Evaluation in the Public Housing Context

In the context of public housing, Milligan, Phibbs, Gurran, & Fagan (2007) identify the relevance of the level at which evaluation is conducted. The evaluative levels are identified as:

Policy level: which is jurisdictionally based and embraces several programs of development initiates in one or more regions. A policy evaluation will be focused on high level goals and targets and how the policy is perceived to be working overall for the use of ministers and senior managers – for example, in determining whether the program should continue and what level of resources are desirable (ibid.).

Program level: which could be one specified model of funding and delivery operating for a region and/or target group. However, a program level evaluation focuses on the scale and level of outputs from year to year, or on differences in performance across projects, providers or regions to meet the needs of the program manager (such as improving the program's effectiveness or efficiency (ibid.).

Project or site level: which would be a local provision under an overarching policy and program, that is, a specific project under a program. Lower level (project or site) evaluations might be more focused on local costs and delivery processes and be very useful to the individual provider when it comes to planning future projects, managing risks and accounting for their performance (ibid.).

Ibem (2010) notes that the rationale for evaluating public housing programmes is to assess their effectiveness, improve housing design, and to ensure continuous improvement of design methods through the provision of feedback to programme designers. The evaluation of housing programmes addresses issues of whether public housing schemes are consistent with the intent and purpose they were initiated, particularly in the areas of programme rationale, implementation process, impacts as well as cost effectiveness. However, Milligan et al. (2007) further assert that considering different aspects of evaluation at one level can assist in making an assessment at another level. For example, evaluations of several projects under the one program might also contribute to a better understanding of the effectiveness of that program in different contexts.

Milligan et al. (2007) assert that evaluation studies play an integral component of evidence-based policy making and that evaluation can be used to inform new policy development and guide decisions about how a program can be replicated successfully. Evaluation also plays a role in contributing to a government's accountability process. However, program managers are often averse to evaluation because of concerns that it may lead to program cuts. Milligan et al. (2007) further suggest that evaluation proves to be attractive if it is perceived as a valid component of risk mitigation, or an integral part of a coordinated and collaborative approach to service delivery used to inform future program design and adjustment.

A review of literature reveals that the evaluation of social programs is conducted in two main forms: formative and summative evaluations. Formative evaluation is also referred to as progress or process evaluation and is conducted to gather information during the implementation of the programme (Ibem, 2011). Stetler, Legro, Wallace, Bowman, Guihan, Hagedorn, & Smith (2006) posit that formative evaluation can identify at an early stage whether the desired outcomes are being achieved so that implementation strategies can be refined as needed to ensure transferability as the programme develops. It addresses questions of programme implementation and how this relates to the achieved objectives on one hand and programme activities and clients‟ satisfaction with the services provided on the other hand. This form of evaluation provides answers to questions on how, why, and under what conditions programmes or projects work or fail to work (Ibem, 2011).

Summative evaluation, also referred to as outcome or impact evaluation, on the contrary, is conducted to gather information on the effectiveness of a programme after it has been implemented (Ibem, 2011). It seeks to determine the relationship between the goals of a programme and its outcomes and measures ways of improving them (Ibem, 2011).

When it comes to approaches for evaluating housing programmes, Obeng-Odoom (2009) distinguishes between the Before and After Analysis, the With and Without Analysis and the Plan Versus Outcome Analysis evaluation approaches. The Before and After approach analyses the situation prior to the implementation of a policy of programme and what the situation is after it is implemented. The “With and Without approach” asks the questions, “what would the world look like without the project?” and “what would it look like with the project?” Meaning that this approach enquires on the difference between the situation with and without the project in assessing its impact. The Plan Versus Outcome approach evaluates a policy or programme by looking at whether it has achieved its objectives and hence it is also referred to as the Objectives Analysis approach. This is the most straight forward way to evaluate projects as it looks back at the objectives that were set for the project and reviews to what extent they have been achieved and what difficulties were encountered (Obeng-Odoom, 2009).

From the foregoing discussion, this study will be conducted at a programme level by examining purposefully selected projects within the programme of HSMP in the Gauteng Province. Due to the fact that the subject projects were under implementation during the time of investigation, this study can be considered as formative in nature. The Plan Versus Outcome approach has been adopted as it assesses the objectives that were set out for and the challenges that were experienced during implementation thereafter propose solutions that lead to the successful implementation of HSMP.

2.4.5 Evaluation of HSMP Programme Peformance

This section will seek to evaluate the performance of the HSMP from the 2017/18 to the 2019/2020 financial years. In his speech at the 2018 State of the Province Address, the Gauteng Premier indicated that 31 new mega human settlements projects had been approved for all five development corridors of the Gauteng City Region (GCR). As of the date of that speech, the Premier indicated that seven mega human settlement projects had been launched. These were:

- Leeuwpoort, Daggafontein and John Dube n the City of Ekurhuleni.
- Montrose and Elijah Barayi in the West Rand District.
- Riversands View in the City of Johannesburg.
- Rama City in the City of Tshwane.

The GDHS Annual Report for the 2017/2018 financial year reports that out of these seven mega projects, only five were under construction. These were Elijah Barhayi, Montrose, Riverside, John Dube and Rama City. The report further states that a number of mega projects that form part of the pipeline remain in the planning stage and this has impacted the achievement of the Provinces' targets to clear the housing backlog prevalent across the province. The GDHS Annual Report for the 2018/2019 updates the performance to 18 projects under construction, 11 at detailed planning and two are reported to be starting with the first phase of planning.

Table 2.3 demonstrates the performance of the Gauteng HSMP with regards to the number of serviced stands targeted for completion versus the actual number of serviced stands completed and the number of houses targeted for completion versus the actual number of houses completed for three financial years (2017/2018, 2018/2019 and 2019/2020). From this table it is noticeable that there was a failure in the meeting of targets in the number of houses completed for the 2018/2019 and 2019/2020 financial years, with only 19% and 68% of the targets achieved in both financial years, respectively. It can also be seen that there was also in a failure in meeting of targets for the number of serviced stands for the 2017/2018 and 2018/2019 financial years, with 39% and 89% of the targets achieved in both financial years respectively. However, the number of serviced stands target was exceeded by 133% in the 2019/2020 financial year.

At the launch of the Gauteng HSMPs by the Gauteng premier in April 2015, the premier announced that these project would deliver 700 000 housing units within fouryears (Turok 2016). The total number of serviced stands and houses delivered since their inception in the 2017/2018 financial year is in the region of 21 689 housing opportunities. The implementation of these projects is now in its third year and this number is far lower that the commitment of 700 000 housing units within 4 years announced during the launch of these projects.

Table 2.3: Gauteng HSMP performance as per GDHS Annual Report for 2017/18 2018/9 and 2019/20 financial years

Measure	2017/2018 Financial Year			2018/2019 Financial Year			2019/2020 Financial Year			
	Target	Actual	% of Target Archived	Target	Actual	% of Target Archived	Target	Actual	% of Target Archived	Total % of Target Achieved
HSMP Number of serviced stands completed	9 363	3 610	39%	10 993	9 799	89%	6 232	8 280	133%	82%
HSMP Number of houses completed	0	0	No target	22 204	4 176	19%	10 814	7 348	68%	35%

Source: Adapted from GDHS (2018) and GDHS (2019) and GDHS (2020)

The GDHS (2018) attribute the underperformance of the Gauteng HSMP programme to the following:

- “The general state of project readiness” (GDHS, 2018)
- “Lengthy township approval processes outstanding township establishment” (Ibid.)
- “Delays in obtaining Power of Attorneys or Land Availability Agreements for land parcels” (Ibid.)
- “Delays in obtaining debt funding and renegotiating grant allocations for projects” (Ibid.)
- “Land disputes between the developer and land owners” (Ibid.)
- “Insufficient bulk sewer” (Ibid.)
- “Poor performance by contractors” (Ibid.)
- “Project management weaknesses” (Ibid.)
- “Community unrest and labour disputes, mainly as a result of disruptions by unregistered business forums”
- “Ineffective public participation processes” (Ibid.)
- “Contractor payment delays” (Ibid.)
- “Delays in production by local sub-contractors as a result of cash flow constraints” (Ibid.)
- “Insufficient or lack of approved beneficiaries” (Ibid.)

It is evident from the formative evaluation of the performance of the megaprojects, that there is misalignment between the initial objectives with regards to the project timelines and the delivery of housing. This warrants an investigation of the method used to deliver these projects and the challenges experienced during implementation these are discussed in the subsequent sections of this chapter.

2.5 Housing Mega Projects Delivery Methods

This section, firstly, defines project delivery methods, and secondly, provides a brief description of public procurement legislation in South Africa. This is followed by an analysis of project delivery methods applicable to housing mega projects in order to examine the effectiveness of delivery methods used for HSMP.

2.5.1 Definition Project Delivery Methods

Project delivery method is one of the critical success factors in construction projects, due to the fact that it has a direct effect on key performance indicators such as cost, schedule, quality, project execution and safety (Ahmed & El Sayegh, 2020). The selection of the project delivery method can lead to the success or failure of a project (Ahmed & El Sayegh, 2020).

The definition for project delivery method suitable for this study is provided by Carpenter & Bausman (2016), who define it as “a comprehensive process of assigning contractual responsibilities for designing and constructing a project, which should include the definitions of project scope, contractual responsibilities, interrelationships of the parties, and the processes for managing time, cost, safety, and quality.

Construction project delivery methods differ from each other in terms of allocation of responsibilities, activities sequencing, process and procedure, and organisational approach in project delivery**.** The most common types of methods include: The Traditional Method (also known as Design, Bid and Build (DBB) approach), Design and Build (DB), Management Contracting, Construction Management, and collaborative (Ghadamsi & Braimah, 2000).

In the traditional procurement or Design, Bid and Build (DBB) method, the client appoints a design consultant, which is usually an architect or engineer, to carry out the design work and prepare contract document s(Mathonsi & Thwala, 2012).. Following this, the contractor is appointed based on the client’s criteria and enters intoa contract with the client for the assembly of the project elements. The client is thus under two contractual obligations; with the design professional and the contractor (Mathonsi & Thwala, 2012). This method is called ‘traditional’ because it has been in existence for a long time and has been the only choice available for most clients of theconstruction industry for many years (Mathonsi & Thwala, 2012).

In the Design and Build (DB) method, the client appoints a single entity to which is responsible for the design and construction of the project (Ahmed & El-Sayegh 2020).. This method provides benefits such as better collaboration given that the designer and the contractor work as one entity, it also allows for fast tracked delivery as construction can be started while designs are still ongoing which can result in time and cost savings (Ahmed & El-Sayegh 2020). Other variations of the DB method include package deals, develop and construct turnkey and build and operate methods (Ahmed & El-Sayegh 2020).

Construction management is where the client appoints both the design team and the contractor early in the preconstruction phase of the project. This method is advantageous in that it allows for better collaboration between project participants and it allows the contractor to advise the client on design and construction management activities (Ahmed & El-Sayegh 2020). Construction management at risk (CMR) is a derivative of construction management and is where the contractor acts as both a project coordinator and a general contractor. This method has the advantages of an increased cost certainty and decreased change orders (Ahmed & El-Sayegh 2020).

Collaborative delivery methods emphasize collaboration, trust, commitment and co-learning between parties and includes variants such as integrated project delivery, alliancing and partnering (Ahmed & El-Sayegh 2020).

Based on findings of a study by Oshungade & Kruger (2015), the traditional method is the most popular and frequently used procurement method in construction projects in South Africa. This is attributed to restrictions in South African legislation, the advantage it has for empowerment and job creation and due to various stakeholder's unawareness of other procurement methods.

However, a study by Bolumole (2017) found that the traditional and DB delivery methods are primarily used in delivering construction project in South Africa and that clients receive best value-for-money on construction projects with the adoption of either of these methods.

In contrast, Mfongeh (2010) investigated constraints of the use of the DB delivery method in South Africa and found that problems encountered during procurement include the lack of knowledge and capacity by clients to prepare and evaluate tender documents.

The constraints, in the design and construction phases, found by Mfongeh (2010) included the fact that contractors do not always have adequate design capacity, poor communication between the design and construction teams within the design and build organisation, most projects using design and build were not completed on time, the quality of projects were lower when using the DB method

2.5.2 Delivery Method for Housing

According to Regan (2012), most public infrastructure is provided using the traditional procurement method and this has been the case for the provision of public housing projects in South Africa in previous years. The implementing strategy has been largely through the state contracting with contractors to construct housing. However, there have been numerous problems associated with this model. Procurement corruption has been identified as a major problem in the public housing sector in South Africa. In her presentation to the portfolio committee on human settlements in 2013, the then public protector, Ms Thuli Madonsela, noted alleged irregularities in the award of tenders and vetting of service providers; overbilling; false billing; and lack of standardisation of housing specification. She also reported on corrupt public officials who allegedly award tenders to companies to which they have some form of personal connection and that the awarding of tenders at times involved payment of bribes to public officials by private companies (Corruption Watch, 2013).

The poor quality of housing provided by contractors has been another issue associated with public housing. Various media reports have reported on dilapidating housing developments which have been newly built and housing developments that have been left incomplete by contractors.

Phago (2010) identify some of the reasons that lead to the poor quality of housing delivered by contractors as:

- Lack of a conducive environment for the contractors to do business.
- Delayed payment of bills by the government to the contractors.
- Uncoordinated administrative processes within the national Department of Housing to reduce the waiting period on administrative matters.

- Lack of information and/or a complaint centre for the business sector in their contact with the national Department of Housing.
- Over reliance on the smaller contractors who are also facing difficulties in accessing finance.

The Department of Human Settlements (2004) reported a decline in the delivery of public housing due to the withdrawal of large construction groups from the state assisted sector due to low profit margins. This withdrawal has left capacity gaps in construction, project management, financial management and subsidy administration. The introduction of emerging contractors has not been able to fill these gaps due to insufficient delivery capacity, limited technical and administrative expertise and inadequate access to bridging finance.

Capacity deficiency exists in all spheres of government. However, its impact is mostly felt at local government level. The lack of capacity is threatening the ability of local government to deliver housing programs (Department of Human Settlements, 2004).

Regan (2012) identifies more faults with the government's use of the traditional procurement method, including time and cost overruns, poor user satisfaction levels and high transaction costs. The method is further described as being adversarial in nature and is associated with disputes of variations, changes in specification which could also lead to civil action.

2.5.3 Alternative Procurement Methods

The magnitude of the housing demand, cost and availability of suitable located land, and ever increasing construction costs pose a serious challenge to housing delivery in South Africa. The supply-side, state driven, approach of which includes fully subsidised housing is inefficient, puts tremendous strain on the public fiscus and is unlikely to be sustainable (Ngcuka, 2010 & Financial and Fiscal Commission, 2012) Many governments around the world have adopted an approach where the government collaborates with the private sector and acts as an enabler and facilitator of housing by providing incentives, legislation and institutional framework for private sector partnership rather than direct government involvement (Onyemaechi & Samy, 2016). The most common form of collaboration is public private partnership (PPP).

2.5.3.1 Public Private Partnerships (PPPs)

Regan, Smith & Love (2011) trace the origins of PPPs to the 1980 where many developed countries were faced with high state debt and deficits, stagflation, and low levels of economic growth. Governments responded by downsizing, privatizing government business enterprises, micro-economic reforms and outsourcing the delivery of public assets and services.

PPPs were developed from the build own transfer (BOT) procurement method, which was used in the 1980s as a financing vehicle in the resources industry (Regan, 2012).

The World Bank Group (WBG) defines a PPP as "a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance (World Bank, 2018).

The World Bank (2016) further elaborates on the description adding that “PPPs are a mechanism for government to procure and implement public infrastructure and/or services using the resources and expertise of the private sector. They combine the skills and resources of both the public and private sectors through sharing of risks and responsibilities which enables governments to benefit from the expertise of the private sector, and allows them to focus instead on policy, planning and regulation by delegating day-to-day operations.”

In South Africa, all PPPs for national and provincial government are governed by the Treasury Regulation 16 which is issued through the Public Finance Management Act, 1999 (PFMA) (Arimoro, 2018). This regulation sets out the standards to be met for it to be classified as a PPP and all institutions undertaking PPPs require approval from National Treasury (Arimoro, 2018). Under Treasury Regulation 16, a PPP is defined as:

> “a commercial transaction between an institution and a private party in terms of which the private party – (a) performs an institutional function on behalf of the institution; and/or (b) acquires the use of state property for

its own commercial purposes; and (c) assumes substantial financial, technical and operational risks in connection with the performance of the institutional function and/or use of state property; and (d) receives a benefit for performing the institutional function or from utilising the state property, either by way of: (i) consideration to be paid by the institution which derives from a revenue fund or, where the institution is a national government business enterprise or a provincial government business enterprise, from the revenues of such institution; or (ii) charges or fees to be collected by the private party from users or customers of a service provided to them; or (iii) a combination of such consideration and such charges or fees" (National Treasury, 2003).

All South African PPPs governed by Treasury Regulation 16 are subjected to three strict tests which are:

- "Whether or not there is substantial technical, operational and financial risk transferred to the private party?" (Ibid.)
- "Whether or not the institution can afford deal?" (Ibid.)
- "Whether or not it is a value-for-money solution?" (Ibid.)

The main models of PPP already in operation in South Africa are the design, finance and operate (DFO) model, the design, finance, build, operate and transfer (DFBOT) model, the design and transfer (DT) model, the build, operate and transfer (BOT) model, as well as equity partnerships (Fombad, 2013). According to Koppenjan (2008) the use of PPPs in implementing public infrastructural projects is expected to have the following benefits:

- Attracting private investment – Investment in infrastructure is expensive and public funds are too limited to realise all the requirements. By means of PPP, efforts are made to attract private money in order to enable investment in infrastructure.
- More value for money – Private companies are supposed to work more cost-consciously and efficiently than the public sector. Moreover, with PPP contracts various project components such as design, building, maintenance and realisation are contracted out jointly. Since private parties are able to coordinate

these phases, design optimisations are possible which lead to better quality and efficiency. Ultimately, the same project can thus be delivered for less money, or higher quality can be achieved.

- Promoting innovation – By involving private parties in public projects, expertise is tapped which governments themselves do not have at their disposal so that innovative solutions become possible.
- Better decision-making and project management – Private involvement is considered to improve the decision-making on infrastructure because it forces the government to clearly delimit and define the project beforehand.

There are different options for PPP and the options most common in literature are summarised in Table 2.4.

Table 2.4: Public Private Partnership Options

DBFT (Design, Build, Finance and Transfer)	In this system, the developer develops the structure using his own generated finance, after construction and a certain agreed period of ownership transfers the whole facility back to the government.
BOT (Build, Operate and Transfer):	This system allows the developer a use of the project for a certain period of time before transferring the project to the government
BOO (Build, Operate and Own):	In this format the ownership is not transferred.
DBFO (Design, Build, Finance and Operate):	In this system, the government owns the project but leases it to the consortium.
BRT (Build, Rent, and Transfer):	This system allows for the consortium to obtain payment from the government before the actual transfer of the project.
BOOST (Build, Own, Operate, Subsidize, and Transfer):	In this system, government provide incentives to users of the completed project in order to make it financially viable for the private consortium.
BTO (Build, Transfer, Own):	This variation relieves the consortium of the insurance cost for operation.
BOOT (Build, Own, Operate and Transfer):	Under this variation, the developer is allowed full unalloyed ownership of the completed structure for a specific period of time at the end of which he relinquishes his full right to the actual owner, while the building is still in completely functional state.
ROT (Renovate Operate and Transfer):	Under this variation, the developer renovates an a already existing building which he is henceforth permitted to operate so as to recoup his investment before transferring it back to the original owner This variant is relatively different from others in that the structure in question is already in existence as against other variants in which the structure is developed by the developer.

BLT (Build, Lease and Transfer):	Under this variation, the developing firm or consortium is allowed to lease out the completed facility out and recoup her money before transferring the completed facility to the owner at an agreed time.
IM/IS (Investment Management and Investment Services):	This variation allows a development firm to complete the construction of the facility while independent investment management firm manages the facility on behalf of both parties for the period of occupancy by the developer for the purpose of recouping the capital invested by the developer and for ensuring that the facility is in good standing by the time of handing over to the owner of the lease.

Source: Adapted from Babatunde, Opawole, & Ujaddughe (2010).

National Treasury (2018) provides a list of 33 PPP projects that have been undertaken since the inception of PPPs in South Africa in 1998. These projects include healthcare facilities, transport and roads, sanitation, tourism and office accommodation projects. National Treasury (2018) also provides a list of PPP projects under review which include the extension of the Gautrain Rapid Rail network, redeveloping six border posts, constructing offices for seven Eastern Cape departments and installing rooftop solar panels on government buildings in Gauteng.

Though pronouncements by senior government officials including the Premier of Gauteng on the HSMP being PPPs, it is worth noting that these projects are not included in National Treasury’s list of PPP projects under execution or in the pipeline. It is also worth noting that no housing projects are listed on both of these lists. This indicates that the Gauteng HSMP are not being implemented as PPPs.

2.5.3.2 PPPs in Housing Projects

Ardoneau (2018) and World Bank (2020) define PPP projects in the housing sector as a partnership between the public and private sector, where the public sector party commonly contributes land and its associated services and amenities, development rights and in some instances a portion of the funding and incentives such as taxation relief. The private sector party often undertakes to provide finance, feasibility study, design, construct, commercialise, operation and maintenance of the completed project.

The World Bank (2020) notes that affordable housing PPPs have mostly been implemented in developed countries and their implementation in developing countries is fairly new. The World Bank (2020) further makes a distinction between Affordable Housing PPP and Large Scale Infrastructure PPP and further suggests that Housing PPPs are more complex to deliver due to the fact that housing does not only comprise of dwelling, but also infrastructure such as water, electricity, roads, stormwater, sewage and other amenities such as schools, healthcare facilities, parks, etc.

The World Bank (2020) further notes that affordable housing PPP are attractive in that they allow the public sector to secure assets and services from the private sector more efficiently at a lower cost, at better quality and at a lower risk. However, when they have been used in developing countries, they have encountered challenges. These challenges include legal and financial institutions and systems are not mature enough to facilitate implementation, some PPPs have ended up relying heavily on government subsidies or guarantees and land thereby making it questionable if the private partner has taken its fair share of risk and the value for money proposition of the partnership World Bank (2020).

Ardonceau (2018) attributes many of the challenges with housing PPPs to insufficient preparation before implementation, which is caused by the urgency by which many governments sought to use PPP in order to reduce housing backlogs. Other challenges identified by Ardonceau (2018) include:

- The lack of national policy to guide PPP implementation in the housing sector
- The need for government to provide land for development
- Insufficient bulk infrastructure and services to support new housing developments
- Corruption
- Delays in decision making
- Inadequate private partner selection processes
- Inadequate private partner vetting
- Inability of government institutions to meet contractual obligations
- Slow delivery or non-delivery of project
- Poor quality of constructed houses

The World Bank (2020) therefore asserts that housing PPPs cannot be a panacea to resolve housing shortages in emerging countries, but rather, that it is important for governments to improve housing sector fundamentals, strengthen housing sector institutions and removing policy, legal/regulatory and administrative constraints that inhibit private sector investment. The World Bank (2020) advocates for government to play an enabling role by not being the direct provider of housing, but rather focus on providing policy instruments that facilitate the private sector to deliver housing.

This is corroborated by Ngcukana (2010) who also states that, while PPP are not the only solution for the delivery of affordable housing, they can play a significant role in reducing the backlog and insuring the maintenance of housing stock after it is handed over to occupants, without further burdening the fiscus. In order to ensure that the private sector plays a role in the delivery of affordable housing, Ngcukana (2010) further recommends that government adopts policies that deal with the following issues:

- Funding – a funding mechanism in the form of a guaranteed government subsidy that would allow developers to repay project debt
- Risk management tool – the risk associated with not being able to collect rent from occupants has a negative impact on sustaining financial viability affordable housing
- Standardised units – the standardisation of housing units and quality requirements allows for economies of scale and therefore development costs savings.

Globally, the low income and affordable housing market is less penetrated by private developers as it is considered to be less profitable and is riddled with numerous challenges and bureaucracy (Ganiyu, 2016). However, Klug, Rubin, & Todes (2013) note an increase in the number of developments, where private developers construct a mixed-income housing developments, in South Africa, that includes a combination of fully subsidised low-income housing, rental housing, housing for the ‘gap’ market and affordable housing for the gap market. In this model, the developer is firstly, able to control the entire value chain by owning the land, using in-house services for planning, designing, construction and marketing. Secondly, the developer is able to obtain government subsidies to finance the construction of low income and social housing. Thirdly, the developer works in partnership with the municipality and signs a co-developer's agreement thereby reducing risk and enabling the developer to avoid cash-flow problems ensuring uninterrupted housing roll-out (Klug, Rubin, & Todes, 2013).

Klug et al. (2013) further note that private developers seem to be able to make significant returns on investment on these types of housing schemes with some developers reporting an overall 25-30 % return on investment. However, Klug et al. (2013) caution that the state continues to pay a premium in order to achieve its housing targets through these types of housing projects.

2.5.4 Development Financing

The development of housing in South Africa is funded through state funding and private finance. The housing provided in HSMP developments is designed to cater for low-, middle- and upper-income households and it is thus necessary to present the financing mechanisms used to fund different housing units found in these developments.

2.5.4.1 Private funding Instruments

Private sector financing is available both on the supply side in the form of development financing. The following is a list of some of the major financing mechanisms available to private property developers for the development of affordable housing:

- Lenders operating in the affordable market – in part as a consequence of the Financial Sector Charter, including: ABSA Bank, Nedbank, Standard Bank, First National Bank.
- The Trust for Urban Housing Finance (TUHF) - which provides commercial property financing that finances property investors exclusively in inner cities (TUHF, 2021).
- International Housing Solutions (IHS) - which is a real estate fund manager focused on the development and management of affordable housing communities (IHS Investments, 2017).
- The Gauteng Partnership Fund (GPF) - which functions as an implementing

agent of the HSMP and uses public sector funding to leverage additional funding and facilitate capital flows into integrated, sustainable human settlements through the formation of strategic partnerships with local and international donors, development finance institutions and private sector partners (GPF, 2021).

- The Housing Impact Fund for South Africa (HIFSA) - which provides commercially viable investments into the low income housing sector (Selcourt estate, 2021).
- SA Home Loans (SAHL) Development Finance – which provides development finance through the South African Housing Development Fund (SAHDF), which is a dedicated affordable housing development fund backed by the Government Employees Pension Fund (GEPF) and the Public Investment Corporation (PIC) (SA Homeloans, 2021).

On the end user side funding is provided by banks and other financial institutions in the form of mortgage loans, pension backed loans and housing micro loans for upper- and middle-income households. According to the Financial and Fiscal Commission (2013) households earning more than R15 000 per month accounts for over 80 percent of the private housing mortgage finance granted by banks with the remainder going to households earning between R 7 500 and R 15 000. This suggests that mortgage finance to households that earn below R7 500 per month is virtually non-existent. The households in this group are typically referred to as the “gap market”. These are households that do not qualify for government subsidised housing and cannot afford bonded homes (Jarbandhan, Viljoen, De Beer & Blaauw, 2016).

To address the “gap market” the government introduced the Finance Linked Individual Subsidy Programme (FLISP) in 2005. This programme initially provided a subsidy to households earning between R3501 and 7 000. This threshold was increased to R 15 000 in 2012 (Helsby, 2013).

Helsby (2013) postulates that the subsidised market is less risky than the “gap market” as developers in the subsidised market are assured to receive payment of the subsidy grant once units are complete and beneficiaries are allocated there is always 100 percent uptake of housing units in the market. On the other hand, payment is not always guaranteed in the “gap market” as developers first have to sell the housing before payment is received (Helsby, 2013).

2.5.4.2 State Funded Housing Instruments

The Human Settlements Development Grant (HSDG) is the one of the main sources of capital for funding subsidised housing delivery, in particular funding for the creation of sustainable and integrated human settlements Financial and Fiscal Commission (FFC, 2013).

The grant is transferred to all provinces, thus, provinces are responsible for managing, implementing and transferring the grant to municipalities (FFC, 2013). The amount of HSDG allocated to provinces has increased from just under 5 billion in 2002 to R20 billion in 2016 (FFC, 2013). Despite the growth in the amount allocated, there is a noticeable number of housing units delivered as depicted on Figure 2.4, which indicates that since 2005 the HSDG amount allocated has been increasing year on year, but the output of housing units delivered started to decline from 2006 indicating diminishing returns (FFC, 2013). This decline in the delivery of housing, whilst budgetary allocations rise, is also reported in the GDHS Annual Report for the 2017/18 financial year. This trend points to a sign of unsustainable housing delivery by government.

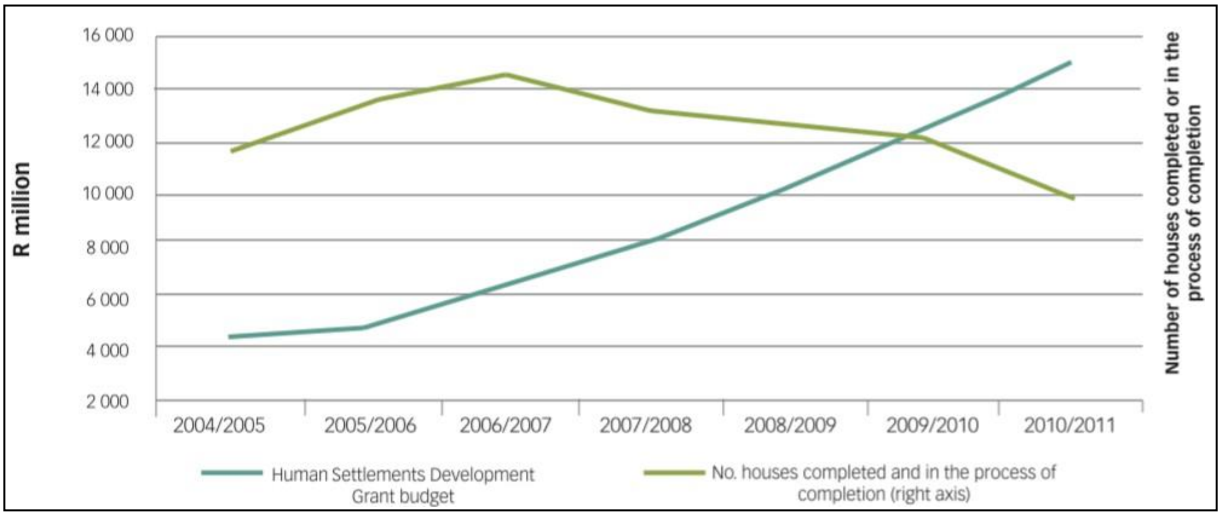

Figure 2.4: Diminishing Housing Outputs versus Rising Expenditure
Source: FFC (2013)

The HSDG is complemented by other grants that focus on the provision of bulk infrastructure including roads, sanitation, water, electricity and public transport (FFC, 2013). The two main infrastructure grants are:

- The Urban Settlements Development Grant (USDG) which supports the development of infrastructure and public services and the purchase of land for metropolitan municipalities.
- The Rural Households Infrastructure Grant (RHIG) which funds rural infrastructure.

The FFC (2013) reports that since their inception, spending performance of both the USDG and the RHIG has been poor with total expenditure for the 2011/12 financial year at 72 percent for the RHIG and 44 percent for the USDG.

Gardner & Graham (2018) attribute the declining delivery of subsidised housing to capacity constraints in municipalities, project planning and implementation delays due to a shift in focus to catalytic projects or mega-projects, increasing discrepancies between subsidy quantums and the actual construction costs of subsidised housing. These subsidy quantums have not been increased since 2013/14. Table 2.5 is adapted from Gardner, Lockwood & Pienaar (2019) and illustrates the differences between the subsidy quantums and the actual construction costs for each subsidised housing type. Gardner, et al. (2019) further highlight that inflation between 2013 and 2017 has added 25 percent to costs and that building cost inflation has increased by 42 percent over the same period. Subsidy quantums remaining unchanged, has a negative effect on the profitability of these projects to developers, which has also led to many developers leaving this sector. However, studies by Ngcuka (2010), FFC (2012) and Ganiyu, Fapohunda & Haldenwang (2017) raise concerns about the sustainability of financing affordable housing through government subsidiesdue to the ever-increasing construction cost and the shrinking fiscus. An analysis by the FFC (2012) found that in order to all households in need with fully subsidised formal housing at current standards would cost an estimated R641 billion of government funds. This is not sustainable with the South African economy remainingstagnant and revenues decreasing.

Table 2.5: Subsidy Quantums vs Construction Costs of Subsidised Housing

	BNG Free Standing		BNG Walkup		CRU		Social Housing Low Rise		Social housing Hi Rise	
	Total Cost	**Total Subsidy**	**Total Cost**	**Total Subsidy**	**Total Cost**	**Total Subsidy**	**Total Cost**	**Total Subsidy**	**Total Cost**	**Total Subsidy**
Land Costs	R6 614	R7 042	R6 614	R7 042	R2 267	R2 267	R26 875	R24 250	R34 400	R31 040
Infrastructure Costs	R101 833	R101 833	R85 470	R90 914	R34 667	R34 668	R104 001	R69 708	R77 109	R49 493
Compliance Costs	R23 141	R14 813	28 889	16 012	R17 796	R17 796	R58 943	R32 418	R89 946	R39 577
Construction Cost	R146 639	R108 513	167 507	126 272	R73 524	R73 524	R252 519	R144 189	R347 170	R154 346
Other Development Costs	R0	R0	R0	R0	R0	R0	R11 997	R6 598	R13 817	R6 598
Development Overhead	R15 302	R0	R15 866	R0	R7 067	R7 067	R25 028	R9 433	R31 078	R12 636
Value Added Tax	R42 962	R0	R44 571	R0	R19 954	R19 954	R67 846	R37 315	R31 078	R37 011
Total Cost	**R336 492**	**R232 201**	**R348 918**	**R240 240**	**R155 275**	**R155 555**	**R 547 209**	**R323 911**	**R677 638**	**R330 701**

Source: Adapted from Gardner, Lockwood & Pienaar (2019)

The study by FCC (2012) proposes more involvement of the private sector and self-help solutions to housing. FFC (2012) found that if the standards of the subsidised housing provided by the state is reduced to a serviced site and private sector participation is increased, then the cost to government drops to one third of the cost.

Iwegbuna (2019) proposes that the construction costs for developing affordable housing can be reduced by the use of innovative construction technology. This has the potential of increasing the scale of affordable housing delivery and maximising developers' profits. The innovative construction technologies identified by Iwegbuna (2019:239) are:

- Cast in Situ' housing units
- Load-bearing steel frame units
- Terra block tabricator
- Moladi cast in place reinforced monolithic structures
- Pinnacle concrete
- Speedwall building systemGreen technology

Kihato (2012) also propose the use of technological alternatives to reduce the costs of housing provision, but for the housing infrastructure. The alternatives proposed by Kihato (2012) include the use of solar energy as an alternative to electricity and the recycling of waste water using localized treatment plants.

2.6 Challenges with Mega projects

This section, firstly, defines mega project challenges, and secondly, provides a brief description of challenges encountered with housing mega projects.

2.6.1 Definition of Challenges with Mega projects

A successfully implemented megaproject is typically defined as one that is delivered on schedule, within budget, meets the promised objectives and benefits. Studies of construction projects around the world have revealed that the success rate of mega projects is less than the success rate of smaller projects (Charrett & Loots, 2018). This underperformance in mega projects was described by Flyvbjerg (2014) as a "mega projects paradox". On the one hand of the paradox, mega projects are in demand as the delivery model for public and private infrastructure around the world. However, on the other hand, performance of mega projects is strikingly poor for the period for which comparable data is available.

This under performance is evident in mega projects implemented in recent history in South Africa which include the Gauteng Freeway Improvement Project (GFIP), the Medupi and Khusile Power Stations and the Gautrain Ripid Rail Link. All of which suffered from chronic cost overruns, schedule delays and benefit shortfalls.

Flyvbjerg, (2014), identify ten challenges that characterise mega projects which include:

- Mega projects are high risk due to the long planning and implementation durations and complex scope
- They are often led by inexperienced planners and managers who continuously change throughout the long duration of the project
- The stakeholders involved in decision making, planning and management often have conflicting interests
- The designs and technology involved is often non-standard which impedes lessons learned from other projects.
- There is frequently an over commitment to a certain project concept at an early stage leading to an absence of analysis of alternative concepts

- Due to the large sums evolved, projects tend to suffer for cronyism, rent seeking and optimism bias.
- Significant changes to scope
- They suffer from extreme unplanned events with massively negative outcomes
- Unplanned events are often unaccounted for, leaving budget and time contingencies inadequate
- Misinformation about costs, schedules, benefits, and risks is the norm throughout project development and decision-making.

The above ultimately result in cost overruns, delays, and benefit shortfalls that undermine project viability. Hannan & Sutherland (2015) further add that megaprojects are also characterised by high risk; lack of accountability, transparency and stakeholder participation and negative and environmental and social impacts.

Developing countries tend to suffer from additional in the execution of mega projects to developed countries. To this end, Othman & Ahmed (2013) sought to identify, validate and classify the challenges experienced in the delivery of mega projects in developing countries. This study identified and classified the key challenges into four categories: engineering challenges; human development challenges; managerial and political challenges and sustainability challenges. These can be summarised as follows:

- Engineering Challenges – these include design and technical challenges caused by lack of professional expertise; shortage of understanding of scientific and technical requirements and lack stakeholder consultation during the decision making process.
- Human development challenges – these include shortage of skilled labour on delivering mega projects in developing countries and inexperienced and unreliable contractors.
- Managerial and Political Challenges – these include lack of vision by a countries leadership; lack of political support bureaucracy and corrupt practices.
- Sustainability Challenges – these include lack of consideration of environmental requirements, preserving historical sites, and natural reserves.

A study by Babatunde, Perera, Udeaja, & Zhou (2014) which set out to identify the challenges and the critical success factors at both development phase and implementation phase of PPP megaprojects in Nigeria found that: perceptions that Nigeria is a high-risk economy by foreign investors; the highly bureaucratic state government; schedule delays caused by administrative procedures; threat of expropriation; reluctance to tender/bid and public/political opposition were the most highly ranked challenges experienced on megaprojects at development phase. The study further found that the highly ranked challenges experienced during the implementation phase of megaprojects to be: unexpected increased quantities; bottleneck in securing execution of the federal government support agreements; resistance by residents and problem of access to the right-of-way.

In the South African context, Khatleli (2016) identified the key challenges with the implementation of mega projects in South Africa as being the rushed implementation of these projects which leads project management difficulties due to of little time being given to proper planning for the public participation process and the shortage of technical expertise in the organisations that undertake mega projects. The preceding section presents literature on the challenges associated specifically with housing mega projects.

2.6.2 Challenges with Housing Mega Projects

In a paper that seeks to provide critical and constructive assessment of mega projects versus urban consolidation methods of delivering housing in Gauteng, Turok (2016) argues that firstly, mega projects are not a “quick-fix” solution for the institutional weakness that exist in the country at present. Secondly, the location of the mega projects will pose a fundamental challenge. As most of the mega projects proposed for Gauteng are situated in the urban periphery and thus there is a serious danger that most of these mega settlements will remain as predominantly residential areasisolated from economic opportunities for decades. An example of this is the Cosmo City development where it took almost a decade for supermarkets, petrol stations andother formal retail outlets to open.

The relationship between the Gauteng housing mega projects, the unemployment population and the distribution of existing businesses is illustrated by Figure 2.5. This figure reveals that these mega projects are firstly, in close proximity to populations of unemployed, and secondly, that they are located far from existing concentrations of businesses (GCRO, 2015). It is thus imperative that these mega projects are developed with economic amenities which will be able to generate economic activity internally, if they fail to do so the risk is that these projectswill exacerbate urban sprawl placing the poor further away from employment opportunities.

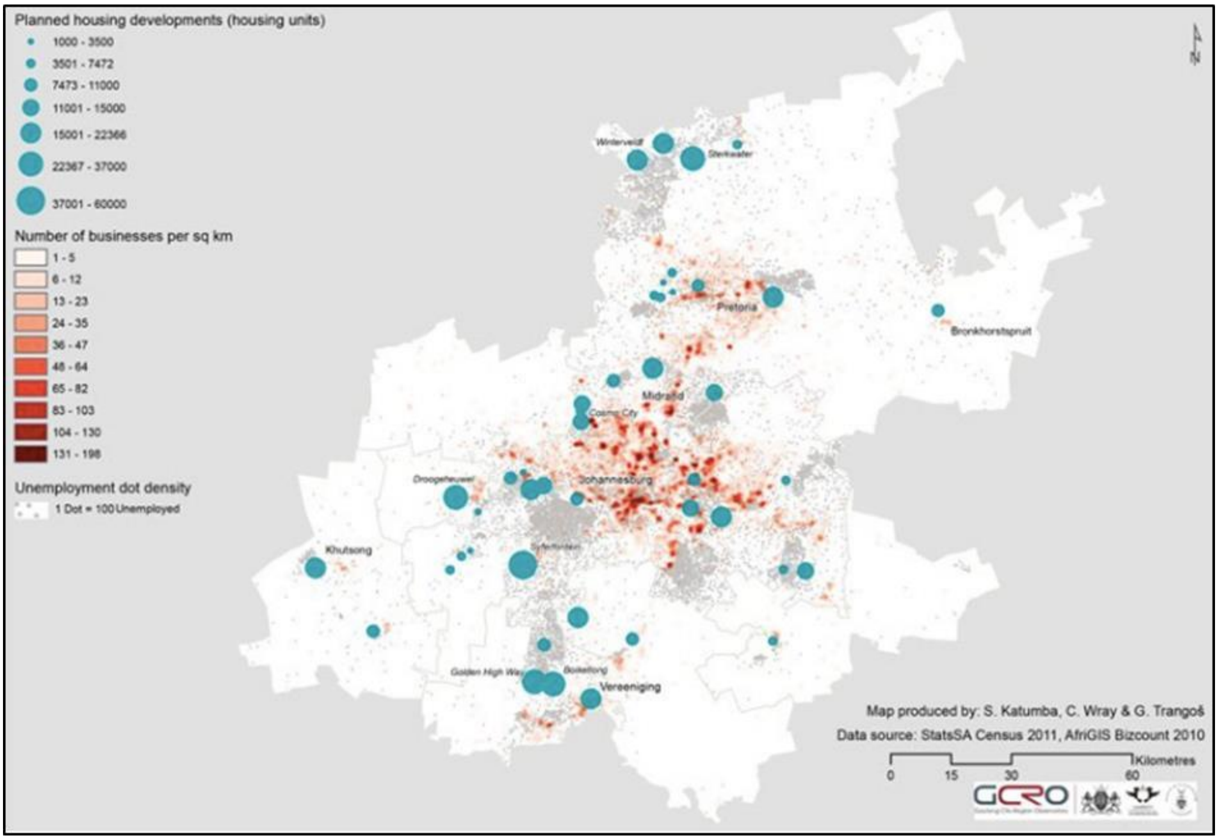

Figure 2.5: Location of Gauteng HSMP in relation to areas of high unemployment
Source: Gauteng City-Region Observatory (GCRO) (2015)

Turok (2016) further argues that another challenge would be that the public sector will struggle to borrow the capital required to invest in additional bulk infrstructure. This will cause project delays and/or encourage the diversion of resources away from core urban areas, which need renewal and reinvestment.

A case study by Charlton (2017) on the Lurfhereng housing mega project development in the City of Johannesburg - which at the time of this study was under construction and is projected to accommodate at least 22 500 households by 2023 - collaborates

Turok's argument. The development is situated on the outer edge of developed areas in an area with minimal current economic activity and limited infrastructure. Charlton (2017) also collaborates Turok's argument around bulk infrastructure in that the development of the Lurfhereng project experienced delays due to bulk service delays and geotechnical difficulties. Charlton (2018) further describes how the number of housing units projected to be yielded by the project has decreased considerably from the initial estimates of 26 000 housing units to now being under 20 000. This indicates the common trend of overstating of benefits during initiation stages of mega projects.

According to Harrison & Todes (2017), new towns developed by both the public and private sector are very costly enterprises with uncertain outcomes and although there are successful examples, many new town programmes have struggled to attract the targeted population and economic activity or to maintain these over time.

This is collaborated by, Harrison, Todes, Huchzemeyer & Charlton (2019), who note that new town developments are faced with a demographic threat as they are often located on the periphery of cities, where greenfield conditions allow for developers to bypass the complexities of the existing city and where land prices are generally cheaper. This results in a reluctance from people to occupy them as many people still aspire to be in the heart of the city where services are well established. This is demonstrated by the uninhabited "ghost" cities in China that have been abandoned after years of construction. The number of "ghost cities'' in China is estimated to be as high as 50 municipalities, with the number of empty apartment properties estimated to be as high as 50 million (Ishak, 2019).

Ishak (2019) attributes the Chinese "ghost cities" to the overzealousness of its government, which, on the back of rapid economic growth, rushed to urbanize massive rural areas. These developments were backed by massive capital, which was largely funded by the county's ballooning debt and experts predict that it is a matter of time before it bursts (Ishak, 2019).

In light of the above, one cannot help, but wonder if the housing mega projects currently being developed in the periphery of major cities in Gauteng will not suffer the same fate and remain unoccupied “ghost cities”.

South African Cities Network (SACN) (2016) cautions that South Africa cannot afford to build “ghost cities or towns and that new town or city approach presents substantial risk and should be considered cautiously within the South African context. Citing the example of new towns of Stilfonteing, Sasolburg and Welkom, which were founded on the backdrop of mining and related industries, SACN (2016) note that the subsequent decline in mining in these areas, these towns have failed to generate alternative economic drivers and have required significant support from the state. SACN (2016) questions whether new towns and cities by being implemented speedily by circumventing government regulations opens up the development model to corruption. SACN (2016) advocates for striking of a balance between meeting the housing needs of the poor and insuring that HSMPs have the necessary economic amenities that are business generating and job creating. These further ensure rates and tariffs are paid to local governments thust developments remained serviced and maintained.

Research by Juta et al. (2014), which analysed the challenges of community participation on the N2 Gateway Housing Project in the Western Cape, highlights the following short comings as presented in the Auditor General Report (2009):

- Government did not create and maintain meaningful records of the project
- Memorandum of understanding that was signed by all three spheres of government to define roles and responsibilities did not clearly define the individual roles
- The business plan had not been finalised and approved before construction began
- Necessary legislation and policies were not applied when construction began
- Identification and securing of sufficient funds was not finalised prior to construction
- Detailed geotechnical surveys were not completed prior to the start of the project
- The selection of beneficiaries was not finalised before construction began
- The time frame for completion of the project was not realistic
- Affordable housing was not provided for the identified target market

- Funding arrangements for the project were not finalised and secured before the project was started.

Research by Mzolo (2016), who set out to evaluate the implementation process of Phase 1A of the Cornubia Housing Programme and to record the corrective measures taken to ensure the successful completion of the project, identified the following challenges:

- Deviations from the original plan as a result of the six-year gap between the conceptualisation phase and the implementation phase. The Cornubia Housing Programme was conceptualised in 2004 and the implementation process commenced on 28 July 2010 and was finalised in March 2014.
- Delays in the completion of the housing programme because the land on which the housing units were to be built was in a poor topographic and geo-technical condition. The poor topographic and geo-technical condition was due to the conversion of agricultural land that had been used to plant sugarcane into a site for building houses. The eThekwini Municipality was compelled to spend an additional R15 million to rehabilitate the land to increase its suitability for building.
- Delays in the completion of the housing programme owing to disagreements over the re-alignment of roads which stakeholders previously thought would link to the N2 freeway. These delays resulted in the escalation of operational costs of the housing programme from an initial budget of R43 million to R59 million.

2.7 Chapter Summary

South Africa has a housing challenge, which is well documented. Numerous initiatives have been initiated by the government to address the housing shortage. A review of literature revealed the growing trend of the use of mega projects by governments to provide social infrastructure. The literature review further revealed that implementation of mega projects is associated with numerous challenges. The literature also revealed that the implementation of housing mega projects in South Africa comes with its own unique challenges. This warrants an investigation into these challenges in order to determine factors to mitigate against these challenges to insure the successful implementation of future project.

Chapter 3: Research Design

3.1 Introduction

This section will discuss the research design for this research. This section will also discuss aspects of validity and reliability and the ethical considerations that were adhered when the research was conducted.

3.2 Research Philosophy

The first layer of the research onion deals with the research philosophy. The Interpretivist research philosophy was used for this study. According to Lincoln and Guba (1985), cited in Decrop (2006), interpretivism is often assimilated with naturalistic enquiry as it strives to understand naturally occurring phenomena in their naturally occurring states. The participants in this study were chosen as they are currently actively involved in the mega projects and were able to provide credible insight that assisted in addressing the research problem. Crewell & Cresswell (2017) are of the view that interpretivist research relies on the participants' views of the situation being studied and that the researcher's intent is to interpret the meanings of these views.

The qualitative research design was used to gather the empirical data. According to Miles & Huberman (1994), qualitative research is often used to explore a new area and to build or emerge a theory about it. However, it may also be used to confirm or test an existing theory. Drawing from the literature reviewed, similar studies conducted by previous researchers have been qualitative in nature. Examples include research conducted by Mzolo (2016), which sought to evaluate the implementation process of the Cornubia Housing Programme (Phase 1A) in the eThekwini Municipality. Mzolo (2016) adopted qualitative research using a case study and conducted interviews with representatives from the eThekwini Municipality, Department of Human Settlements and the private developer. Similar research by Jimoh, Emmanuel, & Paul (2015) and Ibem (2011) employed quantitative research, as well as survey research instruments to evaluate beneficiary perceptions of housing developments. This study will, however, not investigate beneficiary perceptions as the subject projects were still under construction at the time the research was conducted.

Figure 3.1 is a representation of the research "onion" as illustrated by Saunders, Lewis and Thornhill (2009) which has been used to assist in influencing the research design for this study by applying the following layers of the onion: philosophy; approach; strategy; choices; time horizons and techniques.

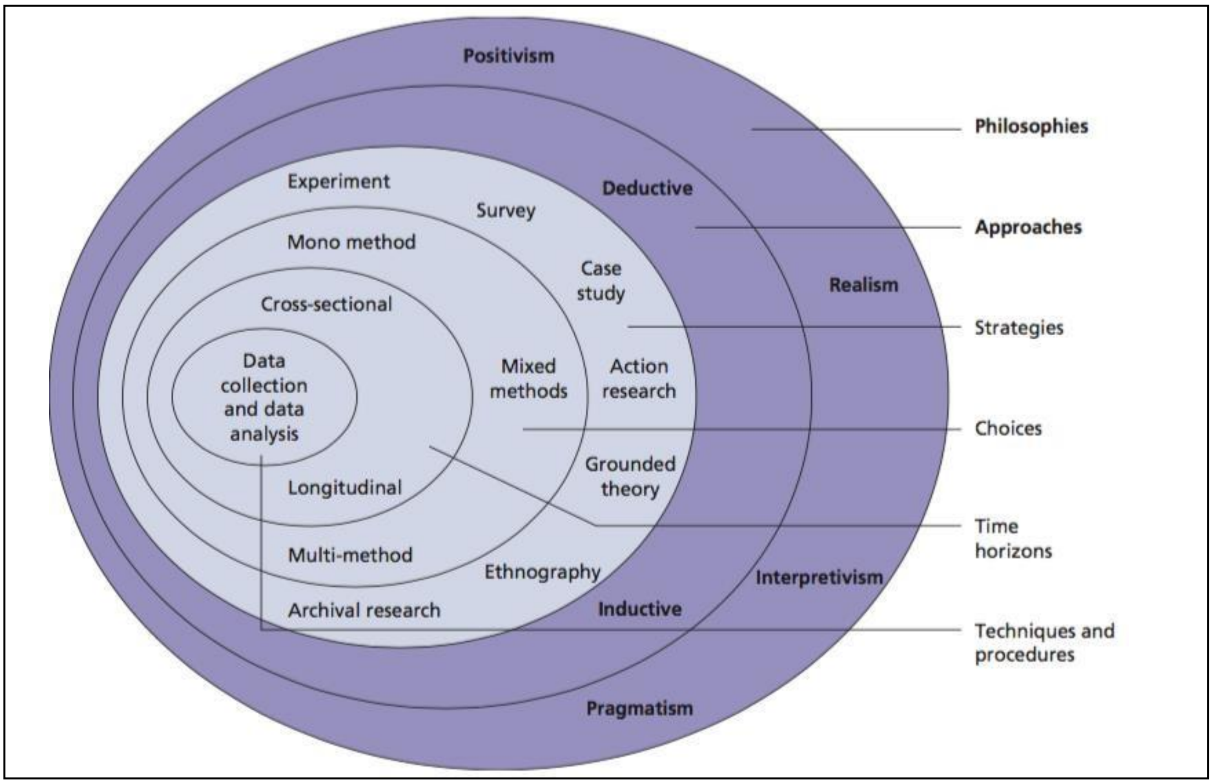

Figure 3.1: Research Onion

Source: Saunders, Lewis & Thornhill (2009)

3.3 Research Approach

The inductive approach was used in this research. Strauss & Corbin (1998) describes the inductive approach as one where "the researcher begins with an area of study and allows the theory to emerge from the data". Thomas (2006) further elaborates that this approach primarily uses raw data to derive concepts, themes, or a model through interpretations made from the raw data by the researcher. The inductive approach differs from the deductive approach, which sets out to test whether data collected is consistent with prior assumptions, theories, or hypotheses constructed by the investigator (Thomas, 2006). The outcome of an inductive analysis is the development of categories into a model or framework that summarizes the raw data and conveys key themes and processes (Thomas, 2006).

Saunders, et al. (2009) postulates that the inductive approach is commonly associated with the interpretivist philosophy and involves the formulation of research questions, aims and objectives that need to be achieved during the research process. The research problem for this research was addressed by using the research questions and objectives identified in Chapter One to formulate questions for the research instrument.

3.4 Methodological Choice

The methodological choice refers to the data collection techniques and data analysis procedures that were used to answer the research questions (Sanders et al., 2009). The data collected and analysed for this study was non-numerical data and thus this study was qualitative in nature. This can be described as mono method qualitative since a single qualitative data collection technique (semi-structured interviews) and a single qualitative data analysis procedure (content analysis and cross case synthesis) were used to answer research questions.

3.5 Time Horizon

The time horizon for the research was cross-sectional and took place at a specific point in time due to the limited time frame available for the researcher to undertake the study. The study took place during the construction period of the subject projects and thus will focus on their implementation.

3.6 Data Collection

Data for the research was obtained from primary and secondary sources. The primary data was collected using semi-structured interviews. A list of questions were administered to the interview participants, one set to the government and local municipality representatives and another set to the private developers involved in the projects. This list of questions consisted of open-ended questions intended to obtain views and opinions from the participants. Harrell & Bradley (2009) confer that semi-structured interviews are oftenutilised when the researcher seeks to probe intensely into a topic and to thoroughly understand the responses provided by the participants. Newcomer, Hatry & Wholey (2015) highlight the use of semi-structured interviews when examining uncharted territory with unknown issues and when conducting formative program evaluation using one-on-one interviews with key program managers and service providers.

The secondary data was collected through the review of relevant literature from both published journals, conference papers, official reports, textbooks, newspaper articles, and official reports.

3.7 Population and Sampling

The population for this study was based on the 31 housing mega projects that have been earmarked for the Gauteng Province. A purposive sampling plan was used in the research. Purposive sampling forms part of the non-probabilistic sampling methods. With purposive sampling the researcher chooses the sample based on whothey think would be appropriate for the study (Saunders et al., 2009). The original sample for this research was three mega projects from the population of 31 projects. The three projects were purposively selected based on their implementation status as per information provided on the GPF's annual report for the period 2017/2018. This report indicated that three projects had commenced with construction activities as of the 2018 financial year end.

The interview participants identified for the semi-structured interviews were selected based on their direct involvement in the execution of HSMP in Gauteng and included.

- Private developers responsible for the execution of the HSMP
- Senior representatives from the project management of the Gauteng Department of Human Settlements (GDHS)
- Senior representatives from the Gauteng Partnership Fund (GPF), which is the implementing agent for the HSMP in Gauteng.

The study excluded beneficiaries since the projects were still under construction. Similarly, purposive sampling was previously used in the study by Kavishe & Chileshe (2019) which involved public and private sector respondents or stakeholders involved in PPP affordable housing projects.

3.8 Data Analysis

The secondary and primary data collected to address the research objectives of this study was qualitative and was analysed using content analysis. Busch, De Maret, Flynn, Kellum, Le, Meyers & Palmquist, (2012) define content analysis as a research instrument that is employed to determine the existence of certain words or concepts within a research study from the collecteddata. For a content analysis to be conducted, the collected data was coded into categories. Coding condenses the collected data into readily analysable units. This data is then assembled into groups of data that go together and allows for the retrievalof the most meaningful material (Huberman, Miles & Saldana, 2014).

3.9 Aspects of Validity and Reliability

Validity in the research process broadly refers to accuracy and truthfulness of findings. A valid study should demonstrate what actually exists and in terms of the research instrument, validity is the ability of an instrument to measure what it was supposed to measure (Brink 1993). Reliability in research, on the other hand, refers to consistency and stability of findings when they are tested repeatedly using the same of comparable methods (Brink 1993). In relation to the research instruments, if the instrument is consistent and stable or predictable and accurate, it is deemed to be reliable (Kumar, 2018). The methods used to ensure the validity of this study and its research instruments included:

- Establishing and justifying a logical relation between the research questions and the research objectives of the study
- Triangulating of various data sources by converging the literature reviewed from journals, government reports and media sources with the perspectives of the interview participants.

The following methods were implemented to ensure the reliability of this study and its research instruments.

- Detailing the research method procedures undertaken to ensure that other can follow the procedures when undertaking similar research in the future.
- Making of voice recordings of the research interviews, where permission was granted by the participant, to improve the accuracy of the transcripts.

- Checking of the transcripts in order to detect any errors made during transcription.

3.10 Ethical Considerations

Saunders (2009) describes research ethics as being related to questions of how the research topic is formulated; how the research is designed, how data is accessed, collected, processed, analysed and stored and the reporting of findings in a moral andresponsible manner. This research was conducted in accordance with the Wits University Ethics Policy and Code of Ethics. The following ethical considerations wereadhered to during the conducting of the research.

- A request for clearance and an introduction letter from the University was obtained prior to any field research being performed.
- Prospective participants to the research were contacted and informed of the purpose of the study and they were requested to indicate their willingness to participate in the interviews
- Participants were requested to provide formal consent for their interview responses to be utilised in the study.
- Participants were assured that participation in the research was voluntary and were granted freedom to withdraw at any time during the research.
- During the interviews, the researcher avoided asking leading questions or proving his own personal opinions during the interviews
- The researcher ensured the anonymity of participants by assigning aliases to each participant
- The researcher endeavored to report all responses honestly, objectively and without bias.
- The researcher avoided plagiarising work by other authors by ensuring that all extracts cited from other authors was correctly referenced.

Chapter 4: Data Collection and Analysis

4.1 Introduction

This chapter presents the analysis of the data collected through interviews conducted, as described in Chapter Three. The chapter begins with an overview of the data collection methods and a description of the respondents to the interviews. This is followed by a summary of the responses obtained from the interview respondents for each interview question. Data Collection Overview

Semi-structured interviews were conducted in order to obtain the primary data. Two sets of predetermined interview questions were prepared. One set of interview questions wasprepared for the GPF and GDHS officials and another set of interview questions was prepared specifically for the developers involved in the HSMPs.

An invitation to participate in the research was extended to a senior official in the planning department and another in the project management department within the GDHS. Another invitation was extended to a senior official from the GPF involved in the implementation of HSMPs. All three of these officials availed themselves for the interviews.

Invitations to participate in the research were also sent to the CEOs of the three property development companies currently implementing the three mega projects identified in Chapter Three. From these three property development companies approached, the CEO from only one company was willing toparticipate in the research interview. To ensure the validity of the research, the researcher approached two additional property development companies, which were not identified in the initial sample of projects. The CEO of only one of these companies was willing to participate in the research interview.

Thus the CEOs from two private sector property development companies, two senior officials from the GDHS and one senior official from the GPF participated in the interviews making it a total of five respondents that were interviewed. These respondents all requested for their responses to remain anonymous in the studyand thus each respondent has been assigned an alias to protect their identities as shown in Table 4.1. Table 4.2 further provides details of the housing mega projects selected for this study. Figure 4.1 is a site plan of the Dan Tloome Mega Project provided for context. The interviews were all conducted over a one-month period in December 2020. Four of the interviews were conducted using virtual meeting software and one interview was conducted "face-to-face" with the participant. The duration for the interviews was between 40-60 minutes.

Table 4.1: Interview Respondents' Aliases

Organisation	Position	Respondent Alias
GDHS	Senior official from Strategic Planning Unit	Respondent 1
GPF	Senior Official involved in Implementation of HSMP	Respondent 2
GDHS	Senior Official from Program Management Unit	Respondent 3
HSMP 1	Development Company 1 CEO	Respondent 4
HSMP 2	Development Company 2 CEO	Respondent 5

Table 4.2: Details of HSMPs selected for the study

Project	Location	Municipality	Number of Houses	Amenities
Affri-Village Mega City	Randfontein	West Rand District Municipality	10 397 units	Shopping centre, 4 Business Facility Sites, 4 Crèches, 2 Primary School and 1 Secondary School, Municipal Office Centre
Dan Tloome Mega Project	Randfontein	West Rand District Municipality	22 110 units	Student accommodation, shopping malls, Industrial Park - Light Industrial and Warehousing; Rental Storage units; 13 Schools – 10 primary and 3 high schools; Various Community Facilities and Centres; Hospital, Churches, Libraries; Government amenities and facilities - Home Affairs, Licensing Department, etc.; Various and a number different Playgrounds and sports fields; 2 x Filling Stations; Over 20Ha of Urban Farming and food production; Solar Farm

Source: GPF (2015)

Table 4.1: Dan Tloome Site Plan
Source: Dan Tloome (2020)

4.2 Analysis and findings of data obtained

This section presents the responses that were obtained from the research participants as per Annexure 1 attached to this report. The findings are analysed in accordance with the conceptual framework presented in Chapter 2 of this study.

In view of the fact that data collected was mainly qualitative in nature, content analysis was used to analyse the data. The data obtained from the interviews was firstly transcribed, tabulated and then coded in order to identify common and key themes emerging from all the different interviews.

4.2.1 Objective 1: To identify the implementation strategy that used to execute housing mega projects and to ascertain if it has been successful

What implementation strategy has been chosen to implement the mega projects?

All respondents confirmed that a turnkey and strategy used was used to implement the projects and that the agreement signed was a turnkey and subsidy agreement.

Respondent 3 indicated that the developers had to submit a proposal to the GDHS whereby the developer availed the land and the technical team to implement the project. Respondent 2 elaborated that the projects fall under IRDP and thus follow the development strategy prescribed in this policy. This respondent further elaborated that the implementing strategy was not a true PPP as defined by the National Treasury department.

Why has this implementing strategy been chosen to implement mega projects?

The reasons provided by Respondents 1, 2, and 3, who were officials from GDHS and GPF for choosing this strategy included:

- “This strategy would lead to fast paced delivery of housing”
- “Using this strategy would minimise risk from the government”
- “The thinking was that the private entrepreneurs would work more efficiently than government”
- “There is a shortage of land in Gauteng and therefore the only way to be able to implement housing projects is to use turnkey developments where developers avail the land”

Is there clear policy or legislation guiding this implementation strategy?

Respondent 1 noted that the implementation of the mega projects is guided by an GDHS’ Mega Human Settlements Strategy, which is available within the department, and that there are various legislations and policies that guide housing at large, such as the IRDP and BNG.

Respondent 2 corroborated this by stating that there is no legislation that speaks specifically to HSMPs and that the IRDP covers such projects.

Responded 3, however, noted that the Public Finance Management Act guides the implementation of the HSMPs.

In your opinion, is this implementing strategy appropriate and sustainable for affordable housing delivery?
All respondents agreed that this implementing strategy is suitable for housing delivery.

Respondent 1 noted that the implementing strategy was working overall, notwithstanding the presence of some teething problems.

Respondent 2 stated that all premises that were used to support the mega projects implementation support the notion, but however that there was a difference between implementation and theory and that with all things being equal the strategy would be sustainable.

Respondent 3 stated that it is sustainable when taking into consideration that government does not have suitable land for housing developments and that private developers have access to suitable land for such developments.

Respondent 4 noted that it is the only way that can be used to reduce the housing backlog.

Respondent 5 indicated that this implementing strategy is better than the strategy that was used in the past.

Are you aware of any alternative strategies for housing delivery apart from this implementing strategy? Could these options have been better?
All the respondents stated that they are aware of the traditional strategy and that it could not have been better than the strategy used to implement the human settlements mega projects.

Respondent 1 added that they do not see a better alternative and that the current strategy is working.

Respondent 2 added that this strategy encompasses the housing from different income groups with different housing typologies.

Respondent 3 added that the traditional implementing strategy, where the government appointed professional resources teams to do designs and thereafter appoint contractors to construct, was not working because of the unavailability of suitable land owned by government and the prolonged time it took to design and procure service providers. The respondent elaborated by saying: "*With the turnkey strategy, we are able to provide service delivery sooner to people. We would still be in planning processes should we have not used the turnkey strategy."*

In your opinion, is the revenue and profitability of these projects sufficient to attract the private sector to engage in these mega projects?

The question of whether the revenue and profitability of these projects sufficient to attract the private sector to engage in these mega projects, was only posed to Respondent 4 and 5 as this could only be answered by developers.

Respondent 4 provided the following answer:

"The profitability was sufficient in 2017 when the projects commenced. We are now in 2020 and The Department of Human Settlement is still working with subsidy quantums from 2017. There is no allowance for Contract Price Adjustment Provision (CPAP) in the contracts. Materials costs have increased as follows since 2017: Brickwork - 26%, Cement - 15%, Steel - 30%, Hardwood doors - 16%, Masonite Doors - 15%, Geysers - 19%. The Developer is now making losses. The gazetted subsidy quantums have been around since 2016."

Respondent 5 responded as follows:

"No. Unless you know or have the very good knowledge of how these things work. Most of the projects go bank (meaning bankrupt) because of the cash-flow management and tight margins between what human settlements pays and what it costs and the perceptions of the banking sector and financial sector about late payment from government. They do not attract funding easily or participation from other potential investors. For example, the quantum has not been increased for the past four years for the housing units and inflation is sitting at about 8 % per year."

4.2.2 Objective 2: To evaluate the performance of housing mega projects

Is the delivery to date in accordance with the initial delivery targets set out for the implementation of these projects?

All the Respondents indicated that the delivery of the projects is not as per initial targets set out. The reasons for the divergence advanced by the respondents include:

- Budget cuts by the Department of Human Settlements due fiscus constraints
- Interruptions caused by Local Business Forums
- Delays in signing of land availability agreements between the developer and landowners before commencement of the projects.
- Bulk Infrastructure availability
- The national shutdown as a result of the Covid 19 pandemic, which caused delays of about three months.

In your opinion, will the implementation of these mega projects lead to fast track housing delivery?

Three of the five respondents agreed that the implementation of mega projects has led to fast tracked housing delivery.

Respondent 3 further elaborated that compared to the traditional method of delivering houses, only 50-100 houses would be delivered by one project in a year. However, with mega projects this has been up-scaled to not less than 500 housing units per project in a year.

The two respondents that did not agree that implementing mega projects has fast tracked the delivery of housing both pointed out that fast tracked delivery was the objective, however, that there was minimal fast tracking of housing delivery due to various challenges.

Respondent 5 noted that this was due to government departments working in silos and are not or less coordinated with each other.

Respondent 4 indicated that one of the reasons for this was the requirement for every project to relinquish 30% of the project local subcontractors. This respondent elaborated: "*These local subcontractors take longer to build. For example, where the norm is for one bricklayer to lay 700 bricks per day, the local subcontractors lay on average 200 brick per day.*"

Responded 2 further pointed out these mega projects are in their first, second and third year of implementation which is planned for 10-15 years. Thus, the projects need to build up momentum to start delivering housing at a larger scale.

In your opinion, will the implementation of these mega projects lead to financial savings due to economies of scale?

Three of the five respondents indicated that these mega projects would lead to financial saving and the other two felt that they would not.

Respondent 1 stated:

"Yes, where the land is serviced, the department does not have to pay for servicing of the land. The department can then bargain with the developer on the price of the land."

Respondent 2 stated:

"The cost per unit is the same as traditional method. It is difficult to say the developers are getting better rates for suppliers or they are getting savings. The government is still paying same the rate per unit."

Respondent 3 stated:

"Yes, the cost per unit is the same as traditional method, but where we are saving is on the professional fees. On the traditional method we would sometimes end up paying more money on professional fees."

Respondent 5 stated:

"For human settlements, I think it has. Scale always brings savings."

Respondent 4, however, stated that they do not think that the implementation of these projects would lead to economies of scale and attributed this to the fact that government is still paying the same subsidy cost per unit to developers since 2016, even though there have been increases in the price of materials throughout the years.

In your opinion, will the implementation of these mega projects lead to solving the backlog in housing Gauteng?
HSMPs would solve the housing backlog in the Gauteng province.

Respondent 1 and 2, however, noted that the backlog cannot be eliminated totally, due to the migration of people into the Gauteng Province in search of economic opportunities.

4.2.3 Objective 3: To determine the challenges experienced in the implementation of housing mega projects.

Have there been any challenges between the stakeholders Involved in the implementation of the projects?
Respondent 1 indicated that there was a challenge of the developer not paying contractors timeously for work done. In these instances, the GDHS Project Manager was requested to intervene and ensure that payments are made to the contractors by the developer. Another challenge is delays in payments by the GDHS to developers. In these instances, the Human Settlements MEC has intervened to ensure payments are made to developers.

Respondent 2 noted the lack of coordination between local government and provincial government as one of the challenges between the stakeholders involved in mega projects. The local municipality is required to provide bulk infrastructure capacity for the mega projects. However, in some cases this is not provided due to the project not being included in the municipality's Integrated Development Plan (IDP). This has led to delays in project implementation. The respondent noted that this can be resolved by better inter-governmental coordination between the provincial government and the local municipality.
Another challenge pointed out by Respondent 2 is management of expectations from the community in terms of job opportunities and benefiting from the money spent on the projects. This has led to site closures by respective communities. The respondent

suggested that this challenge could be mitigated by better communication with the community and the continuous management of community expectations. and that ultimately the 30% local spend requirement is part of the turnkey agreement with the developer and thus it is up to the developers how it is implemented on a project.

Respondent 3 highlighted the challenge of business forums brought about by the 30 % local content policy. The respondent indicated that most of the business forums do not understand how the 30% local content policy should be implemented. This has led to delays in projects of three to four months. The respondent provided the following response as a solution to challenge:

"Every municipal has a Local Economic Development (LED) section, but these LED do not do their job, they are supposed to having a data base of all the emerging contractors within their jurisdiction and their trades so that when the development comes to their area, they are able to source the list of service providers in that area and also provide them with training prior to contracting with the developers. This would resolve the problem."

Respondent 4 noted a challenge of delayed payment of invoices by the GDHS and that this has an effect on the developers' cash-flows. The responded cited an example of an invoice submitted to the GDHS four months' prior to the date of the interview that was still not paid.

Respondent 5 responded as follows:

"Yes. Challenges are between developers, human settlements, council, local community and then beneficiaries and interrelationship with subcontractors.

The key challenge is usually with human settlements - they are not willing to understand challenges that developers are facing around financial modeling and around bulk services. Human settlements' slow responses lead to non-performance. Inefficiencies within government comes from working in silos.

The municipalities do not have any funding for bulk services. Some municipalities are against the mega projects - there should be better alignment of goals between GDHS and municipalities.

Local community - there are huge misunderstandings between local communities that say that 30% of the projects belong to them or that 30% of the money belongs to them.

Challenges between contractor and sub-contractors - If sub-contractors are not paid they usually turn violent and this has happened on many mega projects. Payments are delayed due to certain documents certifications not being provided to human settlements. This should be tightly monitored to ensure contractors pay sub-contractors or developers need to pay sub-contractors directly``.

Have there been any challenges experienced with bulk infrastructure?

Four of the respondents alluded to challenges experienced with bulk infrastructure. The challenges cited by these respondents as, the unavailability of bulk infrastructure and the unavailability of funds for bulk infrastructure upgrades to support the mega projects.

Respondent 3 further elaborated that:

"When developers submit their proposals to municipalities, the municipality will request the developer to sign a service level agreement, which indicates that the municipality needs to contribute a certain amount of money for the upgrading of the bulk, but it has been found that as time goes by, the municipality does not have the money for the contribution to the development. In some instances, the GDHS will augment the fund to the developer. The municipalities were also supposed to make applications to the Department of Water & Sanitation and Department of Energy. These Departments also do not have enough budget to cater for all the Province's needs, for example, money that was being requested by Rand West Municipality was almost the same as Department of Energy's entire budget for the year."

Both Respondent 2 and Respondent 3 agreed that the challenge could be dealt with by better communication and planning between the local municipality and the provincial government. Respondent 3 further alluded to the need for all the affected departments and municipalities to have an integrated planning meeting whereby, before the projects start, each department knows what projects are coming and they can then then plan accordingly.

Respondent 5 elaborated as follows:

"Bulk services usually cost 10-100 of millions of rands. This cost is borne by the contractor before being able to build. Normally the municipality is responsible for putting these services, but unfortunately municipalities are not in good standing. The developer then has to recover this cost from the municipality in years to come. The challenges are ongoing. It does not mean once you put in bulk infrastructure your problems are solved. You have to scale up your bulk infrastructure to the development's level. When you build you don't build all 15 000 units at once, which means even with the bulk it will only cater for the first few thousand units as you build more units you will have to build bulk simultaneously. It is the biggest challenge. If government undertook to install bulk infrastructure and the developers worked hand in hand with GDHS the mega projects would be very successful."

On the other hand, Respondent 4 indicated that no challenges with infrastructure were experienced during the implementation of the project.

Have there been any challenges associated with the funding structure, that is, subsidy instruments, private finance?

All the respondents identified budget cuts to GDHS as being a challenge associated with the funding structure of the mega projects.

According to Respondent 2, year-on-year budgets to all departments are cut by the Department of National Treasury. This has resulted in a reduction in the subsidy grants to developers, and in turn, the reduction in the number of housing units they are required to provide in a financial year.

Respondent 2 further added: *"These mega projects are still in their early stages and developers have currently only been focused on the subsidised housing. It can only be seen in the next year or two if there will be any issues with private financing for bonded housing and social housing."*

Respondent 4 added:

"Yes. Retention was never mentioned in the contract, but 11 months into the project we were asked to provide a performance guarantee or accept 10% retention. We had no choice, but to accept the 10% retention, which has had an impact on our cash flow."

Respondent 5 added:

"Yes. The funding structure is multi-layered funding. You have multi-tiered funding. You have funding for bulk services, you have funding for internal services, you have funding for top structures, funding for schools, funding for hospitals, funding for community centres, funding for retail. Each one of these requires different types of funding. There is no one funder that will cover it all. Challenges with funding are like bulk services - they are ongoing. While they are workable, they are cumbersome to overcome them and resolve them. There are constant funding challenges as you move further your funding challenges grow. There is also no guidance from Human Settlements (i.e. GDHS). In-terms of grant funding, there is a number of grant funding that the developer can employ. However, developers are left on their own to find out about these and see how they work. The grants are like maize, there are various types of grants including international grants, municipality grants, commercial grants, corporate social responsibility grants etc."

Have there been any challenges experienced during the construction of housing?

All the respondents highlighted the challenges stemming from the requirement to appoint 30% local subcontractors.

Respondent 1 noted that these local subcontractors are often inexperienced and this leads to delayed project delivery.

Respondent 2 collaborated this statement, adding that there has also been delayed project delivery due to poor performance by not only the local subcontractors, but also by the main contractors.

Respondent 3 elaborated as follows:

"Someone will claim to be a contractor, but don't have the basic construction skills, and expect to be hired. This can be resolved by developers making funds available for training and through partnering with construction CETA to assist in providing the training."

Respondent 1 noted that:

"The department does have an incubator program to train that particular program, however we are struggling with funding for the Incubator program to provide training."

Respondent 2 further highlighted the challenge of poor quality of work. The respondent noted that this is exacerbated by the fact that the projects are turnkey. However, the issue is actively managed by the National Home Builders Registration Council (NHBRC) and the GDHS, who conduct quality inspections.

Respondent 4 added:

"Yes. After the lock-down there was a shortage of materials. The largest brick supplier could not supply bricks. We could not claim anything from the government except for extension of time. There needs to be an allowance for extension of time in the contract due to valid reasons."

Respondent 5 added:

"Yes. Funding challenges. Local community challenges. Construction risk. Technical challenges. Town planning challenges. Preparation is key and you need to make sure the community is aligned. Bankability and contracts are aligned with human settlements. You need to make sure that all the relevant technical reports, for example, geotech are in place and approved and in line with guidelines for building and also with the municipality. Preparation is the key. If you are prepared well implementation will be smooth. With our project we were very prepared and were able to achieve more than 1000 units in the first year. Where you have some projects that have been running for years that have not achieved this. We wanted to do 2000 units at the end of this financial year, but unfortunately human settlements only have a budget for 1000 units."

Have there been any challenges experienced with beneficiary allocation of the housing?

Respondent 1, Respondent 2 and Respondent 3 all stated that there no challenges experienced with beneficiary allocation.

Respondent 1 explained that in the past there were issues with beneficiary allocation when allocation was handled by councilors. However, the GDHS has now developed a housing allocation policy that is now that it now uses. The respondent further added that there is now also a beneficiary management unit that manages beneficiary allocation.

On the contrary, Respondent 4 indicated that they have experienced challenges with beneficiary allocation. He explained as follows:

"We have identified +- 119 units that are being occupied illegally. The units are not allocated, but the water meters are engaged. They must have been given keys for a price."

Respondent 5 noted

"There were a few challenges experienced, but when the correct processes have been followed and also listening to the local community's concerns. These can be overcome."

Have there been any challenges experienced with the provision of social amenities (e.g. schools, hospitals, and police services) and economic amenities such (retail and industry) by the developments?

All four participants cited a similar challenge, which is the allocation of funding from other government departments such as the department of education and health responsible for amenities such as schools and health care.

Respondent 1 and Responded 2 noted that the concept of HSMPs is still a new concept for government and that the current projects are still in their early stages.

Respondent 1, Respondent 2, and Respondent 3 all highlighted the need for integrated planning between government departments to ensure that the affected departments are aware of the developments and what amenities would be required at an early stage of planning.

Responded 4 further noted that they have also approached the private sector, that is, a national corporation for assistance with funding to build a school through the corporations corporate social arm. However, this assistance is yet to be provided to them.

Respondent 5 noted:
“Yes. The government departments responsible for the amenities, GDE, Department of Health etc. are not original parties to the planning of these mega projects. There is no alignment with these government departments. The different departments run at their own pace. They do not prioritize mega projects. These will delay mega projects because a school would normally take five years to plan and build . With mega projects this you would need to have a school within one or two years not five years. Some mega projects have had to stop because they had built a number of housing units but there was not enough social amenities for the beneficiaries. Human settlements need to get all these parties into one room.”

Are there any further challenges that were experienced during implementation of these mega projects that are not included in the above questions?
Three of the Respondents indicated additional challenges. These are summarised as follows:

Respondent 1 noted the Covid 19 pandemic which resulted in a nation shut down and shortages in materials and which further led to delays in the delivery of the projects.

Respondent 2 noted the poor performance by developers. The respondent noted that this was addressed by, firstly, monitoring these contractors on a weekly basis. Secondly, by not approving any further budget allocation to these developers, in the next financial year, until they have completed the work they were supposed to complete in the previous financial year. The respondent further noted that the agreement also allowed penalties to be applied for poor performance by developers.

Respondent 4 noted the problem of water theft. The respondent elaborated as follows: *"…the occupiers are not used to paying for water and are using fire hoses to steal water. The fire hoses are not connected to a water meter and are being used to wash cars, water gardens, do laundry etc. A total of +-100 million litres of water has been stolen to date. There is no indigent provision for free water, it is difficult to impose money on people who do not pay for housing. People are used to paying for electricity but you cannot turn off the water. There is no security. We tried to set up a body corporate by charging R60 per month on the owner's water bill. The community refused to accept this and a riot happened. The department (i.e., GDHS) requested that we stop charging this amount with immediate effect."*

This respondent suggested that government has to take over management of the development once the developer has completed construction and that the community would need to provide their own security for the development.

In your opinion, what has been the main challenge with the implementation of these mega projects?

Three of the respondents indicated that the availability of bulk infrastructure and the funding for bulk infrastructure to be the main challenge.

Respondent 3 further elaborated:

"…….as you increase housing you need to increase bulk infrastructure services. As a province we need to ensure that bulk infrastructure is expanded in line with the developments that are taking place. Funding for bulk Infrastructure needs government to look into."

Respondent 2 identified the poor performance by developers as being the main challenge. This respondent added that on average developers can only deliver 1 000 housing units per year, which affects the housing delivery targets set out.

Respondent 4 indicated that there was not enough planning conducted by the government prior the implementation of the mega projects was a key challenge.

Responded 5 also added the lack of coordination between government departments as another key challenge.

Do you have any suggestions on how to ensure successful implementation of similar projects in the future?

Three of the four respondents all indicated that in order to ensure successful implementation of similar projects in the future, the key is meticulous planning by government and coordination between all the stakeholders which includes all spheres of government, the government departments involved, the government parastatals, developers and communities.

Respondent 4 highlighted the need for the government to take what they learned from the current mega projects, sit down with developers and discuss the challenges that were experienced with the current projects and how these can be avoided in future projects.

Respondent 5 recommended as follows:

"Bringing the stakeholders together from different government departments and coordination for these."

"Assisting developers to access grant funding."

"Better collaboration between developers and human settlements and all of the stakeholders. Only by having Private Public Partnership can these projects work."

4.3 Chapter Summary

Semi-structured interviews were conducted with five respondents for this study. This included two senior officials from the GDHS, one senior official from the GPF and the CEOs from two property development companies involved in the Gauteng HSMPs. The responses from the public sector respondents appeared to be consistent with one another vis-à-vis the responses from the private sector respondents who appeared to be inconsistent with one another. From the responses provided, it is clear that the performance of the Gauteng HSMPs is not accordance to the initial delivery targets set out. The turnkey development strategy is used to implement the projects, which is associated numerous benefits over the traditional method. Numerous challenges have been identified with implementation of these projects.

Chapter 5: Discussion of the Findings

5.1 Introduction

This chapter is an analysis of the responses presented in the preceding chapter and its related link to the literature presented in Chapter Two in order to identify any similarities or emerging concepts. This will address the research objectives and ultimately answer the research questions.

This study set out to evaluate the implementation of HSMP in Gauteng, identify the challenges experienced during implementation and ultimately determine which factors lead to their successful implementation. Section 5.2 provides a discussion of the findings on the evaluation of the performance of the Gauteng HSMP. Section 5.3 provides a discussion on the implementing method used to implement the Gauteng HSMPs. This is followed by Section 5.4, which provides a discussion on the challenges experienced during the implementation of the Gauteng HSMPs. Section 5.5 provides a summary of the chapter.

5.2 The performance of housing mega projects

All the participants indicated that the delivery of the projects is not as per initial targets set out. An evaluation of the performance to date of HSMPs reveals that the implementation of these projects is not as per initial targets set out by the GDHS. The GDHS Annual Reports for 2017/18, 2018/19 and 2019/20 financial years indicate an underperformance in the implementation of the Gauteng HSMPs with regards to the number of serviced stands targeted for completion versus the actual number of serviced stands completed and the number of houses targeted for completion versus the actual number of houses completed for the three financial years. These reports indicate that there was a failure in the meeting of targets in the number of houses completed for the 2018/2019 and 2019/2020 financial years, with only 19% and 68% of the target achieved in both financial years, respectively. The reports also indicate that there was also a failure in meeting of targets for the number of serviced stands for the 2017/2018 and 2018/2019 financial years, with 39% and 89% of the targets achieved in both financial years, respectively. The number of serviced stands target was however, exceeded by 133% in the 2019/2020 financial year.

5.3 The effectiveness of the delivery method used to execute housing mega projects

All respondents confirmed that the turnkey delivery method was used to implement the projects. In this method, the turnkey developers are appointed using requests for proposals from private developers issued by the GDHS. The developers are then appointed using a turnkey and subsidy agreement with the GDHS and are responsible for availing the land, planning, feasibility studies, statutory approvals, servicing the sites, construction of top structures, marketing of properties, beneficiary allocation. The developers are then entitled to receive subsidy draw down payments for subsidised housing constructed based on subsidy quantums after reaching predetermined milestones. The developers are responsible for obtaining bridging finance to develop bonded houses and economic amenities (Walker, Stone & McGriffin, 2019).

All respondents agreed that this implementing strategy is suitable for housing delivery. As one of the respondents pointed out, the traditional method that was previously used to implement housing projects, where the government appointed professional resources teams to do designs and there-after appointed contractors to construct, was not working because of the unavailability of suitable land owned by government and the prolonged time it took to design and procure service providers. The respondent elaborated by saying:

"*With the turnkey strategy, we are able to provide service delivery sooner to people. We would still be in planning processes should we have not used the turnkey strategy."*

The primary reasons for using this strategy provided by the respondents from the GDHS and the GPF were;

- This strategy would lead to fast paced delivery of housing
- Private developers would work more efficiently than government
- There is a shortage of suitable land owned by government in Gauteng thus private developers would be able to avail suitable land for the developments

This correlates with Ahmed & EL Sayegh (2020) who identify the turnkey project delivery method as a variant of the Design and Build (DB) and notes that this method has proved to provide fast tracked delivery of projects as some portion of construction can be started while design is still ongoing, thereby resulting in cost and time savings.

Turok (2015) points out that there is still no national policy framework to explain the housing mega projects approach and that this approach was, however, was first mentioned by Human Settlements minister Lindiwe Sisulu in her budget vote speech of July 2014 (Sisulu,2014).

Two respondents did, however, link the HSMP to theIRDP, which is one of the programmes under the National Housing Code. The IRDP “provides a tool to plan and develop integrated settlements that include all the necessary land uses and housing types and price categories to become a truly integrated community. The Programme, in particular, provides for planning and developing an integrated project, providing for the housing, social and economic needs of different income categories. It does away with the requirement found in other policy programmes to identify subsidised housing recipients up front and provides for both subsidised, as well as finance linked housing, social and rental housing, commercial, institutional and other land uses to be developed.

The turnkey development method is listed as one the three project strategies for integrated housing in the IRDP. It is also worth noting that the HSMP are reported under IRDP projects in the GDHS annual reports reviewed for 2017/8 and 2018/19. The term mega projects has been used as a marketing term to create fanfare around the projects.

It is clear from the respondents that the delivery method was not a true PPP as defined by Treasury Regulation 16, which requires governs all PPPs in South Africa. Though pronouncements by senior government officials including the Premier of Gauteng on the HSMPs being PPPs, it is noteworthy that these projects are not included in National Treasury’s list of PPP projects under execution or in the pipeline. It is also worth noting that no housing projects are listed in both of these lists.

Research by Financial and Fiscal Commission (2012) in contrast alludes to the fiscal unsustainability of the subsidised provision of housing in South Africa. An analysis by the FFC (2012) found that in order to provide housing to all households in need with fully subsidised formal housing at current standards would cost an estimated R641 billion of government funds. This is not sustainable with the South African economy remaining stagnant and revenues decreasing. The study by FCC (2012) proposes more involvement of the private sector and self-help solutions to housing. The study by the FFC (2012) found that if the standards of the subsidised housing provided by the state is reduced to a serviced site and private sector participation is increased, then the cost to government drops to one third of the cost.

However, when asked about their awareness of any other implementing method currently being used by the GDHS to provide housing, one respondent did mention the rapid land release programme. This is the government's new self-help initiative which seeks to provide serviced stands instead of fully built houses. This responded noted that this method would cost the government less, but however, that it would lead to the creation shack towns.

The World Bank (2020) further notes that affordable housing PPP are attractive in that they allow the public sector to secure assets and services from the private sector more efficiently at a lower cost, at better quality and at a lower risk.However, when they have been used in developing countries, they have encountered challenges. These challenges include: legal and financial institutions and systems are not mature enough to facilitate implementation, some PPPs have ended up relying heavily on government subsidies or guarantees and land thereby making it questionable if the private partner has taken its fair share of risk and the value for money proposition of the partnership (World Bank, 2020).

5.4 The challenges experienced in the implementation of housing mega projects

From the literature reviewed, it is evident that the fundamental challenges associated with mega projects in general are cost overruns, schedule delays, project viability and benefit shortfalls.

This underperformance in mega projects is described by Flyvbjerg, (2014) as a "mega projects paradox”. On the one hand of the paradox, mega projects are in demand as the delivery model for public and private infrastructure around the world, however, on the other hand, performance of mega projects is strikingly poor.

In addition to the challenges identified with mega projects in the literature, HSMP in the South African context, are faced with a myriad of challenges which are unique to these projects. To this end, the respondents to the research interviews identified the following challenges with the implementation of HSMP.

5.4.1 Bulk Infrastructure Funding and Capacity

The most prominent challenge with the implementation of the HSMPs is the bulk infrastructure capacity to service the new developments and the funding for the bulk infrastructure. Bulk infrastructure refers to the network of pipes, drains, cables that connect the water, sanitation, electrical reticulation roads and stormwater facilities to the new developments. Who is responsible for it?

The local municipality is required to provide bulk infrastructure capacity for the mega projects, however, in some cases this is not provided due to the project not being included in the municipality’s Integrated Development Plan (IDP). This has led to delays in project implementation.

As Respondent 3 elaborated:

“When developers submit their proposals to municipalities, the municipality will request the developer to sign a service level agreement, which indicates that the municipality needs to contribute a certain amount of money for the upgrading of the bulk, but it has been found that as time goes by, the municipality does not have the money for the contribution to the development. In some instances, the department will augment the fund to the developer. The municipalities were also supposed to make applications to the National Department of Water & Sanitation and National Department of Energy. These Departments also do not have enough budget to cater for all the Province’s needs, for example, money that was being requested by Rand West Municipality was almost the same as Depart of Energy's entire budget for the year.”

This challenge was highlighted in the literature by Turok (2016) who envisaged that one of the challenges with the proposed HSMPs would be that the public sector will struggle to borrow the capital required to invest in additional bulk infrastructure. Charlton (2017) also collaborates Turok's argument around bulk infrastructure in that the development of the Lurfhereng project experienced delays due to bulk service delays.

Respondents indicated that this challenge could be dealt with by better communication and planning between local municipality and the provincial government and further alluded to the need for all the affected departments and municipalities to have an integrated planning meeting whereby, before the projects start, each department knows what projects are coming and they can then then plan accordingly.

5.4.2 Lack of coordination and planning

The lack of co-ordination between local government and provincial government is noted as one of the challenges between the stakeholders involved in HSMPs. Government departments are reported to be working in silos. Ardonceau (2018) attributes many of the challenges with housing PPPs to insufficient preparation before implementation, which is caused by the urgency by which many governments announce mega projects.

As one respondent noted that this can be resolved by better intergovernmental coordination between all spheres of government as well as the government departments responsible for realising HSMPs.

5.4.3 Delays in payments to Developers

Three respondents noted delays in payments to developers by the GDHS has delayed progress on the projects. In terms of how the HSMP are implemented by the turnkey developers, developers typically construct the subsidised housing first so they can get payments as per agreed milestones from the GDHS, which assists in their cash-flows. The developers then proceed with constructing the bonded housing and commercial property which would be financed by private financial institutions. The delays do not only have in effect on the cash-flow of developers, but they have also lead to protest actions and site closures as the main contractors are unable to pay local subcontractors.

The delays in payments to the developers by the GDHS has been highlighted by the respondents. This challenge has been identified by Phago (2010) as one of the challenges that existed with the traditional method of implementing housing projects and is still prevalent with the turnkey method used to implement HSMPs.

5.4.4 Poor performance by developers and contractors

The literature review notes that the has been a withdrawal of large construction companies from the public housing sector which has resulted in the reliance on emerging contractors who often have limited technical and administrative expertise, limited capacity, and inadequate access to bridging finance.

The respondents have alluded to delays in the delivery of HSMPs due to poor performance by the turnkey developers and the local subcontractors. One respondent noted that one developer can only deliver on average 1 000 housing units per year, which is far less than the housing delivery targets initially set out.

Respondent 2 indicated that on the HSMPs the poor performance of the turnkey developers is dealt with by (i) monitoring them on a weekly basis, and (ii) by not approving any further budget allocation to these developers, until they have completed the work they were contracted to complete in the current financial year. This respondent further noted that the turnkey agreement also allowed penalties to be applied for poor performance by developers.

All the respondents highlighted the challenges stemming from the requirement to appoint 30% of the contract value from local subcontractors. These emerging local subcontractors are described as being inexperienced and lacking basic construction skills.

The GDHS is reported to have an incubator program for training emerging contractors.

However, it is also reported that the department is struggling with the funding for this program to be fully functional. One of the respondents suggests that this challenge can be resolved by developers making funds available for the training of emerging contractors. This can be achieved by developers partnering with CETA to assist in providing the training. The CETA websites states that:

> "CETA provides skills development services to the construction sector and also funds a number of learning programmes including skills programmes, learnerships, apprenticeships, internships and bursaries at various public education and training institutions" (CETA, 2019)

5.4.5 Disruptions by Business Forums

The abuse and misinterpretation of the 30% subcontracting requirements, promulgated in 2017 within the Preferential Procurement Regulations by social groupings or business forums, has led to closure of some HSMP sites, which has led to delays as long as three months.

Media reports by Donnelly (2019) and Ryan (2020) have reported on the upsurge of disruptions to construction sites around the country by these business forums. In some instances, they are reported to have caused disruptions even to private sectorprojects. These disruptive social groupings have been nicknamed "construction mafia" in testament to the "shake-down" intimidation tactics they have instigated on construction sites around the country.

The Preferential Procurement Regulations now stipulate that 30% of public procurement contracts, with a value more than R30 million, need to be subcontracted to designated groups including black South Africans, women and people with disabilities (National Treasury, 2017). This 30% subcontracting requirement is also included in the turnkey agreement with the HSMPs developers.

As noted by one of the respondents, these business forums do not understand how the 30% policy should be implemented. This respondent provided a solution to this challenge by firstly noting that all municipalities have Local Economic Development (LED) sections, but however that they are not doing their job. These LED sections need to have a database of all the emerging contractors and the trades they specialize in within their jurisdiction. This database would then be used to sources emerging contractors when a development is earmarked for a specific area. These contractors can then also be provided with training before contracting with the developers.

5.4.6 Community unrest

Another challenge pointed out by one of the respondents is the management of expectations from the community in terms of job opportunities and benefiting from the money spent on the projects. This has led to site closures by the community.

One of the respondents suggested that early communication with the community where projects will be taking place and the continuous management of community expectations can also contribute to mitigating this challenge.

5.4.7 Funding Challenges

All the respondents identified budget cuts to GDHS as being a challenge associated with the funding structure of the mega projects.

Year-on-year cuts by National Treasury to the budget allocate to the GDHS has resulted in a reduction in the subsidy grants to developers and in turn the reduction in the number of housing units they are required to provide in a financial year. This is general evidence of constraints within the South Africa.

Another challenge identified by the respondents is the discrepancies between subsidy quantums and the actual construction costs of subsidised housing. One of the respondents noted that there is no allowance for contract price adjustment in the contract signed, notwithstanding that there have been increases in construction material prices since 2016. Gardner et al. (2019) highlight that this discrepancy and note that these subsidy quantums have not been increased since 2013/14. Gardner et al. (2019) further highlight that inflation between 2013 and 2017 has added 25 percent to costs and thatbuild cost inflation has increased by 42 percent over the same period. This has a negative effect on the profitability of these projects to developers, which has also led to many developers leaving this sector. This problem can be addressed by adjustmentof housing subsidies for inflation annually.

Studies by Ngcuka (2010), FFC (2012) and Ganiyu, Fapohunda & Haldenwang (2017), however, raise concerns about the sustainability of financing affordable housing through government subsidies due to the ever increasing construction cost and the shrinking fiscus. Ganiyu, Fapohunda & Haldenwang (2017) propose alternative financing models to finance affordable housing construction in a manner that is sustainable and economical to the government, housing developers and beneficiaries (Ganiyu, Fapohunda & Haldenwang, 2017). These include

Iwegbuna (2019) proposes that the construction costs for developing affordable housing can be reduced by the use of innovative construction technology. This has the potential of increasing the scale of affordable housing delivery and maximising developers' profits. The innovative construction technologies identified by Iwegbuna (2019:239) are:

- Cast in Situ' housing units
- Load-bearing steel frame units
- Terra block tabricator
- Moladi cast in place reinforced monolithic structures
- Pinnacle concrete
- Speedwall building system
- Green technology

Kihato (2012) also propose the use of technological alternatives to reduce the costs of housing provision but for the housing infrastructure. The alternatives proposed by Kihato (2012) include the use of solar energy as an alternative to electricity and the recycling of waste water using localized treatment plants.

5.4.8 Challenges with the provision of social and economic amenities

The ultimate outcome of HSMPs is to create integrated sustainable human settlements that incorporate social and economic amenities. To this end, the business plans for the Gauteng HSMPs indicate that various social and economic amenities would be developed by the developers for each project. The developers also commit to providing these amenities in the turnkey agreements. The developers are responsible for sourcing funding to develop these amenities.

As of the period the interviews were conducted, none of the developers interviewed had commenced with the construction of such amenities. One developer, however, indicated that they would be commencing with the construction of a business distribution centre in January 2021.

The challenge identified by the respondents in this regard is due to no budgets being allocated for the development of social amenities by the government departments responsible for providing them. As one of the respondents notes that these departments are not original parties to the planning of these projects. This points to a misalignment and lack of coordination between the GDHS and the various sister departments required to provide social amenities.

Ardonceau (2018) attributes many of the challenges with housing PPPs to insufficient preparation before implementation, which is caused by the urgency by which many governments sought to announce the launching of mega projects for political point gains.

As most of the HSMPs proposed for Gauteng are situated in the urban periphery and thus there is a serious danger that most of these mega settlements will remain as predominantly residential areas isolated from economic opportunities for decades. An example of this is the Cosmo City development where it took almost a decade for supermarkets, petrol stations and other formal retail outlets to open (Turok, 2016).

5.5 Chapter Summary

This chapter presented a discussion of the findings from the research interviews conducted in comparison to the literature reviewed. The underperformance in the implementation of the projects reported by the respondents is likewise reported in the GDHS annual reports for three financial years. The turnkey development method is reported to effective in the delivery of houses by all the respondents when compared to the traditional project delivery method. With this method, developers are reliant on government to finance the development of the subsidised housing and on private funding to finance development of bonded housing and economic amenities within the developments. However, previous researchers have questioned financial sustainability of the South African government provision of subsidised housing and present alternatives to reduce the dependence on the state. Eight challenges with implementation of the Gauteng HSMPs were identified from the interviews and the key challenges identified in the literature include; inadequate planning by government prior to the implementation of the projects, poor coordination between government departments, lack of bulk infrastructure funding and capacity and the poor performance by developers.

Chapter 6: Conclusion and Recommendations for Future Research

6.1 Introduction

This chapter presents the conclusion and recommendation for further research in sections 6.2 and 6.3, respectively. The conclusions are drawn from the responses obtained from the research participants and from the literature reviewed. The recommendations for future research are based on topics, related to the research topic, identified, but could not be addressed in this research and topics that appear to have a paucity of research.

6.2 Conclusion

There appears to be a paucity of literature evaluating the implementation of housing programs in South Africa. Housing is a pressing and emotive topic in the country, which has been identified as the cause of many service delivery protests. This study endeavored to lay the groundwork for future studies on the implementation of HSMPs. The incumbent Minister of Human Settlements in 2014 announced the shift in housing policy from the provision of monotonous sporadic housing by the government to the provision of housing using integrate human settlements developments yielding no less than 10 000 housing opportunities per development, with the premise being that scale would result in time and cost efficiencies and also address capacity issues. In 2015 the Gauteng premier, David Makhura, launched the implementation of 31 HSMPs that would create new cities in the province's five regions.

This study set out to determine which factors may lead to the successful implementation of HSMPs in Gauteng. To achieve this aim, three objectives were identified. The first objective was to evaluate the implementation of HSMPs in Gauteng. The second objective was to identify the implementation strategy that has been used to execute housing mega projects and to ascertain if it has been effective. The third objective was to identify the challenges experienced during implementation of the HSMPs. Based on the findings from the reviewed literature and interviews conducted, the following can be concluded:

6.2.1 The Performance of HSMPs

An evaluation of the performance to date of HSMPs reveals that the implementation of these projects is not as per initial targets set out by the GDHS. The GDHS Annual Reports for 2017/18, 2018/19 and 2019/20 financial years indicate an underperformance in the implementation of the Gauteng HSMPs with regards to (i) the number of serviced stands targeted for completion versus the actual number of serviced stands completed, and (ii) the number of houses targeted for completion versus the actual number of houses completed for the three financial years. These reports indicate that there was a failure in the meeting of targets in the number of houses completed for the 2018/2019 and 2019/2020 financial years, with only 19% and 68% of the target achieved in both financial years, respectively. The reports also indicate that there was also a failure in meeting of targets for the number of serviced stands for the 2017/2018 and 2018/2019 financial years, with 39% and 89% of the targets achieved in both financial years, respectively. However, the number of serviced stands target was exceeded by 133% in the 2019/2020 financial year.

This corresponds with the responses fromthe Respondents, to the research interviews, who all indicated that the delivery of the projects is not as per initial targets set out.

6.2.2 The Implementing Method Used for HSMPs

The strategy that the GDHS employed to implement these HSMPs is the turnkey development strategy. With this strategy, private developers are responsible for availing the land, planning, feasibility studies, statutory approvals, servicing the sites, construction of top structures, marketing of properties, beneficiary allocation. The developers are then entitled to receive subsidy draw down payments for subsidised housing constructed based on subsidy quantums after reaching predetermined milestones. The developers are responsible for obtaining bridging finance to develop bonded houses and economic amenities. This strategy is identified in the IRDP as one of the strategies that should be used to implement integrated housing developments.

Several Respondents who were interviewed for this study suggest that this strategy is suitable for housing delivery. When compared with the traditional strategy, which required the GDHS to appoint the design team and then go out tender for a contractor. This strategy is considered to be beneficial in that it delivers houses at a faster rate by reducing the time required for designing and procuring of service providers. This correlates with Ahmed & EL Sayegh (2020) who identify the turnkey project delivery method as a variant of the Design and Build (DB) and notes that this method has proved to provide fast tracked delivery of projects as some portion of construction can be started, while design is still ongoing, thereby resulting in cost and time savings.

Studies by various researchers question the financial sustainability of free subsidised housing. The FCC (2012) found that, if the standards of the subsidised housing provided by the state are reduced to serviced sites and private sector participation is increased, then the cost to government drops to one third of the cost.

6.2.3 Challenges Experienced During Implementation of HSMPs

This study also sought to identify the challenges experienced during the implementation of these HSMPs projects from the perspective of the client, the implementing agent and the developers responsible for implementing these projects. The following challenges were identified:

- Bulk Infrastructure Funding and Capacity
- Lack of coordination and planning
- Delays in payments
- Developers not paying contractors timeously
- Poor performance by contractors
- Disruptions by Business Forums
- Community unrest
- Challenges with funding
- Profitability Challenges
- Challenges with the provision of social and economic amenities

6.2.4 Factors for the Successful Implementation of HSMPs

The primary research question for this research was to identify which factors lead to the successful implementation of HSMPs in the Gauteng Province. The following factors have been identified as pre-cursor to successful implementation of HSMPs.

Project Delivery Method

The turnkey contracting method is seen to be the most suitable method for delivering HSMPs. This method involves the appointment of private developers who are responsible for providing the land; the design and construction of housing and other amenities. For the turnkey developer to be successful in implementing these projects, they must be experienced and able to access finance to fund the development of non-subsidised housing and social and economic amenities.

Bulk Infrastructure Funding and Capacity

The local municipality is required to provide bulk infrastructure capacity for the mega projects; however, in some cases this is not provided due to the project not being included in the municipality's Integrated Development Plan (IDP). This has led to delays in project implementation.

The three spheres of government need to plan together to ensure the funding required to upgrade bulk infrastructure, through the USDG, is made available for the implementation of HSMPs.

Lack of coordination and planning

Inter-governmental coordination bodies should be formed in order to coordinate the implementation of HSMPs between all spheres of government, government departments including education, health, sports and recreation, social services and safety and security as well as the State Owned Entities involved in the realising HSMPs.

Delays in payments to developers and sub-contractors

The GDHS needs implementation of an invoice tracking system that monitors progress from when a developer submits an invoice until the payment is affected. This system needs to ensure that payments are made within 14 days of the invoice being approved. The payment of subcontractors by main contractors should be monitored closely. Delays in payments to subcontractors leads to protest action and site closures that delay the progress on projects. Where there are constant delays in payments by the main contractor to subcontractors the developers need to pay subcontractors directly.

Poor performance by developers and contractors

The poor performance by developers and contractors can be dealt with by the setting of performance measures and the monitoring of developer's performance on a weekly basis to ensure that work is executed as per agreed milestones. The GDHS also need to enforce the breach and poor / non-performance penalty clauses allowed for in the turnkey agreement signed between the parties.

It is further suggested that developers and main contractors can assist in the development of emerging subcontractors by providing formal training. This can be achieved by developers partnering with CETA or similar entities to assist in providing the training.

Disruptions by Business Forums

The Preferential Procurement Regulations now stipulate that 30% of public procurement contracts, with a value more than R30 million, need to be subcontracted to designated groups including black South Africans, women and people with disabilities. This 30% subcontracting requirement is also included in the turnkey agreement with the HSMPs developers. This requirement has led to the formation of business forums. The misinterpretation of this requirement by business forums has led to disruptions and delays on the Gauteng HSMPs. The Local Economic Development (LED) sections within municipalities need to have a data base of all the emerging contractors and the trades they specialise in within their jurisdiction. This data base should then be used to sources emerging contractors when a development is earmarked for a specific area. These contractors can then also be provided with training before contracting with the developers.

Community unrest

It is critical to identify and begin engagements with the beneficiaries to the HSMPs at the early planning stages of projects. These engagements with beneficiaries should be ongoing throughout the project implementation and even after completion of the projects. This will assist in management of beneficiary expectations with regards to the project.

Funding Challenges

The turnkey agreement signed between the developers and the GDHS does not allow for escalation on the subsidy quantum. The literature also notes that there are discrepancies between subsidy quantums and the actual construction costs of subsidised housing. This has a negative effect on the profitability of these projects to developers, which has also led to many developers leaving this sector. This problem can be addressed by adjustment of housing subsidies for inflation annually.

Challenges with the provision of social and economic amenities

The challenge identified in this regard is due to no budgets being allocated for the development of social amenities by the government departments responsible for providing them. This points to a misalignment and lack of coordination between the GDHS and the various sister departments required to provide social amenities.

With respect to social amenities, as most of the HSMPs proposed for Gauteng are situated in the urban periphery, there is thus a serious danger that most of these mega settlements will remain as predominantly residential areas isolated from economic opportunities for decades.

Integrated sustainable housing delivery must be coordinated and aligned with other departments, including education, health, sports and recreation, safety and security and social services, if the desired outcomes of integrated development with optimised social amenities and economic opportunities are to be constructed timeously.

The GDHS also needs to monitor developers’ progress on the obtaining of finance and implementation, while housing under construction and not leave it to when construction of housing is complete.

6.3 Recommendations for Future Research

This study conducted a formative evaluation of Gauteng HSMPs during the implementation of these projects. These are multi-year projects implemented in multiple phases. None of the project was complete and thus it was too early to conduct an evaluation of whether these projects have met their long-term desired outcomes. To this end, the following future studies are recommended.

- Further summative evaluation research needs to be conducted in the future after the implementation of these projects is complete to determine if the objectives were met and to determine measures for improvement, if required. An investigation of whether the objectives of the provision of social and economic amenities were met would be of significance. Future research can also be conducted to evaluate end user perceptions of the adequacy of the housing provided in these developments.

- A concern that was raised by one the respondents in the study is that there does not appear to be a plan by the government for the maintenance of the subsidised RDP walk-ups constructed within these developments. The developer, in this case, undertook to establish a levy charge to be paid by the beneficiaries of these RDP walk-ups for basic maintenance. This was, however, met with strong resistance and protestation from the beneficiaries and this notion was abandoned. Future research is required to investigate the maintenance of the free RDP walk-ups on the HSMPs developments and how this maintenance may be funded.

- The housing subsidy initiatives by the South African government have provided homes for millions of poor households. The stagnating economic climate and fiscal constraints and rising construction costs make the provision of free housing unsustainable. Further research needs to be conducted on alternative models to finance housing provision to the poor which include the involvement of the private sector and self-help solutions by beneficiaries and the government playing an enabling role.

- Disruptions caused by business forums have had a negative impact on the already ailing South African construction industry. The shake-down style of intimidation inflicted by these groupings is so severe that they have been given the name “construction mafia” by those in the construction industry. This negative impact warrants the need for a study on the origins of these groupings, their legitimacy, the legitimacy of their demands and how they have impacted the South African construction industry.

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Appendix A: Ethics Clearance

School of Construction Economics & Management

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SCHOOL OF CONSTRUCTION ECONOMICS AND MANAGEMENT RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER CEM/20/5/LP1**
PROJECT TITLE	An Evaluation of Factors for the Successful Implementation of Housing Megaprojects in Gauteng Province, South Africa
INVESTIGATORS	Pasiwe, Lwandile (1570545)
SCHOOL/DEPARTMENT	SCHOOL OF CONSTRUCTION ECONOMICS AND MANAGEMENT
DATE CONSIDERED	18/06/2020
DECISION OF THE COMMITTEE	Approved conditionally with respect to the declaration
EXPIRY DATE	30th May 2021
DATE 1//5/2020	**CHAIRPERSON** Dr. Kola Ijasan

cc: Supervisor: : Dr Kenneth Koech Cheruiyot

DECLARATION OF INVESTIGATOR (S)

To be completed in duplicate and **ONE COPY** returned to the Secretary Michelle Kirsten at the CEM reception desk.

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

Date 18 / 06 / 2020

Appendix B: Research Participant Consent Forms

Please read and complete this form carefully. Should you be willing to participate in this study, kindly initial next to each item below and provide your signature and the date at the bottom.

Declaration	**Please Initial**
1. I agree to take part in the above study.	☐
2. I confirm that I have read and understood the purpose for this study and have had the opportunity to ask questions.	
3. I understand that my participation is voluntary and that I am free to withdraw at any time.	☐
4. I agree to the interview audio being recorded.	☐
5. I agree to the use of my anonymised quotes in the research report and in publications.	☐

Name of Participant	Signature	Date
______________________	______________________	______________

Appendix C: Government Officials Interview Questions

List of Interview Questions to Government Officials/Implementing Agents

1. Implementing Strategy

1.1 What implementation strategy has been chosen to implement the mega projects?

1.1 Why has this implementing strategy been chosen to implement mega projects?

1.2 Is there clear policy or legislation guiding this implementation strategy?

1.3 In your opinion is this implementing strategy appropriate and sustainable for affordable housing delivery?

1.4 Are you aware of any alternative strategies for housing delivery apart from this implementing strategy? Could these options have been better?

2. Evaluation of objectives

2.1 Is the delivery to date in accordance with the initial delivery targets set out for the implementation of these projects?

2.2 In your opinion, will the implementation of these mega projects lead to fast tracked housing delivery?

2.3 In your opinion, will the implementation of these mega projects lead to financial savings due to economies of scale?

2.4 In your opinion, will the implementation of these mega projects lead to solving the backlog in housing Gauteng?

2.5 In your opinion, will these mega projects create self-sufficient communities with social amenities (e.g. schools, hospitals, and police services) and economic amenities such (retail and industry)?

3. Challenges experienced

3.1 Have there been any challenges in the relationship between the stakeholders Involved in the implementation of the projects?
If yes, please explain.
If yes, how were these resolved and or how can they be avoided in future projects of this nature?

3.2 Have there been any challenges experienced with bulk infrastructure?
If yes, please explain.
If yes, how were these resolved and or how can they be avoided in future projects of this nature?

3.3 Have there been any challenges associated with the funding structure i.e. subsidy instruments, private finance?
If yes, please explain.
If yes, how were these resolved and or how can they be avoided in future projects of this nature?

3.4 Have there been any challenges experienced during the construction of housing?
If yes, please explain.
If yes, how were these resolved and or how can they be avoided in future projects of this nature?

3.5 Have there been any challenges experienced with beneficiary allocation of the housing?
If yes, please explain
If yes, how were these resolved and or how can they be avoided in future projects of this nature.

3.6 Have there been any challenges experienced with the provision of social amenities (e.g. schools, hospitals, and police services) and economic amenities such (retail and industry) by the developments?
If yes, please explain.
If yes, how were these resolved and or how can they be avoided in future projects of this nature?

3.7 Are there any further challenges that were experienced during implementation of these mega projects that are not included in the above questions?

3.8 In your opinion, what has been the main challenge with the implementation of these mega projects?

3.9 Do you have any suggestions on how to ensure successful implementation of similar projects in the future?

Appendix D: Private Developers Interview Questions

List of Interview Questions to Property Developers

1. Implementing Strategy

1.1 What implementation strategy has been chosen to implement the mega projects?

1.2 In your opinion, is this implementing strategy appropriate and sustainable for affordable housing delivery?

1.3 Are you aware of any alternative ways to housing delivery apart from this implementing strategy? Could these options have been better?

1.4 In your opinion, is the revenue and profitability of these projects sufficient to attract the private sector to engage in these mega projects?

2. Evaluation of objectives

2.1 Is the delivery to date in accordance with the initial delivery targets set out for the implementation of these projects?

2.2 In your opinion, will the implementation of these mega projects lead to fast tracked housing delivery?

2.3 In your opinion, will the implementation of these mega projects lead to financial savings due to economies of scale?

2.4 In your opinion, will the implementation of these mega projects lead to solving the backlog in housing Gauteng?

2.5 In your opinion will these mega projects create self-sufficient communities with social amenities (e.g. schools, hospitals, and police services) and economic amenities such (retail and industrial)?

3. Challenges experienced

3.1 Have there been any challenges in the relationship between the stakeholders involved in the implementation of the projects?

If yes, please explain.

If yes, how were these resolved and or how can they be avoided in future projects of this nature?

3.2 Have there been any challenges experienced with bulk infrastructure?

If yes, please explain.

If yes, how were these resolved and or how can they be avoided in future projects of this nature?

3.3 Have there been any challenges associated with the funding structure i.e. subsidy instruments, private finance?

If yes, please explain.

If yes, how were these resolved and or how can they be avoided in future projects of this nature?

3.4 Have there been any challenges experienced during the construction of housing?

If yes, please explain.

If yes, how were these resolved and or how can they be avoided in future projects of this nature?

3.5 Have there been any challenges experienced with beneficiary allocation of the housing?

If yes, please explain

If yes, how were these resolved and or how can they be avoided in future projects of this nature?

3.6 Have there been any challenges experienced with the provision of social amenities (e.g. schools, hospitals, and police services) and economic/ commercial amenities (e.g. retail and industrial) by the developments?

If yes, please explain.

If yes, how were these resolved and or how can they be avoided in future projects of this nature?

3.7 Are there any further challenges that were experienced during implementation of these mega projects that are not included in the above questions?

3.8 In your opinion, what has been the main challenge with the implementation of these mega projects?

3.9 Do you have any suggestions on how to ensure the successful implementation of similar projects in the future?