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2021
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FACTORS CONTRIBUTING TO THE DELAYS IN HOUSING DELIVERY IN RATANDA TOWNSHIP IN LESEDI LOCAL MUNICIPALITY FOR THE PAST FIVE YEARS – GAUTENG PROVINCE



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A report submitted to the School of Construction Economics and Management, University of the Witwatersrand

June, 2021

Declaration

I hereby declare that I conducted this research on my own and unassisted, except where otherwise indicated.

This research report is being submitted in fulfilment of the requirements for the MSC degree in Building at the University of the Witwatersrand.



22/06/2021

_____ _____

Signature Date

Acknowledgements

Glory be to the Almighty for all the strength He gave me throughout the process of this study.

Special thanks to my Supervisor: Mr Paul Rudzinske for his guidance throughout the study.

I would like to thank all the participants for giving me their most valuable time to respond to the interview questions.

To my kids, Angelo, Koketso, Kagiso and Kegomoditswe, I would like to thank you from the bottom of my heart for your support and understanding.

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List of acronyms

BNG	-	Breaking New Ground
CIRT	-	Centre for Innovation in Research and Teaching
GDHS	-	Gauteng Department of Human Settlements
LLM	-	Lesedi Local Municipality
RDP	-	Reconstruction and Development Programme

Abstract

South Africa is faced with serious housing backlogs and the government has not been able to meet the increasing demand for housing. With increased migration to urban areas, the demand for adequate housing has also increased and the government needs to identify factors contributing to housing delays and develop measures to overcome housing backlogs.

The research was based in Ratanda Township, located in the Lesedi Local Municipality, in the south-east of Johannesburg and covers an area of approximately 1 484 km^2. This research aimed to explore all factors that have caused delays in housing delivery in Ratanda Township, Lesedi Local Municipality, in the past five years. This was achieved by using qualitative research techniques by conducting structured interviews with professionals within the construction industry.

The results indicated that financial constraints were ranked the highest and considered to be the most important factor attributed to housing project delays. When it comes to project management, the top five skills and competencies that a project manager should have are the ability to provide supervision, financial management, conflict resolution, educational competency, and an extensive number of years of experience in the industry.

Other factors that were attributed to housing delays include delays in the payment of contractors and subcontractors, poor site supervision, corruption, service delivery protests, and subcontractors being involved in too many projects. This research will provide stakeholders and decision-makers with a clear understanding of the challenges in the construction industry that cause delays and thus facilitate the implementation of strategies to reduce delays in construction projects.

Keywords: construction delays, housing backlogs, project manager

CHAPTER 1: INTRODUCTION

1.1. Background to the study

South Africa comes a long way from the period of racially segregated Municipalities, which are now referred to as Local Government (Nealer et al., 2007). These Municipalities cover all areas of the country (Nealer et al., 2007). Before racially based development systems in 1994, the majority of South Africans were excluded from meaningful participation in the economy (Ngcobo, 2014). Black South Africans were discriminated against in employment, skills development, control, and ownership of businesses (Tetani, 2016). They didn't have a choice in terms of where they wanted to live and were instead forced to live in the homelands (Bakker et al., 2015). Approximately 90% of the land in South Africa was reserved for the white population, which was in the minority, and to formalize this, colonial laws such as the Natives' Land Act of 1913 was passed (Findley & Ogbu, 2011). This racial segregation confirmed the creation of wealth to a racial minority and imposed under-employment on black communities (Nealer et al., 2007).

After apartheid laws were rescinded in South Africa in June 1991 (Bakker, et al., 2015), an increase in urbanization was experienced (Ngcobo, 2014). This was due to those coming from rural areas seeking employment in urban areas and as a result, shelter close to the place of employment became an important factor (Ngcobo, 2014). This led to the land invasion which caused the establishment of Informal Settlements as people could not afford bonded houses (Ngcobo, 2014). Approximately two-thirds of the total population in South Africa live in urban areas and as a result, South Africa has been regarded as the most urbanized country in Africa (Bakker et al., 2015).

Today there is continued proliferation of informal settlements across the country and the Government is struggling to meet the demand for housing and basic services (Ngcobo, 2014). Most informal settlements are settled in extremely dense and unstructured layout dwellings making it difficult for the Government to cope with the demand to provide services due to various social and technological constraints (Taing et al., 2013). As a result, people residing in these informal settlements have no access to basic services like water, sanitation, electricity, and other amenities (Ngcobo, 2014).

1.1.1. Challenges to national housing policy

The country is faced with a serious housing backlog and there is a lack of capacity and coordination to deal with this problem (Malete, 2014). Housing in this regard does not only refer to a brick and mortar structure but also includes water, sewer, and electricity (Ngwenya, 2016). This backlog can be attributed to, amongst others, the ineffectiveness

of the implementation of housing policies (Ngwenya, 2016). The post-apartheid regime introduced the Reconciliation and Development Programme (RDP) in 1994 to address the lack of housing for low-income earners but the country is still faced with service delivery challenges, of which the core of this delivery is housing (Malete, 2014). The RDP policy did not provide the direction on how it should be implemented and as a result, the policy was regarded as being ambiguous and vague (Tebele, 2016).

Mothae (2013) indicates that the RDP has propagated the apartheid planning patterns where the poorest of the poor are in the peripheral areas far away from the inner city. Due to its inability to satisfy the needs of the public, the RDP was replaced by the Growth, Employment, and Redistribution (GEAR) policy (Tebele, 2016). GEAR is a policy that was introduced in 1996 with the aim of rebuilding and reorganizing the economy to enhance the RDP intended goals (Ngwenya, 2016). According to Ndhambi (2015), the GEAR policy was introduced without consultation and public participation and as a result, there was an overwhelming rejection of the policy. The policy was rejected as it was viewed to be betraying and undermining the principles of the RDP (Reitzes, 2009).

In trying to deal with the housing delivery situation which the RDP and GEAR failed to achieve, the Government introduced policies in 2004 which mainly dealt with Integrated Human Settlements and different tenure options with different typologies (Mothae, 2013). One of the policy directives that was introduced is the Breaking New Ground Policy (BNG), which is aimed at locating people close to their place of work, mainly in the inner city (Mothae, 2013). Moraba (2013) further stated that the BNG policy was also introduced to give the right to adequate housing, create quality and sustainable communities. In addition to these objectives, Trusler (2009) stated that the BNG policy was a Government commitment to combat poverty, create jobs, create wealth, influence economic growth, improve quality of life, and develop human settlements through the acceleration of the delivery of housing.

The government has not been able to realize and achieve what it was supposed to deliver through BNG (Moraba, 2013). It is a policy that was designed to enhance the delivery of housing and create sustainable communities but there was a lack of communication, will, strict control measures, and no clear direction on roles and responsibilities between the Departments and the Municipalities (Moraba, 2013). Juta & Matsiliza (2014) agree that the policy was inadequate to address the changing nature of demand emanating from urbanization pressures and there was no clarity on what the BNG policy aimed to achieve. However, Trusler (2009) argued that BNG is a policy that managed to provide homes to the South Africans even though the delivery was not at an acceptable rate.

1.1.2. Service delivery protests

Service delivery protests are on the rise in South Africa and this is mainly due to communities expressing their dissatisfaction with the failed implementation of the BNG by Municipalities, as basic services and housing are inadequately provided (Figure 1.1) (Moraba, 2013). The country has experienced approximately 3258 service delivery protests between January 2009 and August 2012 (Bhardwaj, 2016). Between March and June 2016, 2947 more service delivery protests were experienced and as a result, these protests have now become almost a routine in the country (Bhardwaj, 2016). One of the major discoveries with protests in South Africa is that they tend to increase when there is a decline in the provision of basic services and they happen mostly in crowded areas and at geographical levels that are on the periphery of a particular local Municipality's area of jurisdiction (Morudu, 2017).

According to Ndlovu (2016), the political infightings due to differences in political ideologies when it comes to matters of service delivery are the reasons for the public protests. Reddy (2016) agrees that the municipal service delivery within local Government has been negatively affected by political infighting and this always leads to service delivery protests which are being used to express dissatisfaction with the lack of services. Service delivery in South Africa is influenced by the politics within the country and highlights some of the underlying issues which have risen with the transition to a democracy (Ndlovu, 2016). During election periods, politicians make promises which are difficult to achieve and don't deliver on after obtaining the votes. This leads to community protests due to the lack of basic service delivery.



Figure 1.1. A picture of community protest for basic service delivery in South Africa. *Source:* (Jordaan, 2017)

This is a clear demonstration of how communities have been raising their voices against the lack of delivery of basic services which also includes water, sewer, and housing (Ndlovu, 2016). According to Twala (2014), service delivery protests in South Africa resembles the protest riots which occurred in the apartheid years. These protests are being utilized by communities as a weapon of choice to fight for their voices to be heard so that their needs can be met (Dassah, 2012).

In Gauteng alone, 500 service delivery protests were experienced within the first three months of 2014 (Ndlovu, 2016). Local Governments have a lack of capacity and are faced with a lot of corruption when it comes to housing delivery (Malete, 2014). Marutlelle & Ijeoma (2015) argued that it is not only corruption and lack of capacity that are the problem in housing delivery but also population growth, government policies, political and economic factors contribute extremely to housing delivery delays.

1.1.3. Factors attributed to housing backlog

In South Africa, approximately 12 million people are without adequate housing and the backlog continues to proliferate (People's Environmental Planning, 2016). In addition to the challenges indicated above, the backlog is also credited to the overly high cost of infrastructure and delays in the approval of plans (People's Environmental Planning,

2016). The Financial and Fiscal Commission (2013) argues that the backlog of housing delivery in South Africa is attributed to the inability to deliver as demonstrated by the 2009/2010 Government projections whereby only 55% of the projected 300 000 houses were achieved. The inability to deliver is due to lack of commitment to serve by those appointed to positions, unscrupulous businesspeople who leave projects at the foundation level, and the selling of houses by corrupt Government employees (Manala, 2013).

According to Burgoyne (2008), the other factor that plays a role in the shortage of housing is the rapid population growth. The world's population reached the 6.1 billion mark in the year 2000 and it was growing at a rate of 1.2% which is equal to 77 million people per annum (Burgoyne, 2008). It was projected that approximately 3.3 billion people (which translates to half of the world's population) would be living in urban areas by 2008 (Burgoyne, 2008). This urban growth involves growth in specific areas of population and individual settlements (Brown, et al., 2015). Burgoyne (2008) further states that it was further projected that this growth would increase to 5 billion by 2030. This number translates to 60% of the world's population (Karantonis, 2013).

In South Africa, the population was estimated at 51.77 million in 2011 (Statistics South Africa, 2011). 22% of this population was living in Gauteng Province (Malete, 2014). The world's population growth was estimated at 1.2% per annum in 2000 (Burgoyne, 2008), but the estimate reduced to 1.1% per annum in 2010 (UNFPA, 2011). However, the South African population growth was estimated at 0.5% per annum in 2010 (UNFPA, 2011). These high levels of population growth create a serious challenge in terms of employment and housing delivery in urban areas (Burgoyne, 2008).

There is a high rate of population growth in Gauteng province in South Africa which is caused by migration (Human Science Research Council, 2005). The population growth in the Gauteng province was estimated at 2.4% in 2001 and by 2005, the estimation grew to 4% per annum (Human Science Research Council, 2005). This is as a result of people being attracted by the economic stability of the province and low unemployment rate as compared to other provinces across the country (Human Science Research Council, 2005). Lim's (2017) model below (Figure 1.2) illustrates the "push" and "pull" factors that cause migration. The diagram depicts the internal migration of people being pushed from a rural area due to low agricultural income and unemployment, underemployment and being pulled to an urban area by better employment opportunities, better working conditions, and better public facilities (Thet, 2014)

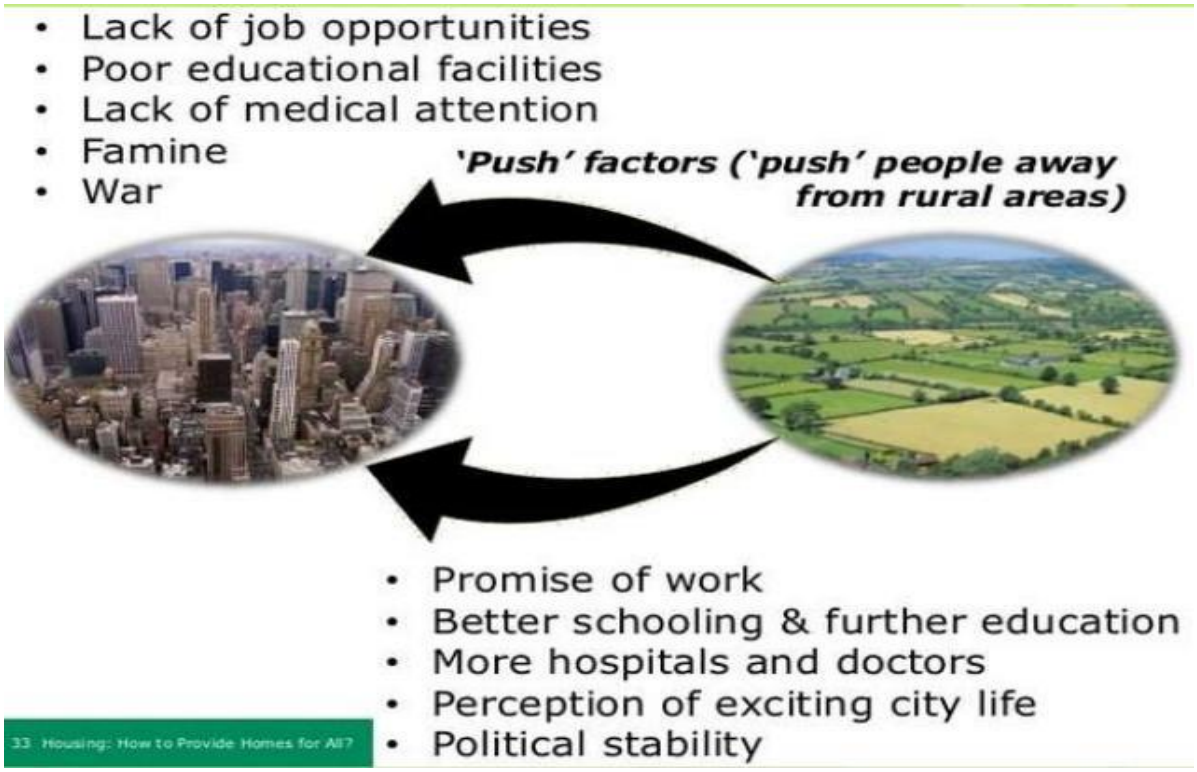


Figure 1.2: "push" and "pull" factors of migration. Source: (Lim, 2017)

1.1.4. Gauteng municipalities and their responsibilities

Gauteng province has three metropolitan municipalities (i.e. Tshwane, Johannesburg, and Ekurhuleni) and two District Municipalities (i.e. Sedibeng and West Rand) (Human Science Research Council, 2005). The West Rand District Municipality consists of three local Municipalities (i.e. Mogale City, Rand West City, and Merafong City), and Sedibeng District Municipality also consists of three local Municipalities (i.e. Emfuleni, Midvaal, and Lesedi) (Human Science Research Council, 2005). Figure 1.3 below shows the Municipalities of Gauteng Province.

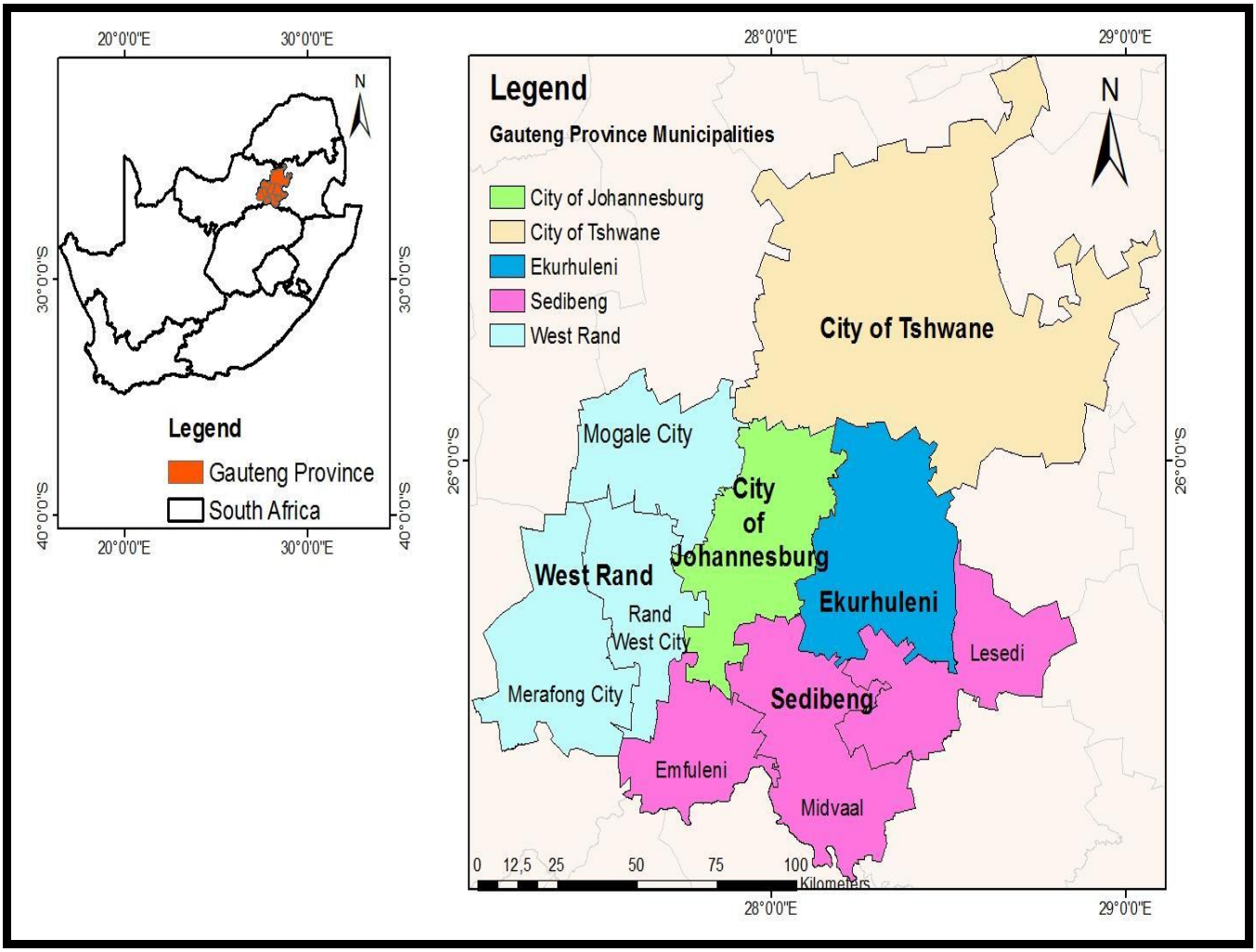


Figure 1.3: Map of Municipalities of Gauteng Province.

The research is focusing on the Ratanda Township which is in Lesedi Local Municipality within the area of jurisdiction of the Sedibeng District Municipality. The Lesedi Local Municipality is situated approximately 56km South-east of Johannesburg and the area measures 1 484 km² (Lesedi Local Municipality, 2013). The Heidelberg town, established in the year 1866, serves as the main town for the municipal area. By 2016, the population of Sedibeng District Municipality was 916 484 of which the Lesedi Local Municipality had the second-highest population within the district with 99 520 people (Sedibeng IDP, 2016-17). Ratanda Township was established in the year 1955 (Lesedi Local Municipality, 2013).

The map below shows the location of the Lesedi Local Municipality within South Africa as well as a map showing the study area in relation to the Lesedi Local Municipality (Figure 1.4).

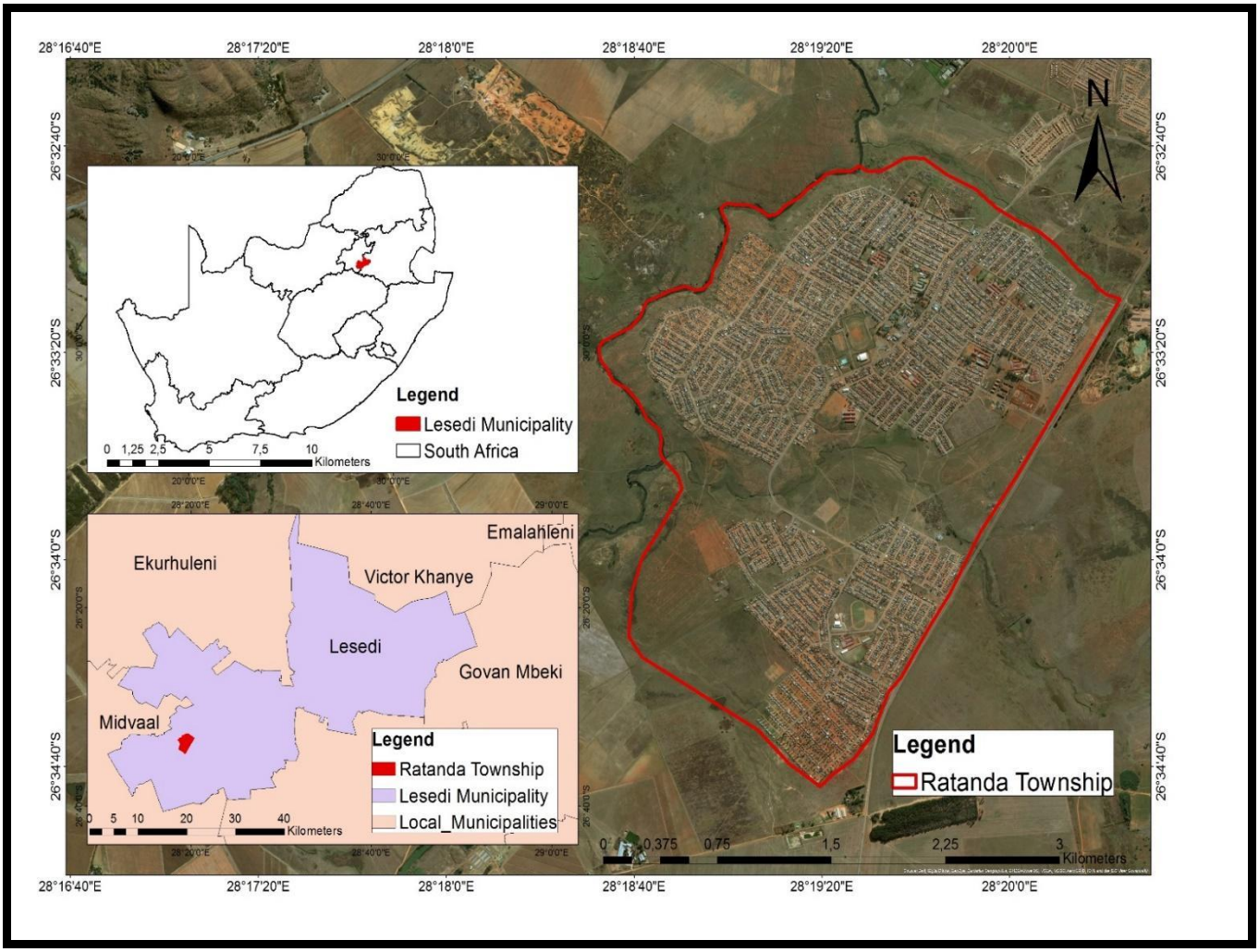


Figure 1.4: Map of South Africa showing the location of Lesedi Local Municipality and the study area.

The South African Municipalities gained the status of Local Government after 1994 and as a result, they have the responsibility to deliver basic services to the people within their area of jurisdiction and improve their social and economic standard of living (Zwane, 2014)

Zwane (2014) therefore suggests that Lesedi Local Municipality as one of the Local Government, has the responsibility to deliver basic services to Ratanda Township, Ratanda Informal settlements, and backyard rentals as these areas fall within the area of jurisdiction of that Municipality. Ratanda Informal settlement and backyard residents are not all potential workers who are active in the labour market (Lesedi Local Municipality, 2013). Most people in Ratanda are unemployed and are heavily dependent on social grants (Lesedi Local Municipality, 2013). As a result, most cannot afford to build or buy their own houses (Malete, 2014). It is the responsibility of Local Government to ensure that these residents are provided with this basic service (Malete, 2014).

Ratanda Township has a lack of urban amenities and a housing backlog of more than 6189 houses (Lesedi Local Municipality, 2014/15). Some parts of the area are rural and are poorly serviced (Lesedi Local Municipality, 2014/15). Most Ratanda residents do not have proper housing, water, and sanitation, and there has been a high number of service delivery protests in the area in the past years (Lesedi Local Municipality, 2015/16), hence this study seeks to find out the challenges in the delays of the provision of housing delivery. There is a growing concern with lots of extension of time of contract requests for many Contractors that have been appointed to build houses in the Ratanda area. This clearly demonstrates that delays are being experienced in completing the work on time. It is therefore imperative to uproot the problem by identifying the major causes of the delay and to recommend better ways in which these delays can be curbed.

1.2. Research problem

The study seeks to identify the contributing factors to the delays in housing delivery in Ratanda Township, Lesedi Local Municipality, for the past 5 years. "The delay can be defined as time overrun, either ahead of the date for the completion of the project as specified by the contract or further than the extended contract period, where additional time has been granted" (Mydin, et al., 2014). According to Kikwasi (2012), the leading causes of delays in construction projects are Contractor payment delays, changes in construction designs, delays in issuing instructions, funding problems, poor project management, variation orders, and disagreements on the valuation of work completed.

The Lesedi Local Municipality must deliver basic services, including housing, without any delays in line with the Act 108 of 1996 (1) of the Constitution of the Republic of South Africa (Malete, 2014), to reduce or eliminate the 6189-housing backlog in the area. The Municipality has a policy for housing development which is guided by the BNG policy which seeks to accelerate sustainable human settlements development (Baloyi, 2014).

However, presently, the Lesedi Local Municipality is not coping well with the demands and is in a state of paralysis, service delivery failure, and dysfunction (Siddle & Koelble, 2013). This study, therefore, seeks to employ qualitative cross-sectional methods to investigate and explore factors hindering the timeous delivery of houses in Ratanda Township within the area of jurisdiction of the Lesedi Local Municipality in the past five years.

1.3. Research question

The purpose of the study is to respond to the following research question:

What are the factors that have contributed to the delays in housing delivery in Ratanda Township in the Lesedi Local Municipality for the past five years – Gauteng Province in South Africa?

To enable the researcher to respond to the research question, the following research sub-questions are explored:

- What are the competencies of the Construction Project Manager/s assigned to housing projects in Ratanda Township?

- What impact does the following internal and external factors have on the implementation of housing projects at Ratanda Township?

  - ✔ The effects of weather on the implementation of housing projects.

  - ✔ The relationship between the Contractor and the Consultants during the implementation of housing projects.

  - ✔ The Contractor's level of skills when it comes to housing construction?

  - ✔ Do contractors have the financial muscle to implement housing projects?

1.4. Research objectives

The research aims to explore all factors that have caused delays in housing delivery in Ratanda Township for the last five years. To achieve this aim, the following objectives were analysed for the research area:

- To determine factors hindering the delivery of housing by conducting interviews with Construction Project Managers and Engineers.

- To examine the internal and external factors which may be threats to the implementation of housing projects utilizing observation and interviews with professionals and housing beneficiaries within the study area.

- To determine stakeholders and their roles in the implementation of housing projects by conducting interviews with managers from Lesedi Local Municipality, Construction Project Managers, Chief Construction Project Managers.

- To recommend alternative solutions to expedite housing delivery, identifying the causes of housing delay in Ratanda, and giving recommendations on how to resolve the problem.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

The movement of people from rural areas to urban areas is called urbanization (Petkar et al., 2012). “This rapid urbanization coupled with population growth is changing the landscape of human settlement, posing significant risks on living conditions, the environment, and development.” (Luoma, 2016).

Rapid urbanization is mainly caused by migration which is caused by looking for a better life in the cities and this increases problems of poverty, slum development, and social disruption (Luoma, 2016). This migration and population growth impact negatively on the city structures across the world (Petkar, et al., 2012). This high level of population growth creates a serious challenge in terms of employment and housing delivery in urban areas (Burgoyne, 2008).

South Africa is experiencing a severe housing shortage due to population growth and as a result, the majority are unable to provide for their own housing needs (Fuller Housing Centre report, 2014). The housing delivery plan is facing a huge backlog and lack of infrastructure and the community can no longer wait for their basic rights in line with the constitution of the country, to be fulfilled (Fuller Housing Centre report, 2014). As a result, service delivery protests are on the rise with people demanding basic services and housing. This housing backlog in South Africa can be attributed to population growth, government policies, political and economic factors (Marutlulle & Ijeoma, 2015). This population growth was estimated at 51.77 million in 2011 (Statistics South Africa, 2011), of which 22% of this population was living in Gauteng Province (Malete, 2014).

To further investigate the causes of this backlog, relevant Journals, Reports, academic papers, Government policies, and Internet information were studied to enable the researcher to review the existing body of knowledge of housing in South Africa in comparison to other countries globally. This body of knowledge paved the way in ensuring that the research is conducted and analysed appropriately.

2.2. Housing challenges across the world and South African context

2.2.1 Housing challenges across the world

King et al., (2016), stated that the challenges facing rapidly urbanizing areas include uncertainty in property rights and a lack of basic services such as water, sanitation, refuse collection, and electricity. To try and rectify this matter, many cities tried to either attract people to move or forcibly relocate them from the cities to the urban boundaries where land is deemed to be cheaper (King et al., 2016).

This plan of moving people to urban boundaries failed in countries like Brazil and India, where this relocation was merely seen as moving the problem elsewhere but not solving the situation (King & Virsilas, 2016).

Tshikotshi (2009), identified that economic inequalities exist in the cities of developing countries and this has resulted in the urban poor living in the peripheries of cities and being socially secluded. The experiences of people living in informal settlements are not understood by the developed countries and as a result, these countries have no clue what people living in poverty must go through daily (Tshikotshi, 2009). The unacceptable conditions of poverty referred to, are situations where people are living where there is a lack of access to water and sewer, living in overcrowded conditions, and in buildings that are structurally unsound with no title deeds (Rorick, 2004).

It is estimated that by the year 2025, approximately 1.6 billion people could be affected by the housing shortage across the world “Woetzel et al., (2014)”. To address this shortage by 2025, access to land must be improved, construction costs must be reduced, the efficiency of existing and newly built houses must be increased and financial costs for buyers and Developers have to be reduced (Macleod, 2014).

The World Bank (2015) observed that rapid urbanization and the increased population living in informal settlements in Africa has exacerbated the existing housing crisis. The housing demand exceeds the current supply and due to this rapid increase in population, African cities will go beyond breaking point in years to come as a result of insufficient delivery of housing (Otieno, 2015). Approximately 4.5 million people become new residents in Informal Settlements each year in Africa and most of those people cannot afford basic formal housing or bond finance (The World Bank, 2015).

Housing backlogs are being experienced in almost all the African countries, like Nigeria where the annual housing demand is estimated at 700 000 whilst the delivery is at 100 000 per annum, with a total housing backlog of 17 million (Otieno, 2015). The estimated population of Egypt is at 90 million and the current housing backlog is estimated at 3.5 million. Figure 2.1 below shows the current housing situation in Egypt.



Figure 2.1: The current housing situation in Egypt. Source: Construction Review Online, 2015.

The housing backlog in Zambia is estimated at 2 million and this is caused by the rapid population growth and continued migration from rural to urban areas. Zambia's estimated population is 15.4 million growing at a rapid rate of 3.2% per annum (Centre for Affordable Housing Finance in Africa, 2016). Like Zambia, the total housing backlog in South Africa and Kenya is estimated at 2 million, however, in Kenya, only 50 000 houses are built per annum (Otieno, 2015).

It has been estimated that 51.8 million people in South Africa live in 14.5 million households (Metze, 2015). Approximately 13.1% of these households live in informal dwellings and the housing backlog per annum is estimated at 178 000 units (Masilela, 2016). The current housing delivery in South Africa is estimated at 140 000 per annum (Wilkinson, 2014). Figure 2.2 below is an example of the informal dwellings in South Africa.



Figure 2.2: Informal dwellings in South Africa.

Source: http://www.bizcommunity.com/Article/196/568/151341.html

2.2.2 Housing challenges in South African context

Qabaka (2013), stated that the housing crisis in South Africa is heightened by the fact that the prices of building material have increased, residential areas are becoming too dense and citizens must be on long waiting lists before receiving a house. However, politicians still promise citizens free housing despite these challenges. The current housing delivery approach of the government housing subsidy scheme which allocates RDP houses to qualifying beneficiaries to deal with the current housing backlog in South Africa has exacerbated the backlog (Novacek, 2016).

By the dawn of democracy in 1994, the estimated housing backlog in S.A was at 1.5 million. But by the year 2015, the backlog was estimated at 2.1 million (South African Institute of Race Relation, 2015). The African News Agency, (2015) indicates that by April 2016, the Minister for Human Settlements confirmed the housing backlog to still be 2.1 million and that the figure corresponds with the Statistician-General of South Africa. The National Housing Policy Framework had set the strategies in fulfilling the goal of delivering 350 000 units per year in South Africa since the abolishment of apartheid laws, until the housing backlog was eradicated, however, the backlog is still increasing despite the delivery of 3 million houses since 1994 (South African Institute of Race Relation, 2015).

To address this housing backlog in South Africa, Novacek (2016), suggest that the regulations for small scale developments have to be condensed, a focus should be more on informal settlements upgrades in terms of development, there should be more community participation in the developments, partnership with sector experts in the tender process should be promoted and stakeholder involved with housing developments must have the same goals.

2.2.3. Land Ownership in South Africa

South Africa has approximately 15.6 million households and approximately 38% to 46% of these households are residing in homes that were constructed after 1994 (Schussler, 2016). These houses are on land that is 52% owned by Africans, 47% by whites and 1% by Asians and Coloured groups (Schussler, 2016). However, Walker (2015), disputes this. She argues that due to the colonial dispossession and apartheid, 87% of the land was owned by whites and 13% by blacks in 1994. The current figures indicate 67% white-owned land, 15% black-owned, 10% state-owned and the remaining 8% is in the metro and non-metro urban areas (Walker, 2015).

From the information provided above, it shows that the unjust legacy of the past that arose from the racially discriminatory laws which were in place in the twentieth century left serious deep scars concerning land ownership (Kloppers et al., 2014). The current government is faced with serious challenges of addressing the imbalances of the past in terms of land distribution. The Reconstruction and Development Programme (RDP) was a framework which was introduced in South Africa to address the issues of inequality which were brought on by apartheid and to facilitate socio-economic growth within the country (Kloppers et al., 2014). This policy was not fully implemented to the satisfaction of South Africans.

Another issue hindering the construction of houses is the issue of land availability. Municipalities in South Africa prefer to use available land for commercial use and are unwilling to dispose of land for low-income housing (Thellane, 2008). Currently, there are many informal settlements which are situated on land that is not suitable for housing development as most of the land is on dolomite or serious natural and environmental constraints (Marutlelle, 2017). This is due to the fact most of the suitable land has already been sold by the Municipalities (Thellane, 2008).

2.2.4. The Constitution

On the 4th December 1996, the Constitution Court approved the Constitution of The Republic of South Africa, no. 108 as the supreme law of the country and came into effect on the 4th February 1997. Chapter 2, section 26 (1) states that “everyone has the right to have access to adequate housing.” (RSA, 1996). Chapter 7, section 151 (152) indicates that “the Local Government must provide services to communities in a sustainable manner.” It is, therefore, the responsibility of the Lesedi Local Municipality and the Gauteng Department of Human Settlements to provide adequate housing to the community of Ratanda.

The South African Human Rights Commission, (2015) states that “adequate Housing is just not the provision of brick and mortar structures but also includes equality, human dignity, public participation and access to information.” The Office of the United Nations High Commission of Human Rights states that “the right to adequate housing contains entitlements such as security of tenure, Housing, Land and Property restitution.”

2.3. Housing Policies

The National, Provincial and Local Governments have a mandate to provide adequate housing to the community as instructed by the supreme law of the land (i.e. The Constitution of the Republic of South Africa, No 108 of 1996). However, it does not indicate the process and exact roles that each sphere of government must play in this mandate (Soto & Swesnik, 2012).

The Housing Act 107 of 1997 came into effect on the 1st April 1998 intending to clarify these roles (Housing Act 107, 1997). The Housing Act seeks to "eliminate discrimination and segregation and to promote integration" (Soto & Swesnik, 2012).

As stipulated in the Constitution of The Republic of South Africa, No 108, housing forms part of the socio-economic rights. The Housing Act 107 of 1997 indicates that job opportunities must be created through housing developments to alleviate poverty and provide free basic services (Phago, 2010). To realise this, housing must be developed through intensive labour methods (Phago, 2010). After the promulgation of the Housing Act 107 of 1997, the Gauteng Housing Act 6 of 1998 was passed to give effect to the National Housing Policy (Phago, 2010). The act was established to ensure housing quality, stability and economic growth in Gauteng (Phago, 2010).

An elaborative picture of the formulation of the Housing Act 107 of 1997, which clearly shows that the policy is meant to improve the welfare and prosperity of South Africa's social and economic environment, is illustrated in Figure 2.3.



Figure 2.3: Characteristics of housing policy. Source: (Phago, 2010).

The National Housing Code of 2000 was introduced as a guide to the implementation of housing. After the Housing code of 2000, another policy strategy document, the Breaking New Ground (BNG) policy, was adopted in 2004 mainly to outline plans with indicators of deliverables and time frames (Phago, 2010). The enhancement of the housing product, spatial planning, promoting densification and integration are some of the objectives of the BNG (Lategan, 2012).

2.4. Housing delivery strategy

Before 1994, South Africa was beleaguered by colonialism, racism, apartheid, sexism and repressive labour policies (AP Framework, 2014). Many people didn't have proper homes and were living in shacks.

South Africa has been struggling, since 1994, to deal with the housing challenges and backlog (Fuller Housing Centre report, 2014). In trying to address this backlog, a National Housing Programme was developed where low-income households would be subsidised to ensure that

they get a serviced stand with water and sewer and a basic house (Fuller Housing Centre report, 2014). The idea of this approach was to deal with backlog through scale delivery of subsidised housing where low-income households would benefit (Fuller Housing Centre report, 2014). The vision and goal of the National Housing Policy Programme were to deliver about 350 000 units annually as one of the strategies to deal with Housing backlog (Tomlinson, 2015). The housing delivery figures over the years indicate that the Government has been struggling to achieve the goals as set out by the National Housing Policy Programme (Tomlinson, 2015). In the 1998/99 financial year, 235 635 units were achieved thereby missing the target by 114 365 (Tomlinson, 2015). A significant decline in delivery was seen over the years thereafter whereby an unacceptable delivery of 105 936 units was delivered in the 2013/14 financial year. The delivery was missed by 244 064 (Tomlinson, 2015). The illustration below indicates that the highest delivery ever realised was in the 1998/99 financial year and it has been declining ever since (Figure 2.4).

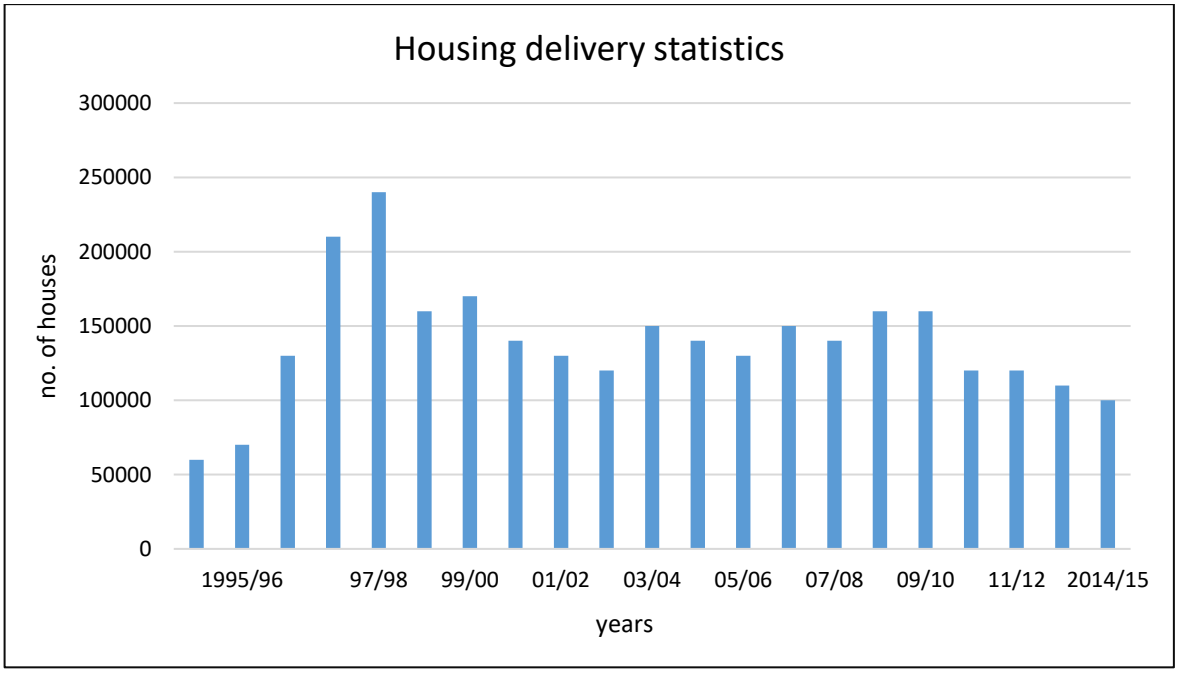


Figure 2.4: Housing delivery statistics since 1995/96 financial year. Redrawn from *source=iu&ictx=1&fir=dnc_aZmrawm6vM%253A%252C8dRAEBzQ7GxAeM%252C_&usg*

Local governments were envisioned to play a very trivial part in ensuring the delivery of houses when the housing policy was developed (Tomlinson, 2015). This changed when the National Housing Act of 1997 was promulgated. The Municipalities were tasked to ensure adequate access to services and housing for people living in their area of jurisdiction (Housing Act 107, 1997). A serviced stand and house are delivered through the low-cost housing subsidy scheme within the subsidy models called the Reconstruction and Development Programme (RDP) (Bawa-Osman, 2017).

The RDP low-income housing "provided the government with an opportunity to mediate in the property market and demolish the apartheid spatial form." (Burgoyne, 2008). The delivery and planning strategy "were aimed at developing townships economically as well as reconstructing urban space through increasing densities, co-ordinating public investment, encouraging business development, connecting transport and land use planning." (Burgoyne, 2008).

Based on the above-mentioned subsidy qualification criteria, the Government realised that there were a lot of people whose household income fell between R3501 and R15000 (Jeffery, 2015). These people wouldn't necessarily qualify for a low-cost house subsidy and neither would they qualify for a bond house with the financial institutions (Jeffery, 2015). This added more pressure to the housing backlog as more and more informal settlements were developing. Despite delivering more than 2.5 million houses since 1994, the housing backlog has grown from 1.5 million from 1994 to 2.1 million presently, with informal settlements increasing in urban areas (Jeffery, 2015).

The Finance Linked Individual Subsidy Programme was introduced to help people falling outside the low-cost subsidy qualification to buy houses or build houses at a price not exceeding R300 000 (Jeffery, 2015). These people would qualify for a subsidy ranging from R20 000 to R87 000 depending on their income levels (Jeffery, 2015). This subsidy amount would be paid to the financial institution providing the bond for the building of a house or purchasing of an existing house.

2.5. Challenges and constraints facing the National Housing Policy

The Housing Programmes were developed in South Africa mainly to address the housing backlog. Despite all these programmes being in place and government budgeting for housing and building each year, the housing backlog seems to be increasing annually "Manomano et al., (2016)". This means that the houses that are being constructed each year are not enough to reduce the backlog. According to "Manomano, et al., (2016)", the problem with housing in South Africa is corruption and mismanagement. As a result, 1910 government officials were arrested in 2010 due to corruption "Manomano, et al., (2016)".

Over and above corruption, the housing challenges are due to inferior materials being used, as a result, poor quality houses are being constructed "Manomano, et al., (2016)". Due to these inferior materials being used, beneficiaries catch illnesses such as tuberculosis and lung infections "Manomano, et al., (2016)". One other fact adding pressure onto the housing backlog is the misuse of houses by those who benefit (Phago, 2010). These beneficiaries rent out or sell houses to illegal immigrants. Even though these challenges are being experienced, "the challenge faced by the government since 1994, is how to provide a programme of action in rolling out public housing policy that is conducive to the eradication of the public housing shortages." (Phago, 2010).

2.6. Delays in Housing Delivery schema

There is enough evidence that suggests that the current policies are financially unsustainable to deliver housing opportunities at a large scale in South Africa (Khumalo, 2012). The People's Environmental Planning (2016) supports the statement by indicating that acquiring sufficient finance to service the land with water, sewer, roads, storm-water and electricity after the bureaucratic red-tape of acquiring land, conducting environmental assessment processes and finalising long planning processes, is a challenging task.

Some of the delays experienced in housing delivery are caused by the delays in township establishment processes, bulk infrastructure constraints and lack of affordable well-located land (Khumalo, 2012). As a result of these delays, the estimated demand for housing grew from 1.8 million in 2001 to 2.1 million houses in 2011 (Khumalo, 2012). "(Musvoto et al., 2016)" argue that the housing delivery problems in South Africa are due to spatial planning and land use management. However, a lack of clarity on responsibility and accountability not provided for in the policies delays housing delivery "(Musvoto, et al., 2016)".

Umhlaba Consulting Group (2013), suggested that the lack of planning was a major challenge to housing delivery. There is "a lack of proactive comprehensive integrated planning for housing long term cohesive, integrated strategic approach that guides funding prioritisation and allocation from various sector Departments on which housing delivery depends." (Umhlaba Consulting Group, 2013).

Davis, (2013) has a different view altogether. She suggests that the non-qualifiers of the Government-subsidised low-cost housing take occupation through bribing or fraudulent means. Some who have been legitimately allocated the houses, rent them out or sell them mostly to illegal immigrants (Davis, 2013). This is a serious set-back to dealing with issues of housing backlog and delivery delays (Davis, 2013).

2.7. Political Commitment

Politics can have a serious effect on the implementation of projects and can determine whether a project will succeed or fail (Jowah, 2014). It is not only politics that has an impact, but also Government policies, administrative and economic variables which can contribute to delays in housing delivery (Marutlulle & Ijeoma, 2015).

The Marutlelle et al., (2015) model (Figure2.5) will enable us to understand and show the extent to which politics and other related factors can delay housing delivery in Lesedi Local Municipality (LLM).

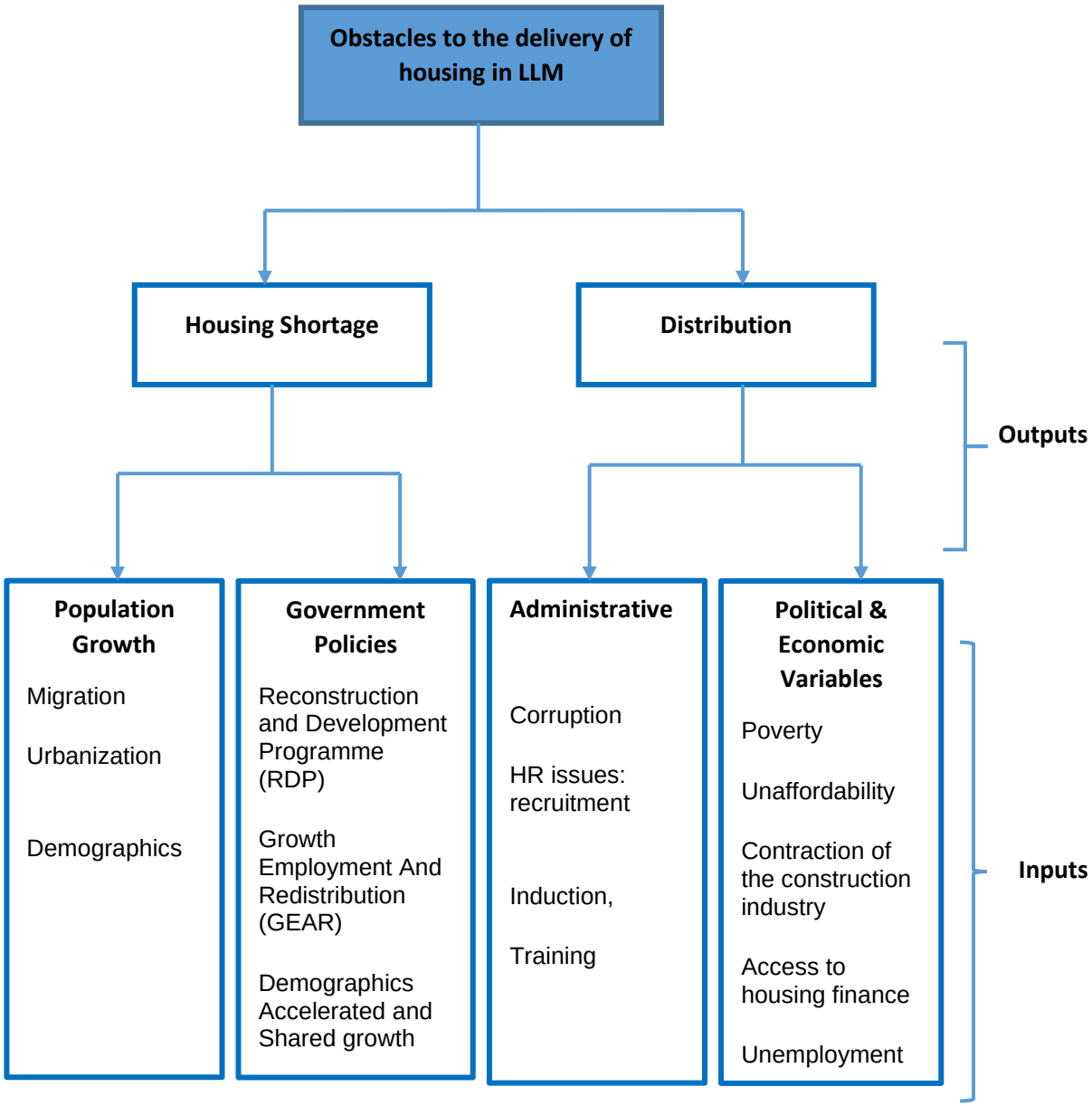


Figure 2.5: Obstacles to the delivery of housing in LLM. **Source:** (Marutlulle & Ijeoma, 2015)

Population growth accelerated urban sprawl, natural catastrophe, political turmoil and poverty are the five factors which are mostly linked with the housing crisis and need to be addressed by all spheres of government in a bid to address housing challenges (Marutlulle & Ijeoma, 2015). However, Ndlovu, 2016 argued that the most powerful challenges faced by housing planners in Local Government in delivering housing shortage are power, politics, limited capacity, multiple stakeholders, unrealistic demands and multi-cultural context. Lack of funding, the ill-capacitation of local Governments, and lack of political will also lead to a lack of housing delivery (Ndlovu, 2016).

Political will is essential as it “facilitates the development of an enabling policy framework, program implementation, and mobilization of financial and technical resources from multilateral and bilateral development partners and consequently enables increased local budgetary allocation” (Murunga et al., 2013).

2.8. Internal and external factors that play a major role in construction delays

It is important to understand the internal and external risks in a project as part of the project plan. This is a prerequisite for effective project management (Tyson, 2010). These risks have the potential to derail the overall plans of a project, affect the cost of construction and might also compromise quality (Atangaza, 2017).

The seven different research strategies that can be used in research are: Experiment, survey, Archival research, case study, Ethnography, Action research, Grounded theory and Narrative inquiry (Saunders, et al., 2016). Hamzah et al., (2011) used literature to summarize causes of delay and construct a delay framework for construction projects in Malaysia. The paper focused on studies done in Malaysia, which is a developing country, and the constructed framework might not apply to the causes of delays in developed countries. While this method of data collection gives insight into the major causes of delay, it does not give a current trend on the delay of construction projects that are currently underway. Soliman (2017) also used a similar research approach, where he collected data from previous papers and concluded that economic, contractual and technical factors were responsible for delays in developing countries and construction projects in developed countries were mostly affected by project characteristics. The findings of this research also indicated that the causes of construction delays that were common globally were shortages of material, shortages of labour and issues related to subcontractors (Soliman, 2017).

Nduka et al., (2018) used well-structured questionnaire to assess perceptions of professionals within the construction industry on the role of site supervision on project performance. The findings of this research indicated that effective site supervision plays an important role in the quality of houses built and the time it takes to complete a project. Alwi et al., (2001), Ugwu et al., (2007), Abas et al., (2015) reported similar findings and concluded that site supervision played a major role in successfully executing construction projects. These researchers however used well-structured interviews and focused on specific factors that affect housing projects and did not give respondents a chance to suggest alternative factors. Sambasvian et al., (2007) found varying results when he indicated that from a list of 28 factors, contractor’s improper planning ranked the highest and poor site management ranked second. Muhammad et al., (2015) used a questionnaire survey to conduct a study in Pakistan to understand the effects of labour productivity. The findings indicated that lack of experience was ranked as the most important factor, followed by low pay rates, working without a holiday, alterations of building specifications, a conflict between labour and supervisors, payment delay, rework, increase of labour age, bad weather and ignored safety precautions. This study, however, is based on

findings for research done in Pakistan and results may differ when research is done in a different geographic location.

Fugar et al., (2010) attributed financial constraints, out of 32 factors, as the major contributing factor to housing project delays in Ghana. In earlier studies, Alaghbari et al., (2007), El-Razek et al., (2008), Sweis et al., (2008) and Abdullah et al., (2010) also found financial difficulties to be the most important factor resulting in construction project delays in Malaysia, Egypt and Jordan respectively. Abisuga et al., (2014) conducted a similar study and found that cash flow problems caused construction project delays followed by client's financial difficulties, inadequate consultant experience and incompetent project teams. Kaliba et al., (2009) studied the causes of construction delays in road construction projects in Zambia. The findings of the research indicated that the major causes of construction delays were delayed payments, financial issues between the client and contractor, modifications of the contracts and economic problems. This further emphasises the importance of proper financial coordination. Other important factors included issues with material procurement, changes in drawings, staffing problems, equipment shortages, poor supervision, construction mistakes, poor site coordination, labour disputes and strikes. Kaliba et al., (2009) suggested that proper project management practices are needed to overcome delays in construction projects. A study that was done by Aigbavboa et al., (2014) in Zambia revealed that delays in progress payments and difficulties in financing projects were the main factors responsible for project delays.

Financial constraints were also indicated as a major factor contributing to construction delays by El-Razek et al., (2008) in Egypt. El-Razek et al., (2008) found that financing issues from contractor, delayed contractor payments and partial payments during the construction process were the main factors contributing to construction delays in Egypt. It is also important to note that the respondents (contractors and owners) blamed each other for the delays in construction projects and this might have influenced the overall results. El-Razek et al., (2008) however emphasised that to reduce delays in construction projects, the consultants, contractors and owners need to effectively work together. Alavirfar et al., (2014) suggested that to overcome delays caused by delayed payments and financial constraints, costs need to be estimated, budgets need to be determined and costs need to be controlled during the construction process. Another important factor which is often overlooked is the awarding of projects to the lowest bidder, awarding projects to contractors who do not have the financial or technical potential and the selection of subcontractors who are involved in other more favourable projects (Alsuliman, 2019). These are fundamental financial factors which ultimately influence the delivery of houses.

Das, (2016) surveyed to identify various labour attributes responsible for delays by distributing questionnaires to different professionals within the construction industry from India and revealed that the major factors attributed to housing delays were: lack of appropriate skill, lack of adequate remuneration and poor commitment by labours. Ali et al., (2010) studied the perceptions of construction workers in Malaysia and labour shortages were ranked as the main factor contributing to housing delays and poor site management ranked last. Ali et al., (2010) also went further to state that delays in construction projects result in cost overrun and extension time. Another important factor that was identified in the literature is site management. Aibinu (2006), Faridi et al., (2006) and Toor (2008) all ranked poor site management as one of the highest

factors contributing to housing delays. The relationship between contractors and consultants is also considered important. Assaf et al (1995) conducted a study in Saudi Arabia and factors such as delays in payment, ineffective planning by contactors and poor site management and supervision were responsible for construction delays. Assaf et al., (1995) also highlighted that the relationship between contractors and consultants can be very difficult. Ineffective planning and scheduling have also been identified as an important factor in construction project delays. Apart from financial difficulties, Abdullah et al., (2010) also identified that contractor poor site management and ineffective scheduling and planning caused delays in construction projects in Malaysia. Tumi et al., (2009) elucidated that the main causes of construction delays in Libya included improper planning, lack of proper communication, material shortage, design errors and financial challenges.

Akomah et al., (2016) studied the perceptions of contractors in Ghana, following delays in road construction projects. A random sampling technique was used in a survey which consisted of 115 participants. The study revealed that delays in honouring payment certificates were ranked the highest, followed by bad weather conditions, unfavourable site conditions, delays in instructions from consultants and difficulty in accessing bank credit.

Several researchers identified bad weather conditions as one of the major causes of delays in construction projects and these include Al-Momani (2000), Mydin et al., (2014), Asnaashari et al., (2015), Ballesteros-Pérez et al. (2015) and Masood et al., (2015). Mydin et al., (2014) identified five major construction delays in Malaysia which include; poor weather conditions, poor site conditions, poor site management, incomplete documents and lack of experience from managers and supervisors. A similar study conducted in Pakistan by Masood et al., (2015) revealed that poor weather conditions were ranked second out of a list of ten top factors. Masood et al., (2015) also attributed delays in construction projects to delayed payments, ineffective planning and scheduling and reworking of construction projects to name a few. These papers identified bad weather conditions as the most important factor, while other studies (Fugar et al., 2010, Atangaza, 2017, Soliman, 2017, Nduka et al., 2018) ranked bad weather as having little or no impact on construction projects. This further emphasises that factors responsible for construction delays can vary from region to region depending on the geographic location.

Atangaza (2017) suggested that bad weather conditions should not have a major impact on the construction of houses. Atangaza (2017) suggests that although the weather cannot be controlled, proper planning can reduce delays. A way to overcome unpredictable weather is to work on the outside of the house where the weather might affect construction during good weather conditions and during bad weather, concentrate on the inside where the weather does not affect (Atangaza, 2017). Atangaza (2017), also identified that insufficient funds, lack of communication and improper planning all play a major role in construction delays. Mydin et al., (2014) provided measures to overcome housing delays and these include; proper planning before construction starts, the establishment of proper communication channels through regular meetings and site visits, the proposal of an incentive if projects are completed early, adequate site management and proper planning and scheduling.

Zidane et al., (2018) researched to assess the perceptions of clients, consultants and contractors from the public and private sectors in Norway and identified similar results. The top five housing

project delay factors identified by Zidane et al., (2018) include; poor planning and scheduling, issues with internal administrative procedures, resource shortages, poor communication and a lack of appropriate inspection processes for completed work. Poor scheduling was also noted as being a major factor Asnaashari et al., (2015). Asnaarshari et al., (2015) also noted that traditional management styles, the use of old technologies, purchasing problems as well as poor weather conditions were important delay factors in Iran.

In a study conducted in Uganda by Alinaitwe et al., (2013), changes to the scope of work was ranked as the most critical factor in construction delays, followed by delayed payments, poor monitoring and control, high cost of capital and political insecurity and instability. This is consistent with the results of studies done by Assaf et al., (2006) and Enshassi et al., (2010), in Saudi Arabia and Gaza Strip, where change orders were ranked as one of the most important factors of delay. Mahamid (2016), also found similar results in a study done in Saudi Arabia. Mahamid (2016), randomly distributed questionnaires to 120 contractors and the results indicated that the five most important direct factors included delays in project progress payments, contracts with unrealistic durations, change orders, poor quality of construction projects and labour with inadequate skills. Furthermore, Mahamid (2016), recommended that to overcome these challenges, there needs to be frequent communication between stakeholders, project owners need to conduct thorough checks of bidders and project owners need to ensure that progress payments are made on time. The study, however, only used the perceptions of contractors and other professionals were excluded from this study, which might make the viewpoints from this study biased.

The importance of proper communication has been emphasised, however other factors such as slowness in decision making can also delay construction projects (Marzouk et al., 2014). Marzouk et al., (2014) analysed responses from project owners, contractors and consultants and identified that the major construction delay factors were slowness in decision making, type of bidding and the award of projects, changes in the scope of the project, and delays in the payment of completed work. Slowness in decision making was also identified as an important delay factor by Hamzah et al., (2011). Hamzah et al., (2011) used data from studies done in Malaysia and identified five important delay factors which include financial difficulties, slowness in decision making, slowness in giving instruction and lack of suitable building material. Mahamid et al., (2012) identified more than 52 causes of delays in the Gaza Strip. The major causes of delays that were highlighted include political situations, the awarding of projects to the lowest bidder, shortages of equipment and delays in decision making. Khan (2019) also indicated political and socio-economic as playing a major role in construction delays in Pakistan. Politics was also seen to play a major role in projects in India by Lehne et al., (2018). Lehne et al., (2018) stated that politicians misuse their power to gain members and are involved in corruption. Sepasgozar et al., (2015) investigated the causes of delay in Iran and grouped the factors into five classes. Sepasgozar et al., (2015) concluded that the top five causes of delays included contractor organization attributes, labour shortages, external factors, material deficiency and design issues. The factors in the study by Sepasgozar et al., (2015) were grouped into broader descriptions which could result in the misinterpretation of the outcomes of the study. For example, contractor organization attributes could mean poor planning, poor site management or poor communication, thus the meaning could be misleading.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. Research strategy

This chapter will address the research methods utilized, the way data was collected, analysed and interpreted to understand, describe and educate others on the causes of delays in housing delivery in Ratanda Township in the last five years.

The research strategy is the way the researcher plans to carry out the research (Saunders, et al., 2016). To address the research questions and objectives, a qualitative case study strategy was used to investigate the causes of delays in housing projects. A case study is flexible in the sense that it allows the researcher to investigate using multiple sources of data collection like interviews and direct observation (Ngcobo, 2014). It is important to note one of the important principles of case study guidelines which states that the research must ensure that a sample is representative of the general population.

3.2. Research design

Research design is a structured plan that guides the researcher in terms of what to do to answer the research question (Dudovskiy, 2016). Thus, the research design of this study is descriptive and analysed in qualitative methods. The data collection strategies associated with descriptive design in qualitative methods involve amongst others, the individual interviews with a structured or semi-structured guide and the sampling technique is purposeful (Kim, et al., 2017).

The study employed qualitative methods to explore the challenges impacting on housing delivery in Ratanda Township. Qualitative research is more about understanding people's words, actions and records and finding patterns within those words and actions (Kakulu, 2014). This methodological choice aims to determine patterns that emanate from observation, documentation and analysis of the research topic.

In qualitative research, the methods are interactive and humanistic, and respondents are actively involved, as a result, sensitivity to respondents in the research study is imperative (Kakulu, 2014).

3.3. Validity analysis

Validity is the extent to which the research study measures what the researcher is supposed to measure (Psu Cd8, 2011). If the results of the study are not valid, then they cannot be used to answer the research question. It is therefore important to ensure that the instrument to be used in the research is the correct one to measure what it is supposed to measure.

Before actual data collection, interviews were scheduled and piloted or pre-tested on two (2) respondents to ensure that the questions are clear, understood and can be answered (Gill et al., 2008). The participants for the pilot interview were randomly selected from the Gauteng Department of Human Settlements and their responses were not included in the target population that was analysed. The pilot interviews assisted in further screening out difficult questions, unfamiliar words or phrases and leading questions (Streatfield, 2011).

3.4. Field data collection

In this study, the researcher is more interested in the experience, meaning and perspective of the respondents with the main purpose of describing the challenges of housing delivery at Ratanda Township. This was done in a form of conducting a face-to-face interview as a technique for collecting data. In achieving this, the researcher utilized the inductive approach to generate new concepts and theories from the given information, to observe and interpret meaning in perspective (Gabriel, 2013).

Field data were collected between June and October 2019. Data was collected through structured interviews which were conducted at the Lesedi Local Municipality, the Gauteng Department of Human Settlement's offices and at contracting companies that were involved in the management of housing projects at Ratanda Township.

Ratanda Township was chosen as the area of interest because there have been previous RDP housing projects in this area and there are still ongoing housing projects. The research population was chosen based on the fact that the respondents have access to RDP housing project information, the respondents (population under study) have worked with RDP housing projects within Lesedi Local Municipality and more specifically Ratanda Township and their perception would be based on factual information (previous experiences).

Letters of approval to conduct the study and interview participants were obtained from the Lesedi Local Municipality (LLM) and Gauteng Department of Human Settlements (GDHS). A list of 13 questions was drafted and utilized to interview the target population which included participants from LLM, GDHS, Contractor and Consultants Companies (Appendix C). The list of contractors and consultants involved in construction in the area was obtained from LLM and GDHS as well as officials who are involved in the construction field from both Departments for sampling purposes. The target population has been defined as "the group of people to whom we want our research results to apply" (Vonk, 2016). These are the individuals that the researcher wishes to generalise the findings and are drawn from the general population. The total sample population or general population consisted of all staff members from the Department of Human Settlements, staff from the Lesedi Local Municipality and employees of contractors and consulting companies that were involved in the management of housing projects at Ratanda Township.

The participants were chosen using a purposive sampling technique and a total of 40 participants were interviewed, making the total sample size to be 40. Table 3.1 indicates the number of

participants from each category in the target population. Purposive sampling technique allows the researcher to be judgemental in terms of choosing participants in the study (Tongco, 2007). The chosen participants have first-hand experience in working on construction projects and thus will be able to provide valuable information on the causes of delay in housing projects (Ren et al., 2008). The first set of samples consisted of 7 Housing officials from the Lesedi Local Municipalities. The second group of samples was made of 2 departmental managers and 12 officials from GDHS and the third group consisted of 5 construction managers, 6 Engineers and 8 construction workers.

Table 3.1: Table indicating the number of participants interviewed. Adopted from Manomano et al., (2018).

Level	Interview sample	Total sample interviewed
Municipal	Lesedi Local Municipality	7
Provincial	Gauteng Department of Housing	14
Company	Contractor and Consulting Companies	19
Total		40

Data was collected through conducting interviews with questions that were designed to meet the objectives of the study and the questions varied from demographic to open-ended questions. The questions were intended to elicit the perceptions of the target sample on the major factors that contribute to the delays in housing delivery. The first section of the interview schedule consisted of questions that were aimed at capturing the demographic attributes of the respondents and these include the age, gender, and race. The second section of the interview schedule consisted of questions that would help elucidate the perceptions of the respondents on the factors that contribute to delays in housing.

3.5. Data analysis

The Statistical Package for Social Sciences (SPSS) version 23 was used to analyse the data that was collected during the interview process. SPSS was chosen in this research because the software makes it easier to present data through descriptive statistics, visually interpret and tabulate raw data. Before any analysis is done, it is important to check the reliability of the data. Chronbach's alpha test was used to calculate the reliability and consistency of the data using SPSS (Abas et al., 2015, Muhammad et al., 2015). Chronbach's alpha values range from 0 to 1 (Mohammad et al., 2015). A value of 0.70 or higher is considered reliable (Abas et al., 2015). The mean and standard deviation of each respondent was calculated and tabulated using SPSS. The summary statistics were calculated and tabulated using excel and the data was presented in graphs and tables.

To establish the importance of the key factors causing a delay in construction projects, namely; financial constraints, weather conditions, competency of labour and political attributes, the relative importance index was used. The relative importance index was used to assess the causes

of delay by Mohammad et al., (2015). Participants were asked to pick out of a total of 4 options which describe the relative importance of each factor. A four-point Likert scale was used to test the importance of each factor. Participants had to choose whether the factor was 1=important, 2= less important, 3=moderately important, 4= not important (Fugar et al., 2010). These responses were then used to calculate the relative importance index. Equation 1 describes the relative importance index, where the value for each factor was calculated by combining the scores given to it by the participants.

$$RII = \sum \quad \frac{Pi\ Ui}{N\ (n)} \qquad (1)$$

Where RII=relative importance index, Pi= respondent's rating of the cause of delay, Ui= number of respondents placing identical weighting, N= number of respondents, n= highest attainable score on the cause of delay.

3.6. Ethical consideration

An informed consent letter to make certain that the participants and respondents were not forced to participate in the study, was distributed to the sampled participants and respondents for them to read and understand the content of the interview schedule of the survey and the face to face interview questions. To ensure that all participants and respondents in the study participated voluntarily, the researcher requested them to complete and sign an informed consent form if they agreed to partake.

The researcher made certain that the confidential information collected from participants is kept in an inaccessible locked place to protect the privacy of the feedback provided by participants. To ascertain confidentiality; all the data is kept anonymous. Participant's information will not be associated with the participants' name.

Chapter 4: RESULTS

The results of this study are presented in this chapter. Following a critical review of the available literature, the most important key groups of factors responsible for delays were constructed and this list included factors attributed to labour competency, financial constraints, political constraints and weather.

The first section of the interview schedule, used to collect data, consisted of demographic questions and the data is presented in figure 4.1. The questions included gender, number of years of experience in the construction industry, the type of organization, the profession of the respondents. The highest number of participants were from the Gauteng Department of Human Settlements and consisted of 12 Officials and 2 Departmental managers. The number of years of experience was also obtained and 15 participants worked between 6 to 8 years, 11 participants worked between 8 to 10 years and 2 participants worked over 10 years in the construction industry. A total of 27 participants were male and 13 were female, making up 67,5 % and 32,5%, respectively. Most of the participants have a BSc degree (15 participants), 8 participants have an MSc degree, 1 has a PhD. degree and 6 and 7 participants hold a certificate and diploma, respectively.

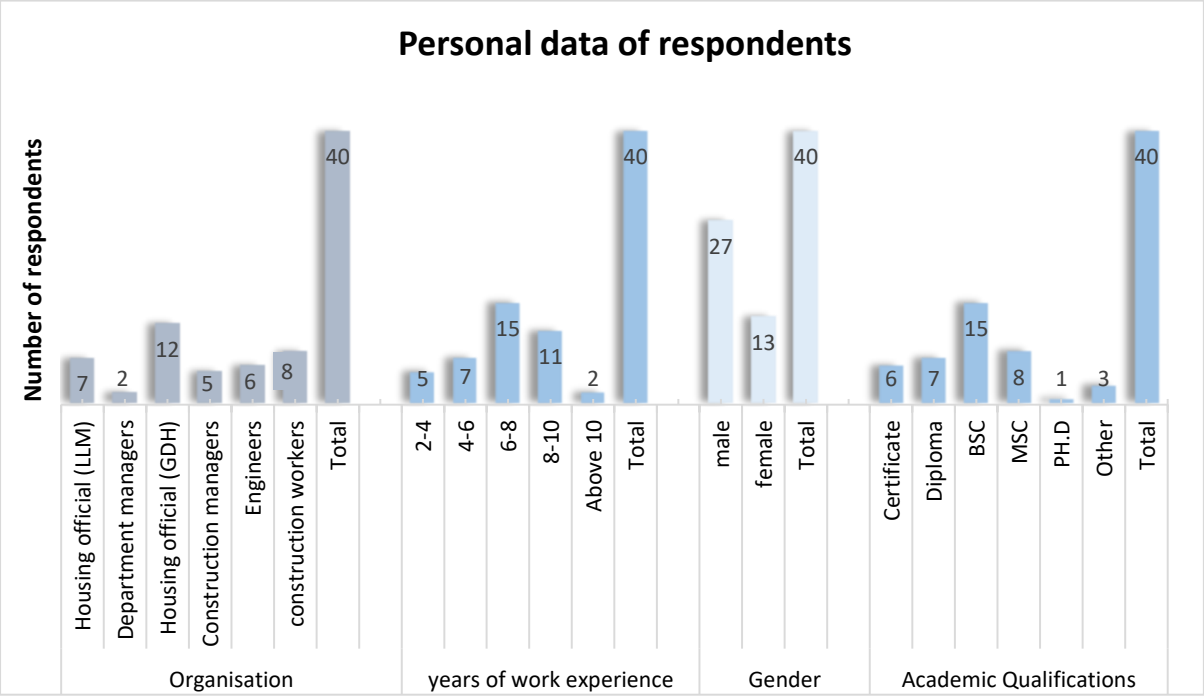


Figure 4.1: Personal data of the respondents (Adopted from Nduka et al., 2018)

Chronbach's alpha test was used to test the validity and reliability of the data and the results are shown in Table 4.1. Before any other analysis was performed, Chronbach's alpha test was used for the validity of the data. The results of this test indicate that the data is 100% valid.

Table 4.1.: Case processing summary

		N	%
Cases	Valid	40	100
	excluded	0.00	0.00
	Total	40	100

The reliability of the data is shown in Table 4.2. A value of 0.70 or higher is considered reliable. The results from the SPSS analysis indicate an alpha value of 0.850, indicating that that data is highly reliable.

Table 4.2.: Reliability statistics

Chronbach's alpha	Chronbach's alpha based on standardized items	Number of items
0.850	0.847	40

4.1. Competency of the project manager

The participants were asked to list the necessary skills that a project manager should have to successfully execute a construction project. A total of 18 different skills were identified from the responses of the participants (Table 4.3). The competencies were ranked according to their means and the most important skill was identified as the ability to provide supervision, with a mean of 4.52 (Table 4.3). Financial management obtained a mean value of 4.23 and conflict resolution had a mean value of 4.21, ranking these factors 2nd and 3rd, respectively. Educational competency, the number of years of experience and the ability to be team builder ranked 4th, 5th and 6th, respectively. Time management, good communication skills and work ethics ranked the lowest, with work ethics ranking the lowest (Table 4.3).

Table 4.3. Table representing the descriptive statistics from SPSS v23 analysis.

Role	**Mean**	**Std. deviation**	**Rank**
Provide supervision	4.52	0.523	1
Financial management	4.23	0.597	2
Conflict resolution	4.21	0.611	3
Educational competency	4.17	0.616	4
Experience	4.10	0.762	5
Team builder	4.08	0.834	6
Contract management	4.01	0.987	7

People management	3.79	0.992	8
Registration with professional body	3.55	0.976	9
Planning and organisational skills	2.42	0.892	10
Resource management	2.18	0.763	11
Negotiation skills	1.67	0.812	12
Good communication skills	1.45	0.876	13
Plan, control and close the project	1.02	0.893	14
Good leadership skills	0.98	0.910	15
Understanding of policy and procedures	0.74	0.922	16
Time management	0.21	0.994	17
Good communication skills	0.11	1.00	18
Work ethics	0.09	1.012	19

4.2. Project implementation and control

To assess how well the respondents, understand the implementation stage of housing projects, respondents were asked to list the most important steps in the process of project monitoring and control. These processes of monitoring and control determine whether a project will be delayed or completed on time. Monthly reporting to the technical committee was listed as the most important (Table 4.4). The stage that was most frequently mentioned by the respondents is that the technical committee gets monthly reports on the project milestones. The contractor that has a plan and a project timeline obtained the second-highest percentage of 16.2%. Respondents also mentioned that a project manager should always be on-site, a project steering committee must be selected, and the contract signed between the contractor and department should be the guiding document for monitoring and control processes (Table 4.4). The monitoring and control processes which were less frequently listed include the appointment of an environmental consultant, the quality assurance provided by building inspectors and the appointment of a safety officer (Table 4.4).

Table 4.4: Respondent's perceptions of the monitoring and control processes during a project implementation stage.

Important process of monitoring and control	Percentage (%)	Frequency
Technical committee gets monthly reports on milestones	17.4	15
Contractor must have a project plan; a project timeline and the timeline must be adhered to	16.2	14
Project manager always on site ensuring that the work is being done	13.9	12
A project steering committee consisting of the community liaison officer, ward councillor, portfolio head entrusted with resolving issues that might affect the project	12.8	11
A community liaison officer is appointed to assist on labour and community issues	10.5	9
Contract signed between the department and contractors should be the guiding document	8.2	7
Engineers and project managers should always be in discussion about the project and guiding contractors on what to do	6.9	6
Project resource team should provide project progress	4.7	4
An independent Environmental consultant appointed to advice on matters pertaining to environmental management	4.7	4
Quality assurance should be provided by building inspectors	3.5	3
Contractors required to appoint a safety officer	1.2	1

4.3. Relationship between contractor and consultants

Participants were asked to explain the relationship between contractors and consultants during the implementation stage of projects in Ratanda Township. A total of 67,5% of respondents stated that the relationship between contractors and consultants was good (Figure 4.2). It can also be seen in Figure 4.2 that 32,5% of the respondents thought the relationship between contractors and consultants to be a bad working relationship and agreed that the two groups did not get along at all.

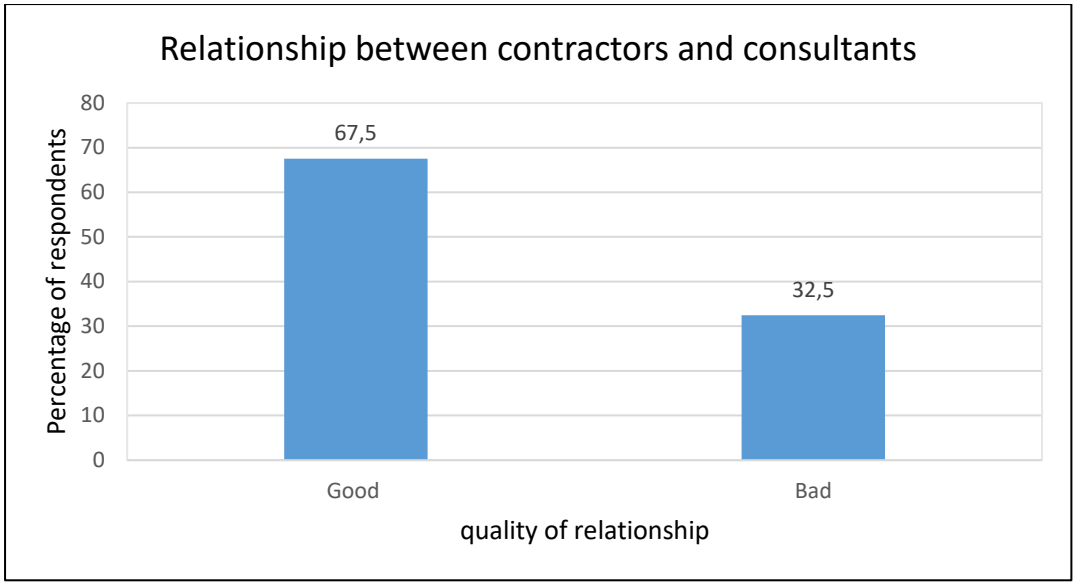


Figure 4.2: Perceptions on the relationship between contractors and consultants

4.4. Contractor skills

The respondents were also asked whether they think the contractors that were appointed for construction projects in Ratanada Township have the necessary skills and capacity to implement projects. A five-point Likert scale (1= strongly agree, 2= agree, 3=neutral, 4= disagree, 5= strongly disagree) was used to assess the respondent's perceptions on the competencies of contactors. Approximately 35% of the respondents strongly agree that the contractors appointed in Ratanda Township have the necessary skills and capacity to implement projects (Figure 4.3). A total of 20% of the respondents indicated that they could not tell whether the appointed contractors were appropriately skilled and thus gave a score of 3 which is neutral. 15% of the respondents disagree that the contractors appointed for the construction of housing projects in Ratanda Township have the necessary skills with 5% disagreeing and 10% strongly disagreeing, respectively (Figure 4.3).

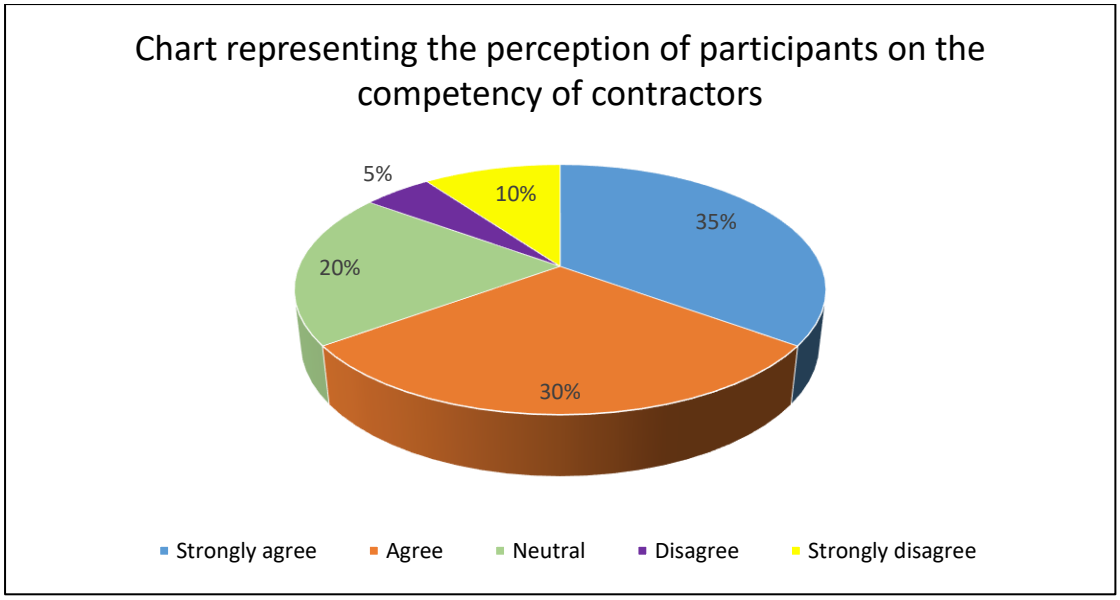


Figure 4.3: The perception of participants on the competency of contactors

4.5. Political constraints

Participants were asked to discuss their views on the political commitment in addressing housing delays in Ratanda. Three main opinions were highlighted in the responses from participants (Figure 4.4). Approximately 12,5% of the participants stated that politicians are only hands-on in addressing issues of housing delays during campaigning periods. Participants who think ward councillors and the mayor involve themself in projects make up 27,5% of the sample. 60% of the participants mentioned that politicians are bound by a manifesto of the ruling party and thus submit monthly reports on the progress of construction projects (Figure 4.4).

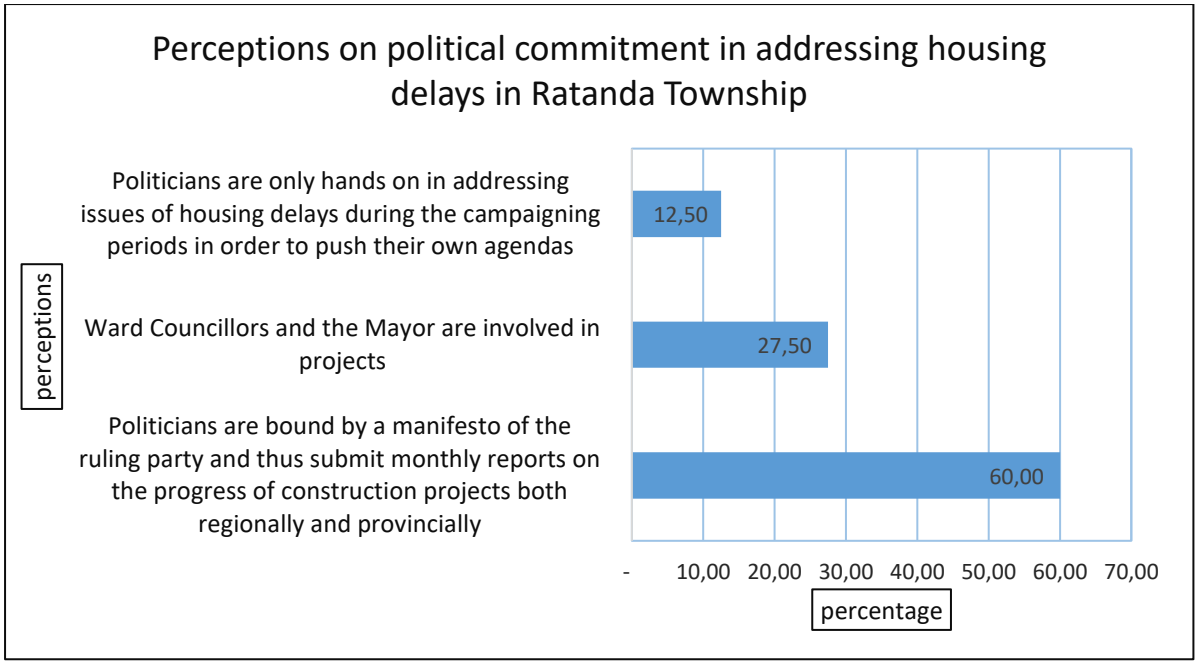


Figure 4.4: Perceptions on political commitment in addressing housing delays in Ratanda Township

4.6. Budget allocations

The views on the impact of budget allocations on the delivery of housing in Ratanda Township are indicated in Figure 4.5. Insufficient funds allocated to housing projects was frequently stated by the participants, making up 40% of the responses. Corruption and mismanagement of funds make up 29% of the responses. The rise in construction consumable prices and purchasing of cheap material that leads to poor quality housing make up 18% and 10%, respectively. Only 3% of the responses indicate that budget allocations do not affect housing delivery and other external and internal factors are responsible for housing delays (Figure 4.5).

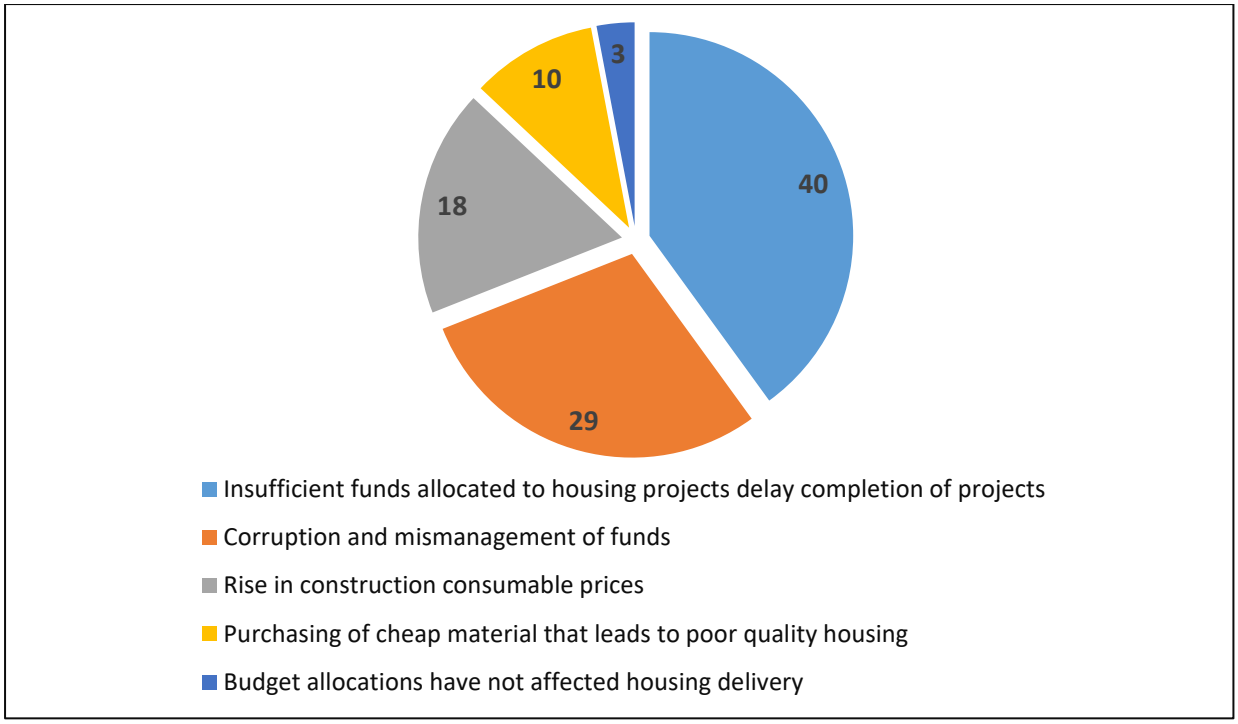


Figure 4.5: Perceptions of respondents regarding budget allocations on the delivery of housing

4.7. The effect of weather conditions

The participant's perceptions of the effect of weather conditions were also inquired, to understand factors attributed to housing delays. Participants who think that weather has not affected the progress of construction projects in the past 5 years make up 27.5% of the responses (Figure 4.6). A total of 22.5% of the participants stated that construction has stopped during heavy rainfall. Construction delays were reported by 17,5% of the participants. Damages to houses, roads and electrical infrastructure were reported by 15% of the participants. The impact of strong wind on construction equipment was reported by 5% of the participants (Figure 4.6).

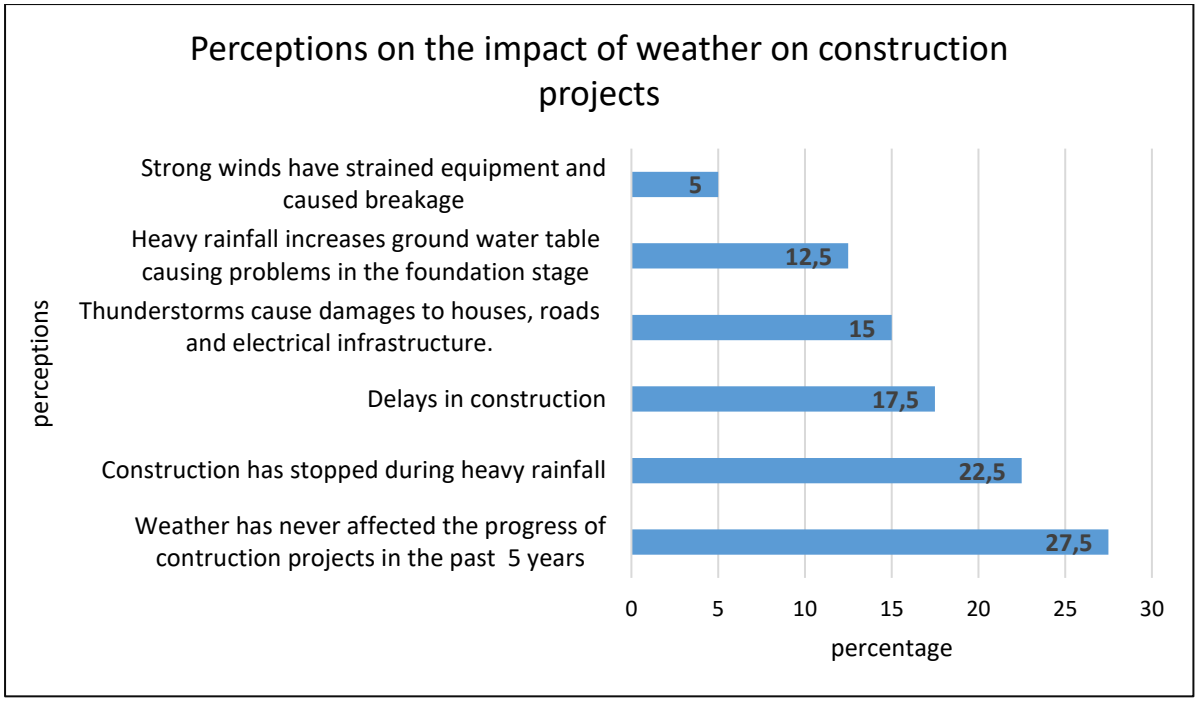


Figure 4.6: Participant's perception on the effect of weather conditions on housing delivery in Ratanda Township.

4.8. Key themes of construction project delays

Respondents were asked to rank the key themes that have been highlighted in this research in order of importance (Table 4.5). These factors include competency of contractors, political constraints, the effects of weather and budget allocation. The Relative Importance Index (RII) was used to elucidate which of the key themes the respondents consider to be the most important factor responsible for housing delays. Financial constraints obtained an RII value of 0.87, indicating that most respondents considered financial constraints as the most important factor impacting on the delay of construction projects (Table 4.5). Labour competency ranked 2nd with an RII value of 0.75. Political constraints and weather conditions were ranked 3rd and 4th, respectively (Table 4.5).

Table 4.5: Key themes ranked in order of importance

Factor influencing delays	RII	Rank
Financial constraints	0.87	1
Labour competency	0.75	2
Political constraints	0.71	3
Weather conditions	0.66	4

4.9. Other factors influencing construction delays

The participants were then asked to list any other factors which were not mentioned in the interview schedule and rank them in order of importance (Figure 4.7). Participants listed delays in payment of contractors and subcontractors (16.5%), poor supervision and planning (15%), corruption (14%), service delivery protest (12%) and subcontractors involved in too many projects as the top 5 causes of delay. Changes in work scope on site (2.3%), lack of bulk infrastructure (2%) and shortage of material (2%) were the least stated responses (Figure 4.7).

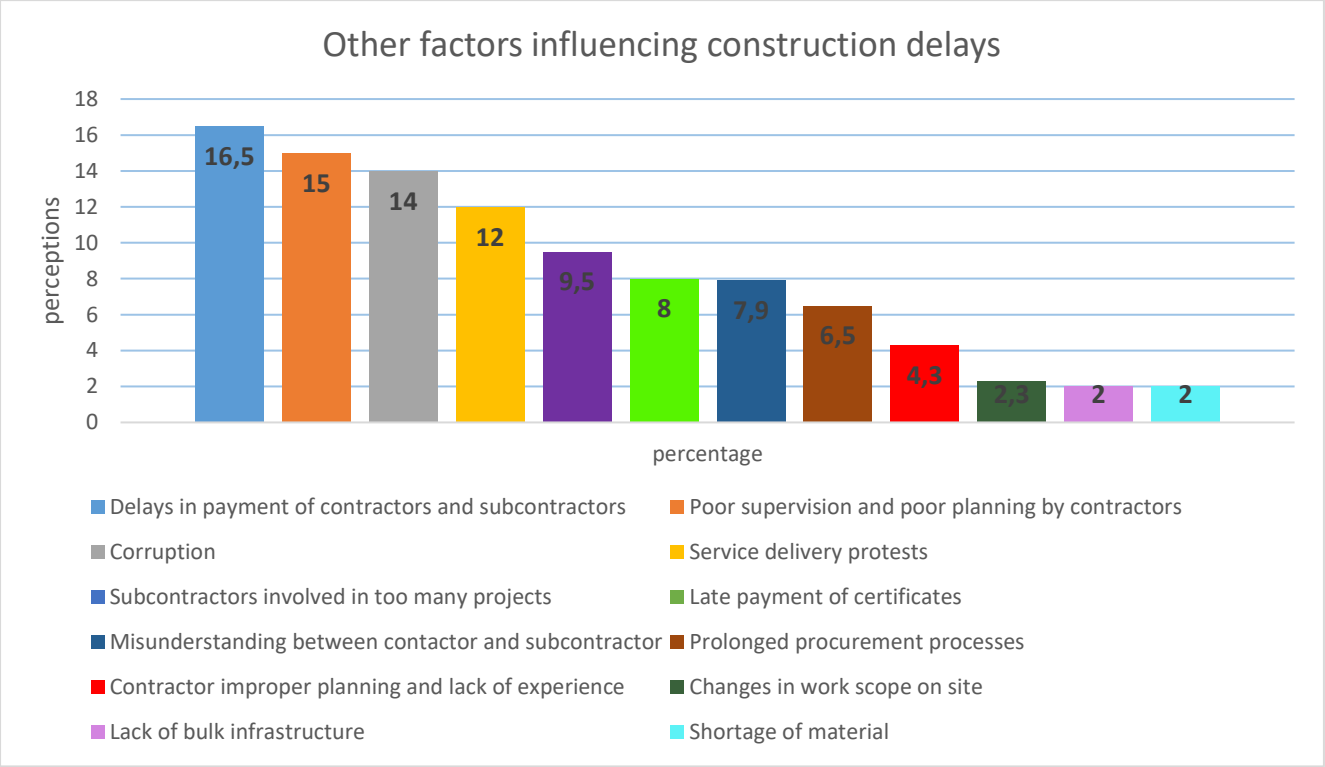


Figure 4.7: Other factors influencing construction delays

Chapter 5: DISCUSSION

5.1. Factors affecting delays in housing projects in Ratanda Township

The data which was collected was analysed and the different perceptions were documented. This chapter attempts to interpret the data and highlight the factors of construction delays identified in this research.

Most of the respondents agreed that the most important skill that a project manager should have is the ability to provide supervision. This was shown by the high mean value (4.52) indicated in Table 4.3. Participants stated that it is important for a project manager to be present during the construction process and to ensure that the work is done accordingly. Ugwu et al., (2007) and Abas et al., (2015) presented the importance of site supervision on construction projects. Results from studies done by Ugwu et al., (2007) and Abas et al., (2015) both indicate that poor site supervision was listed as the most important factor responsible for construction delays, which agrees with the findings of this study. Alwi et al., (2001), also identified poor site supervision as one of the major contributing factors to construction project delays and concluded that poor site supervision results in reworking on the construction site. Nduka et al., (2018) agrees with the results of this study and highlighted that effective site supervision plays an important role on the quality of houses built and the time taken to complete a project. Earlier research conducted by Aibinu (2006), Faridi et al., (2006) and Toor (2008) all found similar results and ranked poor site management as one of the highest contributing factors to housing delays. Further highlighting the importance of site supervision on construction projects. However, in a study done by Ali et al., (2010), poor site management ranked as the least important factor in construction project delays and labour shortage was listed as the most important factor. This emphasises that factors may range from region to region and it is thus important to study the factors of construction delay to mitigate factors that are characteristic for that region The ability of a project manager to provide financial management ranked second with a mean value of 4.23 (Table 4.3). Financial management was also highlighted as an important delay factor by Kaliba et al., (2009), Fugar et al., (2010) and Manomano, et al., 2016)

Conflict resolution was ranked as the third most important skill which a project manager should possess (Table 4.3). Conflicts arise at construction sites either between contractors and subcontractors or between supervisors and construction workers and a skilled project manager needs to be able to resolve conflicts swiftly to ensure that construction continues without unnecessary delays. This comes with having a good contract and people management skills, as well as communication and problem-solving skills which have lower means in Table 4.3. Having formal educational qualifications was ranked as the 4th most important skill.

Participants argued that educational competency means that a project manager has knowledge of appropriate procedures and is better able to ensure that construction projects are completed on time. This is consistent with the results obtained by Abbasnejad et al., (2013) who indicated that lack of knowledge within the construction industry is a major delay factor. Abbasnejad et al.,

(2013) also went further to suggest that education and training are essential for senior managers to overcome the challenge of delays in construction projects.

In Table 4.3, the experience was ranked as the 5th most important skill required from a project manager. This indicates that respondents consider experience as one of the fundamental factors that will influence the progress of construction projects. Respondents suggested that this can be mitigated by appointing project managers with appropriate experience and educational background. This corresponds with the findings of Sambasvian et al., (2007), Mohammad et al., (2015) and Das, (2016). Lack of labour experience was ranked as the most important factor affecting labour productivity by Mohammad et al., (2015), further emphasising the importance of experience in construction projects. Das, (2016) also found that lack of appropriate skills resulted in construction delays in India. Sambasvian et al., (2007) indicated that contractor improper training ranked as the highest factor in construction delays. Further emphasising the importance of appropriate skills and experience within the construction industry.

Another factor detrimental to the progress of construction projects is planning. Planning and organisational skills ranked 10th in Table 4.3, indicating that it is considered as one of the least important factors. Mydin et al., (2014), however, concluded that planning was the most important factor attributed to construction delays and suggested that to overcome these delays proper planning is required before construction starts, proper communication channels should be developed through meetings and site visits, the project owner should come up with incentives for projects that are completed early and adequate site supervision and planning is required. The government could also consider reducing lengthy internal protocols in the process of applications for approval to ensure suitable planning on the construction site without delays (Mydin et al., 2014). Tumi et al., (2009), Abdullah et al., (2010), Umhlaba Consulting Group, (2013) and Zidane et al., (2018) also identified poor planning and scheduling as one of the major factors of delay. Musvoto et al., (2016) indicated that the lack of proper spatial planning and land use management has led to the housing delays in South Africa, further emphasising the importance of planning which was not ranked as one of the important factors by participants in the current study.

The skills that were ranked the lowest include; communication skills, time management and work ethics. The fact that these skills were ranked the lowest does not make them any less significant. It just indicates that only a few participants gave an account of these skills when they were asked to list the most important skills. The skills with the lowest rankings also go together with some of the skills with higher rankings. For example, communication skills are required for a project manager to be able to resolve conflicts during the construction process. Time management goes together with planning and organizational skills. Project timelines need to be developed and adhered to during construction.

It is essential for construction projects to be monitored and controlled, especially during the implementation stages. Projects are monitored through collecting data, recording progress and reporting on the performance of the project (Tom et al., 2013). According to the respondents, the most important step in the monitoring process is the submission of monthly reports to the technical committee (Table 4.4). It is also essential for the contractor to have a project plan and a project timeline as this will serve as a guideline and ensure that projects are completed on time

(Table 4.4). Respondents also emphasised that it is important for a project manager to always be on-site ensuring the appropriate work is being done. This brings to light the notion that project managers and supervisors within the construction industry should be highly skilled to ensure that projects are completed. Proper site supervision and control and monitoring go together. A study that was done by Masambaji et al., (2008) also identified similar findings and acknowledged that poor monitoring and control due to supervisors that do not have the appropriate skills resulted in construction project delays in Botswana.

The respondents indicated the importance of good relationships formed to complete a construction project by stating that monthly reports should be submitted to a technical committee which ensures constant communication, there should be a project steering committee and emphasis was placed on the importance of a community liaison officer to resolve issues (Table 4.4). Contracts signed between the department and contractors should serve as a guiding document to the whole construction project (Table 4.4). Contracts can be used for planning purposes before project implementation and used to ensure the constructed houses meet the requirements from the department. This will also ensure that engineers and project managers are able to steer the projects in the right direction to prevent any errors which might cause delays. This agrees with the findings of Masood et al., (2015) who indicated coordination between project stakeholders as the ninth most important delay factor out of a list of ten factors. Researchers such as Hamzah et al., (2011), Mahamid et al., (2012) and Marzouk et al., (2014) all identified that slowness in making decisions played a major role in construction project delays, thus indicating that the process of planning and signing of contracts should not be prolonged. The appointment of an environmental consultant, quality assurance and safety officer were the least frequently listed processes (Table 4.4). This might be because consultants were more concerned with the processes during the construction project and not with processes at the end of the project. Additional technologies that can be used in the monitoring and control of construction projects include cyber-physical systems (Srewil et al., 2013, Tom et al., 2013) and industrial inspection models (Ding et al., 2017) which could be implemented to reduce project delays and ensure timely completion of projects.

The relationship between contractors and consultants was shown to be an overall good one in Ratanda Township, with 67.5% of the respondents claiming that contractors and consultants get along well (Figure 4.2). This shows that most professionals who participated in this research believe that the relationship between contractors and consultants is a good one. There were other respondents (32,5%) however, who stated that the relationship between contractors and consultants was not good (Figure 4.2). Conflicts and disagreements will always be present when people of different professional levels work together. This can be supported by a statement by Assaf et al., (1995) who stated that the relationship between different parties on a construction site can be a difficult one. This further emphasises the importance of a skilled project manager who can facilitate communication and solve any arising disputes.

The participants were asked to evaluate whether the contractors which were hired for housing projects in Ratanda had the necessary skills or not. It can be seen in figure 4.3 that 35% of the participants believe that contractors have the necessary skills. These participants indicated that the hired contractors had formal education and numerous years of experience within the

construction industry. Figure 4.1 indicates that participants of this research, which also includes contractors, have some sort of formal education and this corresponds with the 65% of participants who strongly agree (35%) and agree (30%) that the hired contractors have the necessary skills. A total of 5% disagree and 10% strongly disagree that the hired contractors have the necessary skills. This could be driven by the fact that professionals within the construction industry blame each other for the delays that occur during the construction of houses. Alavifar et al., (2014) concluded that project owners, contractors and consultants blamed each other for the factors responsible for project delays in Iran. Thus, a similar viewpoint might be responsible for the 15% of participants who disagree that the contractors hired for housing projects in Ratanda Township have the necessary skills.

Approximately 12.5% of participants stated that politicians are only hands-on in addressing the housing delay problem during campaigning periods to push their agendas (Figure 4.4). This indicates the importance of a political structure within a country. Qabaka (2013), corroborated this statement and highlighted that politicians within South Africa promise citizens free houses to obtain votes during the campaigning period. Tomlinson, (2015) highlighted that the government has been struggling to meet the demand for housing in South Africa and that the number of houses delivered has declined since the government developed a housing strategy. This agrees with the 12,5% of participants who stated that politicians are only hands-on during a specific time which is indicated by the fact that housing targets are not being met. Mahamid et al., (2012), Lehne et al., (2018) and Khan (2019) also showed that politics and the self-seeking agendas of politicians also cause delays in construction projects in the Gaza Strip, India and Pakistan, respectively. A total of 27.5% of the participants agree that ward councillors and the Mayor are involved from the start to the completion of housing projects in Ratanda Township. The remaining 60% of participants believe that politicians submit monthly reports on the progress of construction projects to the regional and provincial offices. It can be argued, however, that if this were the case then the government would always have a full picture of the progress of construction projects on the ground and would always ensure that projects are completed on time. Novacek (2016) concluded that the current housing delivery approach developed by the government has not been effective in dealing with the housing backlog in South Africa. South Africa's political and socio-economic structure was influence by apartheid and the government has tried to use measures such as the National Housing Policy Framework to reverse the impacts that apartheid has had on the provision of adequate. The housing backlog is at 2.1 million (South African Institute of Race Relations, 2015) which clearly shows the shortfall of politicians and the government in dealing with the housing backlog.

The South African Institute for Race Relations (2015) indicated that the housing backlog in South Africa has continued to increase since the initial construction of low-income housing began. This indicates a serious discrepancy within the government and the officials responsible for the delivery of houses. Another important political factor which prolongs the provision of low-income housing in South Africa is the issue of suitable land for housing. Municipalities do not want to provide land for low-income housing and rather prefer to use the land for commercial activities (Thellane, 2008). Politics has a serious impact on the implementation of housing projects (Jowah, 2014). Murunga et al., (2013) argued that political will is essential because it facilitates the

development policy framework, enables the implementation of projects and also determines budget allocations for housing projects.

When it comes to budget allocations, insufficient allocation of funds to housing projects obtained the highest percentage of 40% (Figure 4.5). Atangaza (2017) also obtained similar findings, where insufficient funds were ranked as one of the major causes of construction delays. It is not possible to complete construction projects without funds to purchase quality material and pay contractors. A total of 29% of the participants agreed that corruption and mismanagement of funds affect budget allocations in housing projects. This agrees with the results obtained by Manomano et al., (2016), who revealed that despite the annual allocation of funds for the construction of houses, not enough houses are being built yearly to reduce the housing backlog. This means that the funds that were initially allocated for housing projects are being used elsewhere. The rise in construction consumable prices and purchasing of cheap material made up 18% and 10%, respectively (Figure 4.5). Manomano et al., (2016) also noted that cheap materials were used to build low-quality houses, and this resulted in the occupants contracting illnesses such as tuberculosis and lung infections. The use of cheap material also results in houses having to be rebuilt or repaired often which results in slower construction of new houses and thus delays in meeting the growing demand. Only 3% of the respondents stated that budget allocations were not responsible for delays in housing delivery (Figure 4.5). These respondents strongly believe that other factors are responsible for delays in housing projects and that funding is not a major factor which can be attributed to housing delays.

The impact of bad weather conditions is another factor that needed investigating. Strong winds were reported to have damaged equipment and caused damages by 5% of the respondents (Figure 4.6). Heavy rainfall was reported to have caused an increase in the groundwater table and caused issues in the foundation stage by 12,5% of the respondents. A total of 40% of the respondents reported that heavy rainfall caused delays (17,5%) or a halt (22,5%) in the construction process. This shows that bad weather conditions have had some sort of impact on construction projects in the past 5 years. Al-Momani (2000), Asnaashari et al., (2015), Ballesteros-Pérez et al. (2015) and Masood et al., (2015) identified poor weather conditions as one of the major delay factors, which corresponds with the participants in the current study who indicated the impacts of bad weather on construction projects in Ratanda Township. It was also revealed that approximately 27,5% of the participants stated that bad weather has not affected construction projects in Ratanda Township (Figure 4.6). This has been supported by Atangaza (2017) who stated that construction managers need to plan appropriately by keeping up to date with weather predictions as well as working on the exterior parts of the house before the rainfall season and working in the interior during rainfall periods. Researchers such as Fugar et al., 2010, Soliman, 2017 and Nduka et al., 2018 also concluded that poor weather conditions had very little or no impact on construction projects. This indicates that the effects of weather can be managed through proper planning. The varying perceptions by the participants on the impacts of weather on construction projects can be attributed to the professional level of each respondent. For example, government housing officials might not be aware of the impacts of bad weather at construction sites if these delays are not being properly reported.

5.2. Internal and external factors which may threaten the implementation of housing projects

The results from the relative importance index analysis revealed that financial constraints were ranked as the most important factor influencing housing project delays in Ratanda Township, with an RII value of 0.87 (Table 4.5). This agrees with the findings by Frimpong et al., (2003) and Fugar et al., (2010) who both studied construction projects in Ghana. Other studies which corroborate with these findings are those done by Assaf et al., (1995) and Alaghbari et al., (2007), Abdullah et al., (2010), Hamzah et al., (2011) and Aigbavboa et al., (2014) who concluded that financial difficulties were the main factor attributed to construction delays. Studies that were done by Sweis et al., (2008) and Abisuga et al., (2014) also state that financial constraints ranked the highest. Insufficient funds allocated to housing projects were ranked the highest when analysing the effects of budget allocation on construction projects (Figure 4.5). Without adequate funding, the completion of housing projects becomes a challenge and leads to shortages in material and delayed payments (Oglesby et al., 1989). This is supported by the fact that financial management was also ranked as one of the most important project management skills in Table 4.3. Respondents agreed that a competent project manager should be able to effectively manage budgets to ensure the completion of a project (Table 4.3). Kaliba et al., (2009) suggested that proper project management practices are required to overcome these challenges in construction projects.

Labour competency was ranked as the second most important factor. This is because the workers who work at the construction site are ultimately responsible for carrying out the planned construction project. Labour inefficiencies were ranked as the 5th most important factor by Mahamid (2016) in Saudi Arabia, indicating the importance of labour competency in construction projects. Mahamid (2016) indicated that when labour does not have adequate experience, the project may fail, there may be severe cost implications, or this might negatively impact on the relationship between the contractor and the owner of the project. The influence of weather conditions was ranked last, with an RII of 0.66. This agrees with the 27.5% responses from participants who stated that bad weather has not had an impact on construction projects (Figure 4.5). This finding agrees with research done by Sweis et al., (2008), who indicated bad weather was ranked among the least important construction delay factors. Akomah et al., (2016), however, found contradicting results when it was identified that bad weather was ranked as the second most important factor affecting housing projects. This could however be attributed to the geographical location where the housing project took place, emphasising the importance of location when investigating construction delay causes.

Participants were asked to list other factors which were not mentioned in the interview schedule which are responsible for delays in construction projects. A total of 12 factors were listed by the participants. The top 5 factors that were listed by participants to be responsible for delays in construction projects include delayed payments of contractors and subcontractors, poor site supervision and planning, corruption, service delivery protest and subcontractors being involved in too many projects (Figure 4.7). Delayed payments of contractors and subcontractors made up 16.5% of the responses (Figure 4.7). This correlates with the findings of El-Razek et al., (2008),

Masood et al., (2015) and Mahamid (2016) who identified delayed payments to contractors among the major factors that can be attributed to construction delays. Alavifar et al., (2014) listed this as a challenge in the monitoring and control phase of the project and suggested that to overcome this delay; overall costs should be calculated before the project commencing, budgets should be determined, and costs should be controlled during the construction process. This would ensure that there are enough funds and payments are distributed on time throughout the entire duration of the construction project. Poor supervision and planning ranked second with a score of 15% (Figure 4.7). The ability of a project manager to provide appropriate site supervision was ranked as the most important project management skill in table 4.3. This further emphasises the importance of site supervision within the construction industry.

Corruption was listed as the third most important factor, with corruption making up 14% of the responses. Corruption can come in the form of mismanagement from government officials (Manomano et al., 2016) or through fraudulent activities of the beneficiaries of the houses (Phago, 2010, Davis, 2013). Service delivery protests were ranked fourth in Figure 4.7. Service delivery protests occur when the residents do not receive basic services such as water and proper sanitation and result in the rise of protests and civil instabilities. Service delivery protests were also shown to have caused delays in construction projects by Marutlulle et al., (2015). Municipalities are responsible for ensuring that citizens receive basic service delivery (Figure 4.7) and this challenge needs to be addressed at the municipal level to ensure that service delivery protests do not occur. Participants who believe that subcontractors who take up too many projects are responsible for project delays make up 9.5%. Participants stated that if subcontractors are working on too many projects, then they would give higher preference to projects with greater profit which would result in construction delays in lower-paying projects. Alsuliman (2019), found similar results from construction projects in Saudi Arabia where the selection of subcontractors with other more favourable projects was ranked as the third most important factor affecting project delays. Mahamid (2016) suggested that project owners should do a thorough check of all the resources and competences of contractors before awarding a project. This would assist in ensuring that projects are awarded to suitable contractors with the capacity to complete projects at the set time.

Late payments of certificates, misunderstandings between contractors and subcontractors and prolonged procurement processes ranked 6th, 7th and 8th, respectively. Contractor improper training and planning ranked 9th. The participants believe that most professionals hired to work in housing projects in Ratanda Township have the necessary skills to carry out the project and that improper training and planning does not play a major in construction delays. This is supported by 65% of participants who agreed that the contractors hired for housing projects in Ratanda Township have the necessary skills, as was seen in Figure 4.3. The change in the work scope was ranked as the 10th most important factor causing construction delays. Participants argued that work scope rarely changes and that the initial project documentation is used as a guideline throughout the entire construction process. However, researchers such as Assaf et al., (2006), Enshassi et al., (2010), Alinaitwe et al., (2013) and Marzouk et al., (2014) identified changes to the scope of work as the main factor responsible for construction delays, which contradicts with the findings of the current study. It is recommended that all stakeholders, including the government, consultant, contractors, engineers, who are involved in the project

should have frequent and continuous communication during all stages of the construction process, to ensure that the construction of houses is completed on time and the houses built are in the best possible quality (Mahamid, 2016). Lack of bulk infrastructure and shortage of material ranked last. Khumalo (2012), however, concluded that bulk infrastructure was ranked as one of the major causes of construction delays.

The above results outline the major factors responsible for delays in construction projects. The findings of this research support the results of studies conducted by previous researchers which indicate that multiple factors are responsible for delays in construction projects. Delay factors can vary from region to region and thus region-specific research must be conducted to highlight important factors and implement measures to reduce the backlogs in housing projects.

5.3. Feedback on the findings from three managers working on projects in Ratanda

The results and findings of the study were shared with three managers from GDHS who are involved in housing projects in Ratanda and were requested to provide their views on the findings. Their views are as follows:

1st OFFICIAL (CHIEF CONSTRUCTION PROJECT MANAGER)

"I agree with the skills that the project manager should have. The projects in the area of Ratanda are managed by a highly experienced, dedicated, and qualified project manager. However, I find the matter relating to financial constraints to be accurate. Projects are not financed adequately due to budget constraints. The budget that the Department receives every financial year is so limited that when it is shared by the entire Gauteng province, some projects within the province do not even receive a cent of the budget."

"I am not in agreement with poor site supervision and planning and corruption. As already indicated, the project manager is highly experienced and the level of supervision has always been outstanding. There hasn't been any suspicion of corruption in all projects in Ratanda."

"Late payments of contractors played a big role in the failure of some of the projects. Contractors are depending on payments to procure material and pay labour but when there is a delay in payment, production gets affected."

"Service delivery protests are a serious set-back on our projects because not only are the people protesting but they vandalize the work that is already on the ground. Although the project manager ensures that contractors have all-risk insurance before construction starts, it sometimes takes too long for a payout to be made or the insurance doesn't pay because the contractor would have defaulted on the monthly premium."

"Some of our contractors are engaged in too many projects and they end up not being able to complete some of the projects."

“The recommendations are well received and are in line with the 10 PMBOK knowledge areas. We have confidence in the work that the project manager is doing on the ground. Maybe I should just add that the Department has now moved in the direction of appointing Developers instead of contractors. This is the strategy that seems to be paying off because development in the area is now accelerating.”

2nd OFFICIAL (CONSTRUCTION PROJECT MANAGER)

“The research has been conducted and I am not in a position to dispute the findings thereof but to rather embrace what is presented before me and learn from it. The findings are an eye-opener and with the permission of the researcher, they can be shared with the team involved in the projects to improve service delivery.”

“Although some of the systems have always been in place as outlined in the researcher's recommendations, some could be looked at to improve on what we already have. The issue of late payment to our service providers has been a serious problem and that has already killed a lot of businesses.”

“One other issue which I think the research did not pick up on is the issue of contractors who fail to deliver at other provinces and they come to this province and get appointed. There needs to be a system in place to blacklist non-performing contractors.”

“The matter with regards to the financial and technical capabilities of the bidders is a strong point that will be shared with our Supply Chain Management. I have often noticed contractors who take more than two months to start with work after the award of contract due to cashflow challenges. Going forward, proof of cash in the bank must be produced. However, on the other hand, this might also hit back as we might be considered to be insensitive and not supporting the BBBEE policy.”

3rd OFFICIAL (CHIEF CONSTRUCTION PROJECT MANAGER)

“I have noticed that your research topic is about the delays in housing delivery in Ratanda Township. One of your findings that cannot be disputed is the ability that the project manager should have. The project manager may have all those abilities but if he is not supported by management, he will not achieve the desired goal. The project manager is not in control of the payment of subcontractors. If subcontractors are not paid on time, the project manager is bound to fail in the management of the project.”

“It is not in the hands of the project manager to approve variation orders that might arise on the project. He only submits and presents what needs to be approved to management. If approval is delayed, the project manager becomes a scapegoat whenever there is non-delivery. We need to look at the value chain and identify where non-delivery might have occurred.”

“I couldn’t agree more on the issue of financial constraints. This is very well researched. The financial capabilities of contractors as well as the late payment of contractors and consultants are the major contributing factors when it comes to non-delivery.”

“Indeed, communication is key to the success of the project. Informing communities about the project can eliminate protests and instead, the community will protect their project.”

“I fully agree with the findings and support the recommendations.”

5.4. Researcher’s comments on the three managers feedback

The appointment of Developers instead of Contractors is a clear indication that Contractors that were appointed before didn’t have the financial muscle to execute the projects. Generally, Developers are those that have the financial muscle to execute the projects even if the client delays payments. The Department has taken an excellent decision in this regard.

The matter relating to Contractors without financial muscles is raised by all three officials and this seems to be a leading matter that contributes to non-delivery according to them. In general, the researcher’s findings are accepted except for the project manager’s lack of capability to manage the project. However, the researcher maintains that the finding with regards to supervision contributed to the delays in the delivery of houses in the area.

CONCLUSION:

This study set out to investigate the factors that influence housing delivery delays in Ratanda Township. South Africa has a housing problem and millions of citizens are without adequate housing. Housing backlogs have increased and there is a need to understand the delays in construction projects aimed at housing the poor. Research previously done in this field has highlighted that multiple factors are responsible for delays in construction projects and that factors vary from region to region. The main findings of this research are indicated below:

Key findings of the study

- The top five skills and competencies that a project manager should have are:

  The ability to provide supervision - Ugwu et al., (2007) and Abas et al., (2015) both indicated that poor site supervision was the most important factor responsible for construction delays. Kaliba et al., (2009) indicated poor supervision as one of the factors that contributed to construction delays in the road construction projects in Zambia. Assaf et al., (1995) also agreed in a study conducted in Saudi Arabia that poor site management and supervision were responsible for construction delays in construction projects.

  Financial management skills - Financial management was also highlighted as an important delay factor by (Kaliba et al., (2009), Fugar et al., (2010) and Manomano, et al., 2016)

  Conflict resolution skills - Assaf et al., (1995) agreed that the relationship between different parties on a construction site can be a difficult one and requires a skilled project manager who can facilitate communication and solve any arising disputes.

  Educational competency - This is consistent with the results obtained by Abbasnejad et al., (2013) who agreed that lack of knowledge within the construction industry is a major delay factor and clarified that education and training are essential for senior managers to overcome the challenge of delays in construction projects.

  The number of years of experience - Muhammad et al., (2015) used an interview schedule survey to conduct a study in Pakistan to understand the effects of labour productivity. Their findings indicated that lack of experience was the most important factor contributing to the housing delivery delays. Mydin et al., (2014) also identified five major construction delays in Malaysia of which one of them was lack of experience.

- Other factors of construction delay in Ratanda Township include:

  Financial constraints - were ranked the highest and considered to be the most important factor attributed to housing delivery delays. Fugar et al., (2010) attributed financial constraints, out of 32 factors, as the major contributing factor to housing project delays in Ghana. Alaghbari et al., (2007), El-Razek et al., (2008), Sweis et al., (2008) and Abdullah et al., (2010) also found financial difficulties to be the most important factor resulting in construction project delays in Malaysia, Egypt and Jordan respectively. Abisuga et al., (2014) and Kaliba et al., (2009) conducted similar studies and obtained similar results.

  Delayed payments of contractors and subcontractors - Kikwasi (2012), concurred that the leading causes of delays in construction projects were contractor payment delays. Muhammad et al., (2015) used an interview schedule survey to conduct a study in Pakistan to understand the effects of labour productivity delays and the findings indicated payment delay as one of the factors. One of the findings of the causes of productivity delay in road construction in Zambia by Kaliba et al., (2009) study, revealed payment delay as a major cause of construction delay. In the studies conducted by Aigbavboa et al., (2014) in Zambia, El-Razek et al., (2008) in Egypt, Assaf et al (1995) in Saudi Arabia, Akomah et al., (2016) in Ghana, Masood et al., (2015)in Pakistan and Alinaitwe et al., (2013) in Uganda, all revealed delayed payment to contractors and subcontractors as the contributor to the construction delays.

  Poor site planning - Umhlaba Consulting Group (2013), suggested that the lack of proactive comprehensive integrated planning for housing is a major challenge to housing delivery. Ineffective planning and scheduling have been identified, by Assaf et al., (1995) and agreed by Abdullah et al., (2010) in their study conducted at a construction site in Malaysia and Tumi et al., (2009) in Libya, as an important factor in construction project delays. Atangaza (2017), also identified improper planning as a major role player in construction delays and Sepasgozar et al., (2015) Atangaza (2017) and Zidane et al., (2018) agree with the statement.

  Corruption - According to Manomano, et al., (2016), the problem with housing in South Africa is corruption and mismanagement. However, Marutlulle & Ijeoma (2015) argued that it is not only corruption and lack of capacity that are the problem in housing delivery but also population growth, government policies, political and economic factors contribute extremely to housing delivery delays.

  Service delivery protests - Service delivery protests were seen to have caused delays in construction projects by Marutlulle et al., (2015).

  Subcontractors being involved in too many projects - Participants stated that if subcontractors are working on too many projects, then they would give higher preference to projects with greater profit which would result in construction delays in lower-paying projects. Alsuliman (2019), found similar results from construction projects in Saudi Arabia where the selection of subcontractors with more favourable projects was ranked as the third most important factor affecting project delays.

Recommendations

The following recommendations have been identified based on the findings of the research.

- Site supervision should be carried out throughout all the project stages and monitoring, and control should be carried out by all project stakeholders including government officials, consultants, contractors and subcontractors.
- A skilled project manager with appropriate educational background and experience should be appointed.
- Contractors should be paid on time for work that has been completed to ensure continuous productivity.
- Government officials need to thoroughly check the financial and technical capabilities of bidders before awarding construction projects.
- The government could implement incentives for projects that are completed early to motivate efficient completion of projects.
- Planning and scheduling should be implemented and continued throughout the construction process.
- Frequent and continuous communication, through meetings and reports, between all project participants should be maintained to ensure that project progress is monitored, and projects are completed within the specified time.
- Data on project progress could be shared using cyber-systems to ensure that all stakeholders are well informed at each project stage.

Implications of the study on construction management

Housing backlogs are a critical issue in South Africa. A study of this nature gives insight into the factors that are causing housing delays and the elevated housing backlog. The Gauteng Department of Human Settlements can utilize the factors identified in this research to remove some of the bottlenecks in the construction industry and ensure effective and timely provision of houses to underprivileged South Africans. The research findings provide the stakeholders and decision-makers with a clear understanding of the challenges in the construction industry that cause delays. The data presented in this research could also be used by project stakeholders to identify competent labour for construction projects to minimise delays. This research can also be used to implement relevant solutions for specific causes of housing delays. A research of this type can also inspire future research on housing project delays and add to the existing knowledge.

Delimitation and Limitation of the study

The study is delimited to the Lesedi Local Municipality in Gauteng Province, South Africa. Even though there are other Municipalities in the province (i.e. City of Johannesburg Metropolitan, City of Tshwane Metropolitan, Westrand District, Ekurhuleni Metropolitan, Emfuleni Local Municipality and Midvaal Local Municipality) as well as others across South Africa, the study outcomes might not be applicable in those Municipalities due to locational differences. Thus, this project could be extended to include other townships within South Africa where construction delays are an issue, to compare and elucidate the factors responsible for construction delay.

One of the limitations of the study is that interviews with participants could only be conducted based on the availability of the participants. Scheduling meetings at appropriate times with the participants enabled only a sample size of 40 participants. The allocation of more time to conduct this research would ensure that more participants are interviewed and the collection of more data for analysis.

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Appendix A: Ethics Clearance Approval

PROTOCOL NUMBER (for office use only): _____

University of the Witwatersrand, Johannesburg

***Ethics Application Form* for School of Construction Economics and Management Ethics Committee**

Use this form in applying for clearance of research involving human participants

Instructions

1. Completed applications must be submitted to Mantiseng Sithole at the CEM reception desk
2. Four paper-based (hard) copies of each document must be submitted.
3. All submissions and materials must be typed. Handwritten submissions are **NOT** acceptable.
4. Incomplete applications will **NOT** be considered.
5. Applications will **NOT** be processed if signatures from applicant or supervisor are missing.
6. Photocopying should be done 'back-to-back' to save paper.
7. Glossy and fancy binding is **NOT** necessary.
8. Necessary supporting documents (e.g. *Participant Information Sheet, Consent Form*, copies of instruments), must be stapled to the *Ethics Application Form*.
9. Please ensure the order of the documents being submitted are – Application form, participant information sheet, Consent form, copies of instruments and the research proposal

Complete this checklist to show what documents you have submitted.

✓

Check list

For all research:

✓	Completed *Ethics Application Form*
✓	Copies of the research proposal
✓	Copies of proposed research instruments (e.g. questionnaires/interview schedules)
✓	*Participant Information Sheet* (for each different sample group)
✓	*Consent Form* [*Assent Form* for under 18s] (for participant's signature) (for each different sample group)

Where applicable (Attach to this form):

✓	Relevant permission letter (from, e.g. company's HR department, National authorities such as Education Departments, Health Centres, Correctional Services, landowners, University Registrars, School principals, etc.)
	Any other appropriate *Consent Forms* (e.g. for members of focus groups, etc.)
	Guardian *Consent Form* (for participants under the age of 18)
	Other (please specify)

Declaration

I recognise that it is my responsibility to conduct my research in an ethical manner according to Guidelines of the University of the Witwatersrand, according to any laws and/or legal frameworks that may apply, and according to the norms and expectations of my discipline.

In preparing this Application for Ethics Clearance form, I have consulted the ***Guidelines for Human Research Ethics Clearance Application /non-medical*** (available on this web site http://web.wits.ac.za/Academic/Research/Applications.html) and have familiarised myself with the ethical guidelines specific to my discipline.

Signature

Name of researcher/applicant Sipho Samuel Morapadi

1. Researcher's personal data

Surname: Morapedi				Name: Sipho						
Title:	[ ] Prof	[ ] Dr	[X] Mr	[ ] Ms	[ ] Mrs	[ ] Other:				
School:										
Staff / Student number:	1762398			[ ] Full time	[X] Part time	[ ] Staff				
Your telephone(s):	0836312273									
Your Email:	1762398@students.wits.ac.za									
Name of Supervisor (if applicable):	Mr. Paul Rudzinske									
Supervisor's email address:	Paul.Rudzinske@wits.ac.za									
Supervisor's tel. number(s):										

2. Specifics about the research project

Title of research project

Factors contributing to the delays in housing delivery in Ratanda Township in Lesedi Local Municipality in the past five years – Gauteng Province

Is this research for degree purposes? [X] Yes [ ] No

If so, for what degree? [ ] Honours [X] Masters (research report)

Other (please specify)

Has it been approved by the relevant higher degrees committee or other relevant unit? [X] Yes [ ] No [ ] Submitted & pending

List the names and affiliations of any *additional* researchers who will be covered by this ethics protocol

N/A

Where will the research be carried out?

At Ratanda Township within the area of jurisdiction of the Lesedi Local Municipality

What are the aims / objectives of the research? (Please list; be brief)

To evaluate all factors that causes delays in housing delivery in Ratanda Township for the last five years. To achieve this objective, the following objectives will be analysed for the research area:

- **The manner in which Project Management was applied on construction projects.**
- **The internal and external factors which may be threats to the implementation of housing projects**

Do you have any financial or material interest associated with your research participants or with the organisations that you will work with during your research?		
[ ] Yes	[X] No	[ ] Potential conflicts of interest may exist
Please explain how you will manage any existing or potential conflicts of interest, if applicable. N/A		

INFORMATION RELATING TO ETHICAL MATTERS
Protocols submitted to the Committee must have sufficient information to enable the committee to judge the ethical implications of the proposed research. Please be brief and concise but also as specific and informative as possible

3. Formal permission		
Has appropriate formal permission been obtained, if required (e.g. employer, government department, land owner, etc.)?		
[X] Yes (attached)	[ ] Not required	[ ] Pending (must be supplied before permission is granted)
Obtaining permission is necessary when conducting research *within the premises* of a particular site such as an ethnography of the functioning of a supermarket or a school, or the way staff interact with clients in a clinic, or of how the HIV Unit in the City of Johannesburg functions. Please read the detailed guidelines on the Ethics website http://web.wits.ac.za/Academic/Research/Applications.htm		

4. How will data on human research participants be collected (instruments, methods, procedures)? (Attach instruments as an appendix)	
[ ]	In written format (e.g. questionnaires, diagnostic tests, etc.)
[ ]	Completion of on-line instruments (e.g. questionnaires)
[X]	Individual interviews (e.g. structured, semi-structured, etc.)
[ ]	Group interviews (e.g. seminar/discussion groups, focus groups, etc.)
[ ]	Ethnographic observation, participant observation, other informal descriptive, and/ or interactive methods
[ ]	Community-based methods or techniques such as drama workshops, community theatre, training workshops, participant rural appraisal (PRA), rapid rural appraisal (RRA), etc.
[ ]	Research on/in therapeutic or counselling contexts
[ ]	Observation of public performance, and/or public behaviour observation
[ ]	Photography, video and/or audio recording (ensure permission is signed for on the *Consent Form*)
[ ]	Other research methods or techniques (specify in this line).
Brief details of instruments to be used (attach instrument or draft to this application)	
The interview schedule in a semi-structured format	

5. Who will the research participants be?				
Brief description of human participants, including age range and sample size, for each sample:				
• Participants will be individuals working at Gauteng Department of Human Settlements, Lesedi Local Municipality and Consulting companies who are / were involved in construction at Ratanda Township. • These participants should be over the age of 18 and should have been working for a period of not less than 3 years. • All participants should have technical knowledge in the field of construction.				
Does this research expose either the participant or the researcher to any potential risks or harm that they would not otherwise be exposed to?	[ ]	Yes	[X]	No
If 'yes', explain:				

Will research involve vulnerable categories?	☐ Yes	☒ No
If so, state which ones:		
How will any existing vulnerabilities among research participants be addressed? N/A		

NB: The term 'vulnerable categories' includes, among others, children under 18, orphans, prisoners, **persons with cognitive** or communication disorders, people who are traumatised or currently in traumatic situations

Where necessary, include details of steps to be taken to facilitate data collection across language barriers (e.g interpretation or translation)

6. How will informed consent be obtained?

How will potential participants be **identified / selected / recruited**?

- Participants to be identified from Gauteng Department of Human Settlements, Lesedi Local Municipality and Consulting companies.
- Participants must have worked for a period not less than 3 years and must have technical knowledge in the field of construction.

What will participants be told about the research (including the promises to be made)?

The aim of the research will be explained and participants will be told that it is of no risk to them if they participate. The information to be obtained from them will be confidential and can only be disclosed with their permission. All transcripts will be secured with a special code. Participants will also be informed that they have the right to withdraw from participating at any time.

How will informed consent be obtained?

Participant Informed Consent Form will be provided and a consent form will be signed by participants before the interview.

☒	Formal (Signed form)	☐	Informal (e.g. verbal)	☐	Other

Briefly explain your strategy for ensuring informed consent

Those willing to participate will be required to read the Participant Informed Consent Form which explains the purpose of the study, procedures of collecting data including timeframes, potential risks and discomfort, payment (if any), confidentiality and rights. Clarity will be given on any item matter if required. Once understood, a consent form will be signed by the participant before the interview commences (Please see attached Participant Informed Consent Form).

Attach *Participant Information Sheets* and *Consent Forms* for each sample group, and/or other related materials

NB: ***Consent*** in social science and humanities research involving human participants: Where informal ethnographic or participant observation methods are used, or where signed *Consent Forms* are not possible, or for research involving group contexts (focus group, Participant Rapid Assessment, Rapid Rural Appraisal, public performance, workshops) **state how the quality of informed consent will be assured**. It is essential that participants in research be fully informed and agree, on this basis, to participate in the research

7. Protecting participant identities				
Can **anonymity** be guaranteed in resulting reports, theses and/or publications?	X	Yes		No
Can **confidentiality** be guaranteed?	X	Yes		No

Explain how this will be done? (What will participants be told in this regard?)

The information will remain confidential and will be disclosed only with the participant's permission. The researcher will ensure that the confidentiality of the feedback data is secured in a locked cabinet. After the researcher has collected data, all interview transcripts will be secured with a special code. This will safeguard the information with only the Researcher having access to it. To further ensure confidentiality of the recordings and anonymity of the participant, the researcher will not ask the participants for their personal information during recording.

NB: While confidentiality may be desirable, it cannot be guaranteed in, for example, focus groups, or ethnographic observation. Similarly anonymity should be preserved in questionnaires, but cannot be offered in workshop methodologies, focus group research, etc. Participants should have the right to remain anonymous in the final report, and this must be respected in handling of all data relating to them. Participants need to be informed about these issues.

8. Protection of data during and after the research

How will the data be protected **while the research is in progress**? (This includes how the identities of participants will be protected).

Al interview transcripts will be protected with a special code only known by the researcher. All feedback data will be secured in a locked cabinet.

What is to be **done with the research data** after completion of the project?

	Stored in archives (specify)		Stored in on-line data base (specify)
X	Stored in password protected computer		Stored in digital form with all identifying feature removed
X	Destroyed after 5 years (insert numbers of years)		

Explain how the data will be securely stored during this time

All interview transcripts will be protected with a special code only known by the researcher and other data will be scanned and stored in a password protected computer. All hard copies will be destroyed after completion of the project.

NB: 'Raw' or unprocessed data, especially **where the identity or personal data of research participants is included, must be safeguarded** and preserved from unauthorised access. Data may be destroyed after use, but **preservation in an archive or personal collection** may also be appropriate, desirable or even essential. For instance, data sets that contain **historically important information** or information that relates to **national heritage** must be preserved and should be placed in a public archive where possible and appropriate.

All data should be preserved in a way that **respects the nature of the original participants' consent**. If you are unsure about the procedure of data management and storage, please contact Nina Lewin (ninalewin@gmail.com)

9. Access to the research results / reports

How will the results be **reported**?
A research report will be completed by the researcher and all findings and recommendations will be included in the report.

Who will have access?

The research report is to be utilised for academic purposes and students will have access to the report.

Note: All Wits Masters and PhDs are stored in the main library as well being made available on the www.

SIGNATURES (REQUIRED)

By signing this form the researcher and supervisor (if any) of this project undertake to ensure that any amendments to this project that are required by the Human Research Ethics Committee (Non-medical) are made before the project commences.

Declaration: We, the signatories, declare that all information on this form is correct and that we will strive to maintain the highest ethical standards in this research at all times, according to disciplinary and university expectations, recognising that ethical practice in research is always a continuing process.

	Date	Name	Signature
Applicant	09/10/17	Sipho Moagabi	
Supervisor	09 October '17	Paul Rudzinske	P Rudzinske (Wits)

Appendix B: Participants informed consent form

Participant Informed Consent Form

LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN RESEARCH

Title of the study: Factors contributing to delays in housing delivery in Ratanda Township in Lesedi Local Municipality for the past five years – Gauteng Province

You are requested to participate in a research study conducted by Sipho Morapedi, a Masters student from the University of the Witwatersrand.

If you have any questions or concerns regarding the research, please feel free to contact me on:

Address: 01 Loch Street
Meyerton
1962

Cell #: 083 631 2273
079 625 4149

Email: 1762398@students.wits.ac.za

PURPOSE OF THE STUDY

The aim of the research is to evaluate all factors that causes delays in housing delivery in Ratanda Township for the last five years. In order to achieve this objective, the following objectives will be analysed for the research area:

- The manner in which Project Management was applied on construction projects.
- The internal and external factors which may be threats to the implementation of housing projects

PROCEDURES

The researcher will be collecting data in a form of a face to face interview. The interview will take place in a secured place / room where there will be no interference. The interview will not be more than 15 minutes and the researcher will use a recording device to record the session while writing down the notes.

Participant Informed Consent Form

POTENTIAL RISKS AND DISCOMFORT

There are no anticipated risks or discomforts associated with participating in this study.

PAYMENT FOR PARTICIPATION

Participants / respondents will not be remunerated for participating

CONFIDENTIALITY AND ANONYMITY

Participants are assured that any information that is obtained through the face to face interview will not be identified with them. The information will remain confidential and will be disclosed only with the participant's permission. The researcher will ensure that the confidentiality of the feedback data is secured in a locked cabinet.

After the researcher has collected data, all interview transcripts will be secured with a special code. This will safeguard the information with only the Researcher having access to it. To further ensure confidentiality of the recordings and anonymity of the participant, the researcher will not ask the participants for their personal information during recording.

PARTICIPANT WITHDRAWAL AND RIGHTS

As a participant, you have a right to choose to take part in this study or to decline. Those opting to take part in the study have the right to withdraw at any time. During the interview, the participant may decline to answer any question they may feel uncomfortable with. The researcher may also withdraw the participant from the study if circumstances which warrant the researcher to do so arises.

Participant Informed Consent Form

CONSENT

I hereby agree to participate in the research regarding factors contributing to housing delivery challenges in Ratanda Township based in Lesedi Local Municipality. I understand that I am participating freely and without being forced to do so. I also understand that I can stop participating or stop the interview at any time should I wish to discontinue and that such decision will not in any way affect me negatively.

The purpose of the study has been explained to me, and I understand what is expected of my participation in this study.

I have received all the necessary contact details of the researcher should I have any issues that may arise in this interview and would like to clarify at a later stage.

I understand that this consent form will not be linked to the interview transcripts and that my answers will remain confidential.

I understand that the results of this interview will only be utilised for academic purposes and will only be released for purposes other than academia when permission has been granted by me.

I acknowledge that I have read and understood this information contained in this "Participant Informed Consent Form" and would like to continue participating in this study.

_____ _____

Signature of Participant Date

Appendix C: Proposed Research Instrument

Title: Factors contributing to the delays in housing delivery in Ratanda Township in Lesedi Local Municipality for the past five years- Gauteng Province.

Research Objectives

- The manner in which Project Management was applied on construction projects
- The internal and external factors which may be threats to the implementation of housing projects

Face to Face Interview Questions

1. Please indicate your profession within the construction industry.
2. How many years of experience do you have in the construction industry?
3. Please indicate whether you are male or female.
4. Please indicate your level of education.
5. Tell me about your views on the competencies that a Construction Project Manager assigned to monitor construction projects should have.
6. Explain the process of project monitoring and control during project implementation in Ratanda Township
7. How would you explain the relationship between Contractors and Consultants during implementation of projects in Ratanda Township?
8. Do you think Contractors appointed for construction of houses in Ratanda Township have the necessary skills and capacity to implement the projects? Answer 1= strongly agree, 2= agree, 3=neutral, 4= disagree, 5= strongly disagree
9. What is your view regarding political commitment in addressing housing delays in Ratanda Township?
10. Explain how the budget allocation has affected delivery of housing in Ratanda Township.
11. How has the effects of weather affected delivery of housing in Ratanda Township over time?
12. The factors that cause construction delays fall under key themes in this research and they are; financial constraints, political constraints, labour competency and weather conditions. Could you please list these in order of importance, with the first factor as most important and last as the least important?
13. Are there any other delays that you are aware of that affect delivery of housing in Ratanda Township other than what has been discussed?

Appendix D: Permission by Gauteng Department of Human Settlements

GAUTENG PROVINCE
HUMAN SETTLEMENTS
REPUBLIC OF SOUTH AFRICA

INTERNAL MEMO

Enquiries: Philemon Mukumele
Directorate: HCUD
Tel: +27 (0)11355-4158

TO : **MATILDA M. GASELA**
HEAD OF DEPARTMENT

FROM : **LYDIA MPE**
DIRECTOR: HUMAN CAPITAL UTILIZATION AND DEVELOPMENT

DATE : **12 SEPTEMBER 2017**

SUBJECT : **REQUEST TO CONDUCT RESEACH FOR ACADEMIC PURPOSES RE: MASTERS OF SCIENCE (MSC) STUDENTS.**

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1. PURPOSE

To request the Head of Department's approval for students who are in the Masters of Science Programme with Wits University to conduct research in different areas of their studies.

2. BACKGROUND

The Gauteng Department of Human Settlements is financing 11 employees who are Construction Project Managers to pursue a Master's of Science in Construction Project Management with Wits University. As part of their studies they need to conduct research in different areas of their studies. Amongst others the research topics include:

- ✓ The impact of local labour on achieving quality standards in low cost housing: Lesedi Local Municipality.
- ✓ The Housing Delivery challenges: Ratanda Township
- ✓ Green Procurement in Construction Industry: Gauteng Department of Human Settlements.

- ✓ Public Participation in Infrastructure Projects.

The data to be collected will be for academic purposes only.

3. RECOMMENDATION

It is recommended that the Head of Department grants approval for employees who are in the Masters of Science (MSC) in Building Project Management Programme to conduct research for academic purposes in different areas of their studies.

(Attached herewith are the letters to WITS University from the respective students)

MS. LYDIA MPE:
DIRECTOR: HUMAN CAPITAL UTILIZATION AND DEVELOPMENT
DATE: 12/10/2017

Recommended	X	Not Recommended	

MR. JOSEPH ZULU:
DDG: CORPORATE MANAGEMENT SERVICES
DATE: 12/10/2017

SUBJECT: REQUEST TO CONDUCT RESEACH FOR ACADEMIC PURPOSES RE: MASTERS OF SCIENCE (MSC) STUDENTS.

3. RECOMMENDATION

It is recommended that the Head of Department grants approval for employees who are in the Masters of Science (MSC) in Building Project Management Programme to conduct research for academic purposes in different areas of their studies.

(Attached herewith are the letters to WITS University from the respective students)

Approved	X	Not Approved	

MS. MATILDA M. GASELA
HEAD OF DEPARTMENT
DATE: 12 OCTOBER 2017

Enquiries: Sipho Morapedi
University of Witwatersrand
School of Construction Economics & Management
1 Jan Smuts Avenue
Johannesburg
Cell: 083 631 2273

The Head of Department
Gauteng Department of Human Settlements
Private Bag X79
Marshalltown
2001

ATTENTION: Ms. Matilda Gasela

REQUEST TO CONDUCT A RESEARCH IN RATANDA TOWNSHIP FOR ACADEMIC PURPOSES

I am a Masters student at the School of Construction Economics and Management at University of the Witwatersrand. I (researcher) would like to do a research on the housing delivery challenges at Ratanda Township with the aim of determining factors contributing to the delays in housing delivery in this area in the last five years.

The researcher will be more interested in the experience, meaning and perspective of the respondents with the main purpose of describing the challenges of the housing delivery at Ratanda Township. In order to achieve this, a face to face interview will be requested with officials from Lesedi Local Municipality, Gauteng Department of Human Settlements, and Contractors & consultants who are / were involved in construction in the area.

I hereby request an approval to conduct a research study as indicated above. The approval is needed for the ethical clearance of my research project. The data to be collected will be for academic purposes only.

Your assistance in this regard will be appreciated.

Yours faithfully,

Sipho Morapedi
University of Witwatersrand Student
Date: 04/10/2017

Department stamp

Approved / ~~not approved~~

Signature of Head of Department
Date: 12 OCTOBER 2017

Appendix E: Permission by Lesedi Local Municipality

Enquiries: Sipho Morapedi
University of Witwatersrand
School of Construction Economics & Management
1 Jan Smuts Avenue
Johannesburg
Cell: 083 631 2273

The Municipal Manager
Lesedi Local Municipality
P.O. Box 201
Heidelberg
1438

ATTENTION: Mr. Isaac Rampedi

REQUEST TO CONDUCT A RESEARCH IN RATANDA TOWNSHIP FOR ACADEMIC PURPOSES

I am a Masters student at the School of Construction Economics and Management at University of the Witwatersrand. I (researcher) would like to do a research on the housing delivery challenges at Ratanda Township with the aim of determining factors contributing to the delays in housing delivery in this area in the last five years.

The researcher will be more interested in the experience, meaning and perspective of the respondents with the main purpose of describing the challenges of the housing delivery at Ratanda Township. In order to achieve this, a face to face interview will be requested with officials from Lesedi Local Municipality, Gauteng Department of Human Settlements, and Contractors & consultants who are / were involved in construction in the area.

I hereby request an approval to conduct a research study as indicated above. The approval is needed for the ethical clearance of my research project. The data to be collected will be for academic purposes only.

Your assistance in this regard will be appreciated.

Yours faithfully,

Sipho Morapedi
University of Witwatersrand Student
Date: 27/09/2017

Municipal stamp

Lesedi Local Municipality
27 SEP 2017
Lesedi Plaaslike Munisipaliteit

Approved / ~~not approved~~

Signature of Municipal Manager
Date: 27/09/2017