The cause of the water infra-structure backlogs in Limpopo Province

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

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ABSTRACT

Water infrastructure has generally contributed to the development to most of the economic systems while it also served as basic human need. Availability of sustainable water infrastructure plays an important role throughout the human lifespan.

Inadequate water services infrastructure and underspending on infrastructure projects has been affecting the reliability of water services provision in Limpopo province municipalities before and after the dawn of democracy in 1994.

Qualitative data was collected through one on one interviews using a semi-structured questionnaire.

The major findings with respect to the first research question was poor quality supervision, lack of capacity or inexperienced contractors, operations and maintenance of the existing infrastructure, inadequate budget, long procurement processes, political interference in the appointment of service providers and the change in political leadership. Lack of project management systems and poorly resourced, Inadequate funding and change in political leadership.

The major findings with respect to the second research question were politically mandated professional service providers (PSPs), Municipal Infrastructure Grant (MIG)'s inability to release about ten percent of the total capital budget for planning purposes, system that does not allow multi-year financial commitment, conflict between administration, political leadership and long turnaround time in resolving disputes.

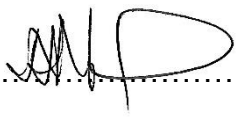
Key words:

Infrastructure, infrastructure funding, political economy

DECLARATION

I, Norman Nokeri, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Norman Nokeri

Signed at …  ……

On the ……8…… day of ……November…… 2017

DEDICATION

Firstly, I dedicate this study to the Almighty God who blessed me with wisdom, understanding and perseverance to complete such a demanding course like this.

Secondly, I dedicate this study to my wife who was continuously the pillar of my strength, pushed me to do the best even when I felt like throwing the towel.

To my children whom we missed each other, I am saying thank you for tolerating the entire period.

ACKNOWLEDGEMENTS

I wish to acknowledge the contributions of the following people without whose assistance this project would not have been realised:

Professor Eric Schaling (Wits Business School), for mentorship during this entire study.

All the executives and technical directors of the municipalities of Limpopo, Department of Water and Sanitation, Development Bank of Southern Africa, Municipal Infrastructure Support Agency, South African Local Government Association and Cooperative of Governance, Human Settlement and Traditional Affairs for finding slots for the interviews that led to the completion of this research report.

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CHAPTER 1. INTRODUCTION

1.1 Purpose of the study

The purpose of this research is to identify and understand the underlying issues that cause the water services infrastructure backlog in Limpopo Province, which directly or indirectly hinders social and economic development.

1.2 Context of the study

Since democracy started in 1994, South Africa has focussed on redressing the past imbalances created by the apartheid government ranging from transportation to water and sanitation infrastructure (Amod, Wall, & Rust, 2012; DBSA, 2012b); R. Nnadozie (2011); (R. C. Nnadozie, 2013). This was evident from the types of policies that were developed and adopted such as the Reconstruction and Development Programme (RDP), Community Water Supply and Sanitation (CWSS) in 1994 amongst others and the acts that were passed such as the Constitution of the Republic of South Africa in 1996. The National Water Act 36 of 1998 and the Water Services Act 108 of 1997 were amongst the government instruments created to ensure that the country's water resources are developed, protected, managed and distributed equitably as well as ensuring the rights of access to basic water supply and basic sanitation

South Africa is according to the Constitution of the Republic of South Africa divided into three spheres of independent government but inter-dependent of each other, i.e. National, Provincial and Local governments (Republic of South Africa, 1996). The national government is responsible for the policy framework from which the provincial and local government develop their policies for implementing the government programmes.

South Africa has nine provinces and 278 municipalities. Limpopo is one of the nine provinces composed of five district municipalities and twenty five local municipalities (excluding the newly formed local municipality called Lim 345 in Vhembe district municipality). Eales (2010) indicated that Limpopo is amongst

the provinces that are regarded as having the highest water infrastructure backlogs and this has also been confirmed by R. Nnadozie (2011) when he indicated that Limpopo was the third province with the largest backlogs after Eastern Cape and Kwazulu Natal. Mostert and Van Heerden (2015) further confirm that Limpopo is one of the provinces hit by poverty, inequality and high rate of unemployment in dire need of the infrastructure, water infrastructure being listed as hampering development.

The focus of this study is on Limpopo province looking at the underlying issues that contribute to the water services delivery infrastructure backlogs. The study identifies these challenges and where applicable, provides appropriate recommendations that will assist municipalities and other water agencies with the provision of water services.

1.3 Problem statement

1.3.1 *Main problem*

Inadequate water services infrastructure and underspending on infrastructure projects have been affecting the reliability of water services provision in municipalities before and after the dawn of democracy in 1994.

Alexander (2010), Eales (2010) and R. C. Nnadozie (2013) emphasised that violent service delivery protests that increased by 100% between 2007 and 2009 in the country were due to, amongst others lack of or inadequate infrastructure to provide potable water. Singo (2012) indicated that municipalities are continuously failing to deliver the infrastructure required for stimulating economic growth which is exacerbated by poor planning, and the monitoring and evaluation systems of capital programmes implementation. Koelble and LiPuma (2010) added that lack of accountability and enforcement by the relevant institutional bodies on the municipalities lead to careless spending of the municipal budgets and Limpopo municipalities are not immune to these challenges.

In the African National Congress Local Government summit held in Polokwane, Mamokgere (2016) quoted Minister Faith Muthambi on the lack of service delivery in Limpopo province stating that:

> "It's an insult to our people that all the time the money is returned based on the fact that people have been fighting on who to appoint. We have done the analysis to say in the last 11 years this province was allocated R17 billion and only R13 billion was spent. Meaning that we lost R4 billion back to the national fiscus."

1.3.2 *Sub-problems*

The first sub-problem is to qualitatively explore the underlying challenges of water infrastructure backlogs over and above various forms of government interventions.

The second sub-problem is to qualitatively explore why there are still unspent budgets that are returned to the national fiscus while water infrastructure backlogs amongst others continue to grow.

1.4 Significance of the study

Local government plays an important role in the provision of infrastructure, being responsible for the provision of necessary infrastructure services such as water, electricity, sanitation, roads, and sewage which in turn stimulate local economic development (Singo, 2012). In general, infrastructure development brings about local economic growth since job opportunities are created which result in economic activities in society (National Treasury, 2012). Infrastructure investment is continuously being prioritised by the South African government to meet the needs of its citizens. This was demonstrated by the budget allocation of R813 billion for public sector expenditure over three years (National Treasury, 2015b). However, since 1994 the local government has been underspending because of poor planning and corruption on infrastructure development (Ajam, 2014). Pillay, Steyn, and Sommerville (2013) highlighted the figures of underspending as R622,3 million (2007/08), R847,8 million (2008/09) and R1,3

billion (2009/10), which indicate that funding is not the ultimate challenge to roll out infrastructure but rather, other issues that may range from skills, political interference (for example, council members forced senior managers to appoint service providers that will benefit them) and poor planning.

The significance of the study is that in establishing the underlying issues around failure to spend the allocated infrastructure budget as well as the solutions, it may provide guidance to municipalities, public water utilities and other agencies responsible for infrastructure development.

1.5 Delimitations of the study

The study focuses on the underspending of the water services infrastructure budgets to understand the challenges that thwart social and economic growth in Limpopo province with the hope that the solutions that are formulated will support other provinces with similar challenges.

The Department of Water and Sanitation being accountable to Parliament on the overall access to water and sanitation, was engaged to understand the overall challenges around water infrastructure development. Mines within the province were engaged to understand how this infrastructure inadequacy affects their growth plans. Municipalities were intensely engaged to get to the core of the challenges around water services infrastructure backlogs. Sampling, selection of the respondents and how data was collected are discussed under the methodology chapter.

1.6 Definition of concepts

For the purposes of this study the following concepts are defined as follows:

Water Services refers to water supply services and sanitation services (Republic of South Africa, 1997)

Backlog refers to “a service level less than that needed to ensure a household’s health and safety” (Van der Walt, 2014)

Water services infrastructure refers to “a reservoir, dam, well, pump house, borehole, pumping installation. purification work, sewage treatment plant, access road, electricity) transmission line, pipeline, meter, fitting or apparatus built, installed or used by a water services institution to provide water services or dispose of industrial effluents” (Republic of South Africa, 1997).

1.7 Assumptions

According to Yilmaz (2013) there are five key research assumptions common to both qualitative and quantitative research methods though they have different interpretations in each method. These assumptions which most clearly reveal the underlying paradigm are ontological, epistemological, axiological (objectivity or subjectivity of the values), methodological, and rhetorical. Ontology, epistemology and axiology then become the basis for the assumptions for this study as follows:

- That the respondents provide the real status of the underlying challenges as close to the subject being discussed as possible because it is possible to have multiple realities though accepted (Yilmaz, 2013). This is critical to the study because its intention is to unlock any challenges that hinder the ameliorating economic growth and the living standards of South Africans.

- That the participants trust and accept the researcher so that they can speak openly around the topics that are presented to them. This is very important for the appropriate proposal of the solutions relevant to the implementers of the infrastructure programmes.

- That the participants are not too biased in articulating the issues around the topic as this has a severe impact on the outcomes of the study as it may mislead the agencies that are to use the lessons for implementation.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

The focus of this chapter is to review the literature about water infrastructure development outside and within South Africa. Legislation and policies emphasising the intent of the South African government to rollout the infrastructure are also highlighted. Roles and responsibilities of various institutions regarding infrastructure development are reflected. The chapter further provides the arguments around the impact of the infrastructure backlogs in general.

The structure of this chapter is composed of the background discussions where various legislation and policies governing the water sector are briefly highlighted. Water infrastructure backlogs are discussed in detail, first nationally and briefly globally, then followed by Limpopo province, specifically, as the area of interest. The underspending on infrastructure is another topic that is also intensively discussed and once more, starting nationally and then Limpopo province, as an area where this research is focussed. The final topic is the conclusion of the literature review against the research questions formulated.

2.2 Background discussion.

The Constitution of the Republic of South Africa, particularly Chapter 2, emphasises the rights of access to basic services such as water, electricity and roads by every person. The Bill of Rights is widely accepted and well understood, however, what is key is how to ensure that these rights are fulfilled. Municipalities are for this purpose charged with the responsibility to ensure the provision of services to the people within their juristic (Republic of South Africa, 1996). The government went further to establish municipalities and categorised them into metros (category A) and non-metros (category B or C) so that appropriate support can be provided where needed. Powers and functions were clearly indicated from the executive authority to the accounting officers and management of the municipalities (Republic of South Africa, 1998). A Municipal Infrastructure Grant

(MIG) is distributed through Cooperative Governance Traditional Affairs (CoGTA) to all the municipalities in the country per the formula that is composed of all the service provision elements for developing relevant infrastructure to deliver the basic services.

Furthermore, municipalities prepare the Integrated Development Plans through a community participation process that ensures that all the community needs are captured and prioritised for adoption by municipal councils for implementation thereafter. The municipalities account to the communities within their jurisdiction through ward council meetings (Republic of South Africa, 2000).

Water is the economic hub of every development in the world and that is why WWDR (2016) highlighted the fact that most of the industries depend on the continuous supply of fresh water in order to create jobs for people. This means that it is critical that water infrastructure is developed in a responsible manner. The report further notes that in order to create water dependent industries, it is critical that the infrastructure is improved and the efficiencies around water usage are enhanced (WWDR, 2016).

Currently, most of the municipal services are not able to meet the basic requirements of the communities within their jurisdiction, especially in the most rural areas, when compared to urban areas. There is a huge water infrastructure backlogs that should be eradicated if South Africa is to fulfil its promise of providing all South Africans with basic water (Eales, 2010; Van der Walt, 2014). There are various challenges in the rollout of the water services infrastructure due to, amongst others, poor planning, shortage of technical skills, poor or lack of maintenance and delayed expansion of schemes, leading to a constrained operating capacity (Van der Walt, 2014). Van der Walt (2014) further indicated that there should be ways and/or methods like project management that should be employed to enhance the municipal service delivery programmes, taking into consideration the municipal constraints.

There are water infrastructure projects that have been running for more than ten years, particularly in Limpopo Province without being completed. Communities ended up vandalising such infrastructure as it was not providing the services for

which it was intended for. Infrastructure projects are key in the creation of both temporary and permanent jobs in the country; it is therefore important that the municipalities are institutionally ready to roll out the capital projects (Van der Walt, 2014).

Research has shown that government introduced programmes that were meant to close the capacity gaps in municipalities, such as Siyenza Manje and others, through the Development Bank of Southern Africa, yet these programmes did not yield results (Mdunge, Mpondo, Chakwizira, & Mashiri, 2014). Koelble and LiPuma (2010) and Van der Walt (2014) further highlighted the introduction of the programmes to support the municipalities in accomplishing their mandate, such as local government turnaround strategies in 2011, project consolidate, five-year strategic agenda, operation clean audit in 2014.

Prior to 1994, service delivery was concentrated in certain areas, especially in urban white population areas while the black people were mostly run by homelands with minimal skills and depended on the South African Government for funding and were characterised by high infrastructure backlogs as highlighted by (DBSA, 2012b; R. Nnadozie, 2011; R. C. Nnadozie, 2013)

The availability of water infrastructure is very important in the development of any country's social (such as improving quality of life) and economic growth. Backlogs of or inadequacy of water infrastructure deters any investors locally and internationally (Presidencial Infrastructure Coordinating Commission (PICC), 2012). The term "backlog" is subject to interpretation. Still (2009, p. 2) defined backlog as "communities with no infrastructure versus those with inadequate infrastructure in various ways". He further classified backlogs as depicted in Table 2-1:

Table 2-1: Backlog Classification for Water Services (Still, 2009)

CLASSIFICATION PRIORITY		DEFINITIONS
Priority 1	No Water Services	Whole community has no never had formal (municipal) water supply system
Priority 2	Inadequate DWAF Infrastructure Need: Extension	Communities have formally grown and there are households that do not have water. 1. Network: new infrastructure 2. Storage: new & adjacent, 3. Local Available Source: New Borehole, pipe
Priority 3	Inadequate DWAF Infrastructure Need: Upgrade	Existing infrastructure not on RDP standard. 1. Network: too small pipes, 2. Storage: Add to exist / elevation 3. Source: Infrastructure to increase exist yield
Priority 4	Inadequate DWAF Resource Need	Not enough water in system due to Demand Management problems or local source development issues
Priority 5	Inadequate DWAF Management Need: O&M	Water can be restored to RDP (where infrastructure ok) by: enough & efficient staff and sufficient funds for O&M (incl. e.g.: quality at Water Treatment Works (WTW), machines working, etc.)
Priority 6	Inadequate DWAF Management Need: Refurbishment	Water can be restored to RDP by: Repair/Replace with same existing infrastructure
Priority 7	Inadequate Housing Interim	Squatter (un-orderly layout) to be addressed with temporary infrastructure.
Priority 8	Inadequate Housing Permanent	Orderly layout where housing scheme is needed. E.g. overcrowded yard, existing low-cost housing project with need
adequate		Adequate Infrastructure

However, Van der Walt (2014, p. 846) defines backlog as “a service level less than that needed to ensure a household’s health and safety”. Having all these definitions and priorities identified in Table 2.1, the latter definition encompasses all the priorities indicated in Table 2.1 even though it may not sufficient. It should be noted however, that backlogs are not static.

2.3 Water infrastructure backlogs

2.3.1 *Water sector governance*

The water sector is governed by the National Water Act 36 of 1998 and the Water Services Act 108 of 1997. The National Water Act ensures that the country's water resources are developed, managed, protected and used in an equitable manner (Republic of South Africa, 1998). The Water Services Act ensures that the Chapter 2 of the Constitution of the Republic of South Africa is fulfilled by ensuring that every citizen have the right to access basic water services (Republic of South Africa, 1997). The Act further sets the norms and standards for planning, tariffs and the regulatory framework within which the water services institutions should operate.

These Acts highlighted above, responded to the past imbalances in access to basic water services created by the apartheid regime. Furthermore, the position of the democratic government was a pro-poor approach for eradicating the social ills that were being experienced by the previously marginalised society. To ensure that people on the ground receive services per their needs, the water services delivery was decentralised to local government (DBSA, 2012b; Republic of South Africa, 1996)

Flowing from the Acts highlighted above, water infrastructure is divided into two parts namely, water resources which involve the development of raw water dams per the hydrological yield of watersheds to meet the needs of industries, households and agriculture. The second part is water services infrastructure which is composed of potable bulk water that is supplied to the communities and businesses (DBSA, 2012b). Figure 2-2 schematically illustrates the various components of the water sector infrastructure:

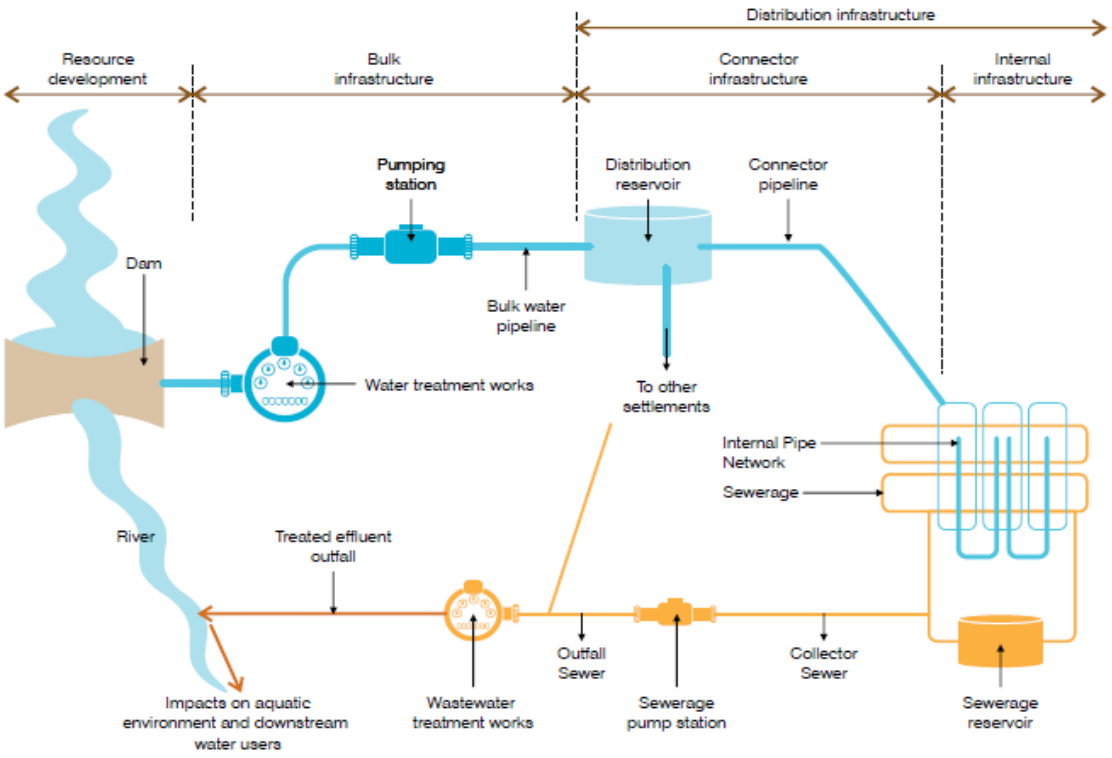


Figure 2-1: Water and sanitation infrastructure (DBSA, 2012b)

The Department of Water and Sanitation is responsible for the development of water resources infrastructure and the regional bulk water services infrastructure, and protects, manages and maintains this through its entities such as Water Boards and the Trans-Caledon Tunnel Authority (TCTA). The internal reticulation of potable infrastructure is the responsibility of the Water Services Authority (DBSA, 2012b; Republic of South Africa, 1997; Republic of South Africa, 1998)

2.3.2 *State of water infrastructure*

The durability of the infrastructure is key to the continuous achievement of social development and economic growth in South Africa (ICIOB & PrCM, 2011). It is therefore important that all the agencies and public entities responsible for the infrastructure development implement such infrastructure with diligence. ICIOB and PrCM (2011) further highlight that in Africa, infrastructure services are seen as public goods which are usually assigned to the state-owned enterprises or public entities which if budget is available, the implementation costs are very high or characterised by a long wait between the application for services and the actual

receipt of such a service because of the poor service rendered by state-owned entities in most cases.

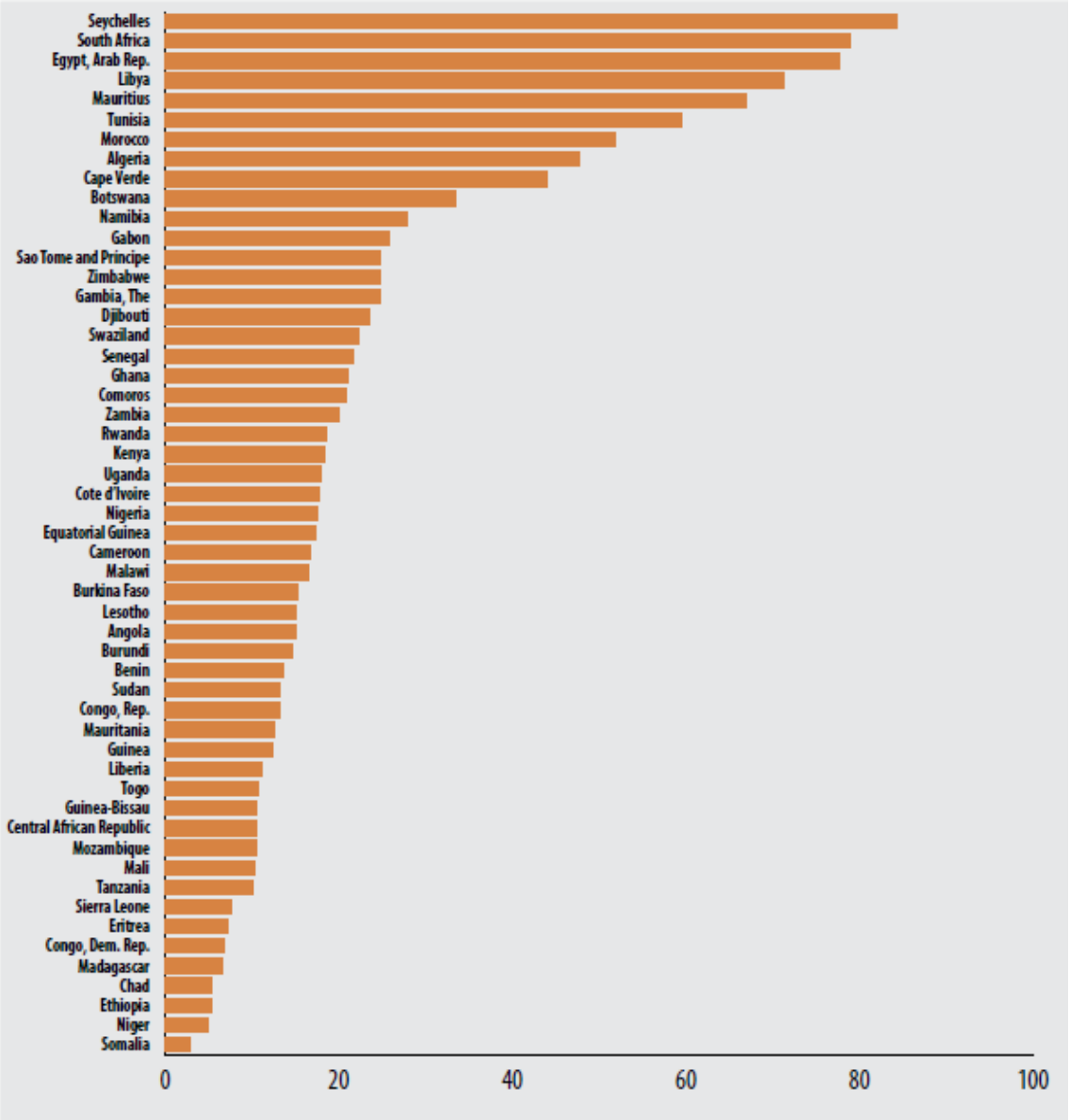


Figure 2-2: African infrastructure development index (AfDB, 2013)

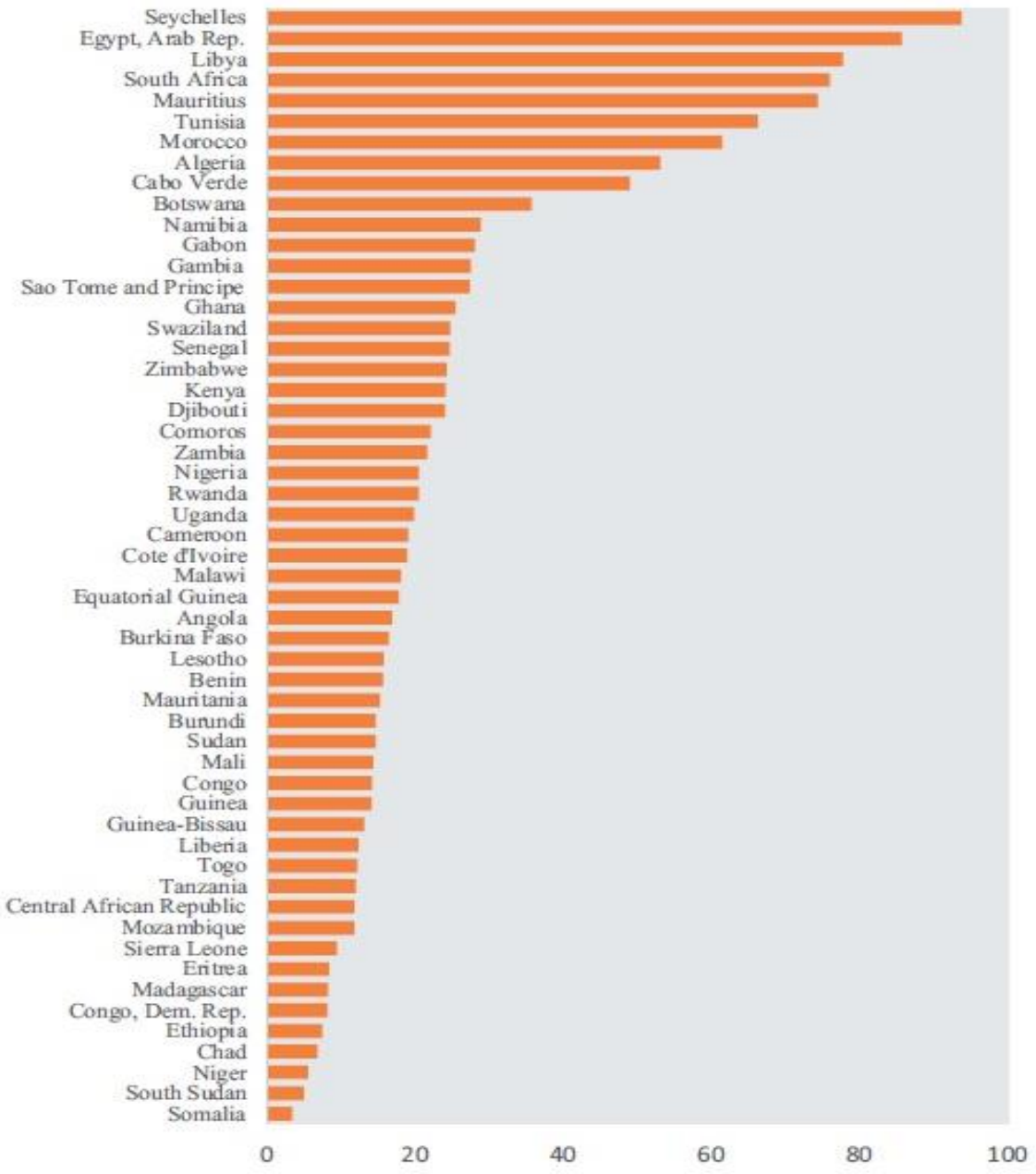


Figure 2-3: African infrastructure development index (AIDI) (AfDB, 2016)

As depicted in Figure 2-3 and Figure 2-4, in the top ten best performing countries, South Africa has regressed in the development of infrastructure as it ranked two after Seychelles in 2013 and it was ranked four in 2016 and has been overtaken by Libya and Egypt (Arab Republic). Figure 2-5 further depicts that South Africa, although in the top ten, it is not doing well in terms of the infrastructure. This calls for a thorough diagnosis in order to unearth the hidden challenges that deny the reliable services to the people of South Africa and the continent at large.

Table 2-2: Africa Infrastructure Development Index (AfDB, 2016)

Rank	Country	2013	Rank	Country	2014	Rank	Country	2015	Rank	Country	2016
1	Seychelles	84.41	1	Seychelles	89.57	1	Seychelles	93.71	1	Seychelles	93.92
2	South Africa	78.97	2	Egypt. Arab Rep.	81.11	2	Egypt. Arab Rep.	85.62	2	Egypt. Arab Rep.	85.66
3	Egypt. Arab Rep.	77.67	3	South Africa	73.81	3	Libya	77.67	3	Libya	77.79
4	Libya	71.37	4	Libya	73.44	4	South Africa	75.90	4	South Africa	75.51
5	Mauritius	67.01	5	Mauritius	71.21	5	Mauritius	74.28	5	Mauritius	74.07
6	Tunisia	59.51	6	Tunisia	61.88	6	Tunisia	66.19	6	Tunisia	66.26
7	Morocco	51.81	7	Morocco	56.66	7	Morocco	61.40	7	Morocco	62.40
8	Algeria	47.78	8	Algeria	49.91	8	Algeria	52.98	8	Algeria	53.39
9	Cabo Verde	44.11	9	Cabo Verde	46.20	9	Cabo Verde	48.95	9	Cabo Verde	49.43
10	Botswana	33.50	10	Botswana	34.76	10	Botswana	35.64	10	Botswana	35.63

Table 2-2 further highlight the inconsistencies of South Africa when it comes to infrastructure development. The country has been regressed from second position to third position in 2013 and further regressed from third position to fourth position in 2014 and maintained the position until 2016.

Government has shown its intentions and commitment to the development of infrastructure through its budgeting approach and by jointly developing the “Infrastructure Investment Programme” (IIP) with the European Union (DBSA, 2012a, 2012c).

The overall intention of IIP was to ensure that South African social development and economic growth is improved, as well as that of the SADC region. According to DBSA (2012a) the IIP was earmarked to assist in the rollout of the government’s infrastructure programme, considering the constraints that the country and SADC region have experienced.

There is a call for integrated infrastructure planning to avoid the fragmentation that is negatively affecting effective and efficient service delivery (DBSA, 2011). According to Amod et al. (2012) SAICE rated the water infrastructure D- in 2011 from D+ in 2006, meaning that there has been regression in the area of infrastructure development. More details are highlighted in Figure 2-6:

Table 2-3: Rating of South Africa water services infrastructure (Amod et al., 2012)

Sector	2006 grade	2011 grade	Trend	Brief condition report from 2011 report
Water	D+ for bulk infrastructure	D– for bulk infrastructure		There has been further deterioration in the ageing bulk water infrastructure portfolio as a result of insufficient maintenance and neglect of ongoing capital renewal. Persistent, serious salination of key river systems and eutrophication in many dams and rivers continues. Acid mine drainage is a cause for concern in the vicinity of gold- and coalmines. Large dams require urgent refurbishment. Farm dams are deteriorating because of lack of maintenance, threatening accelerated sedimentation of bulk storage infrastructure. The level of water supply in certain systems has fallen far below the 98% assurance of supply recommended in the National Water Resource Strategy. Owing to long lead-times required for development of new supply schemes, the situation is likely to become worse before it becomes better.
	C+ for major urban areas	C+ for major urban areas		Major and ongoing strides in provision of water infrastructure since 1994, but insufficient maintenance has led to many problems of compliance with quality and reliability requirements. This is especially so outside metropolitan areas. Recently introduced improved monitoring might help. Water wastage (through leaks) is still too high. Serious shortage of skilled personnel and officials; governance failures increasing. Increase in protests in urban and rural areas – an effort to force improvement in services.
	D– for all other areas	D– for all other areas		
Sanitation (including wastewater)	C– for major urban areas	C– for major urban areas		Serious problems continue with management of many wastewater (sewage) treatment works. Wastewater leakage and spillage, especially into major rivers, is still too high. Recently introduced improved monitoring might help. Unsustainable design and construction becoming more apparent, e.g. on-site sanitation facilities not easily emptied once full. Inadequate operation and maintenance capacity, and shortage of skilled personnel.
	E for all other areas	E– for all other areas		

It is evident that more work needs to be done to improve the social plight that is continuously impoverishing the poorest of the poor.

2.3.3 *Water Infrastructure in Limpopo Province*

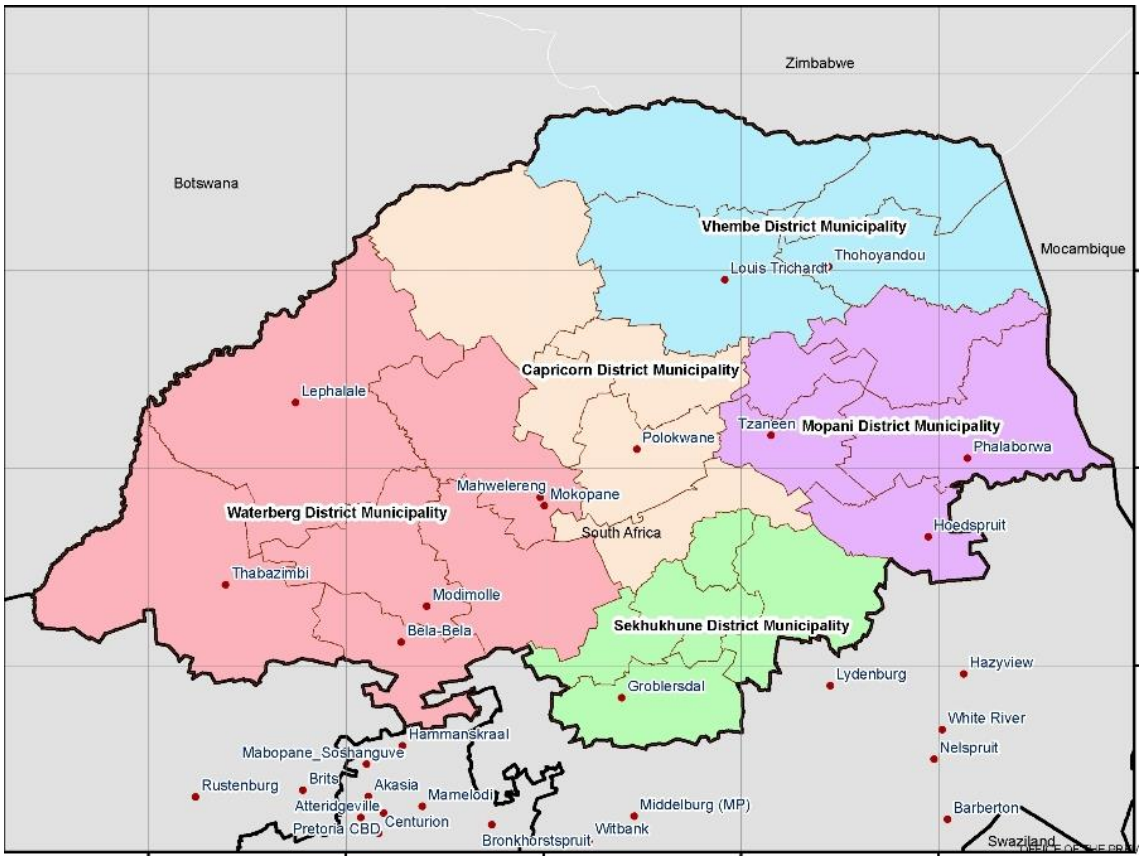


Figure 2-4: Limpopo Province map

Limpopo Province is one of the nine (9) provinces in South Africa. It is the northernmost province that shares borders with Mozambique, Zimbabwe and Botswana. It has been named after the great Limpopo River that flows along its northern border. The province is composed of five (5) district municipalities known as Mopani, Sekhukhune, Waterberg, Vhembe and Capricorn.

Limpopo is characterised by the high number of rural areas and few urban areas, making its revenue base small and there are high levels of unemployment (Mostert & Van Heerden, 2015). In the midst of all these challenges Eales (2010) indicated that Limpopo is amongst the provinces that are regarded as having the highest water infrastructure backlogs and this has also been confirmed by R. Nnadozie (2011) when he indicated that Limpopo was the third province with backlogs after Eastern Cape and KwaZulu Natal. Mostert and Van Heerden (2015) further confirm that Limpopo is one of the provinces hit by poverty,

inequality and high rates of unemployment and is in dire need of the infrastructure, water infrastructure being listed as hampering development.

Eales (2010) highlighted the fact that there are some rural areas that are still getting non-potable water from the unprotected streams which they share with animals because there are no water sources that have been developed. Eales (2010) further indicates that there are not even regional bulk distribution networks that are able to meet the community demands.

Some of the contributors to infrastructure backlogs in Limpopo and other provinces are lack or poor infrastructure, lack of institutional capacity, technical and financial skills, corruption and inability to collect revenue to be used for expanding the infrastructure thus affecting the service coverage according to Cooperative Governance and Traditional Affairs (CoGTA, 2014). The picture painted in Figure 2-5 is a great concern in that only 7% is well and 30% reasonably functional and combining the remaining two categories it means 63% of the 278 municipalities (175 municipalities to be exact) are not able to fulfil the constitution of this country (South Africa).

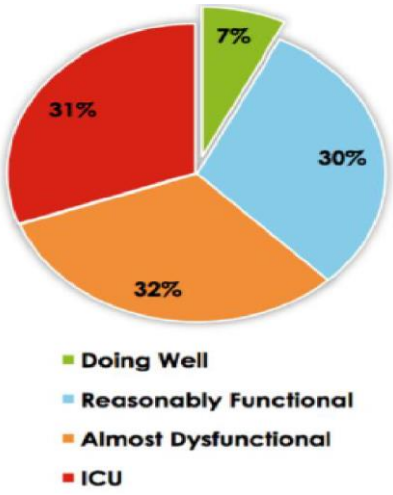


Figure 2-5: Status of municipal functionality (CoGTA, 2014)

Access to reliable, safe drinking water is linked to the availability and functionality of bulk distribution and reticulation infrastructure. Reliable safe drinking water was also the highest ranking challenge that various municipalities raised

(Statistics South Africa, 2016, p. 56) and the others, like unemployment, followed. Table 2-4 highlights the challenges.

Table 2-4 : Five leading challenges facing municipalities as perceived by the household (Statistics South Africa, 2016)

Top 5 Challenges	Main challenge	Number of people
Challenge 1	Lack of safe and reliable water supply	2 683 048
Challenge 2	Lack of or inadequate employment opportunities	1 963 104
Challenge 3	Cost of electricity	1 706 313
Challenge 4	Inadequate housing	1 199 692
Challenge 5	Violence and crime	867 155

Table 2-4 further shows the breakdown of these challenges per province precisely to align or arrange the order of priority or ranking of the challenges.

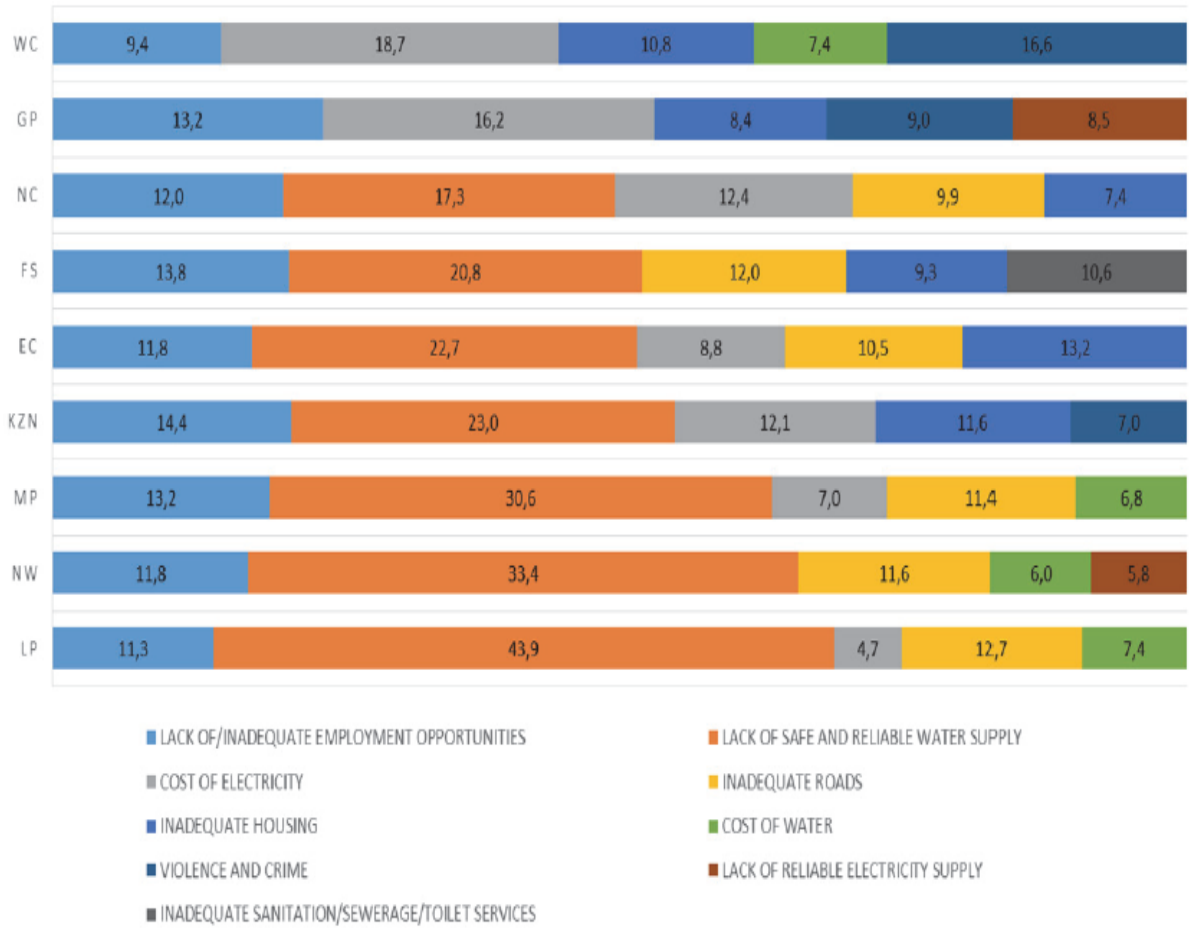
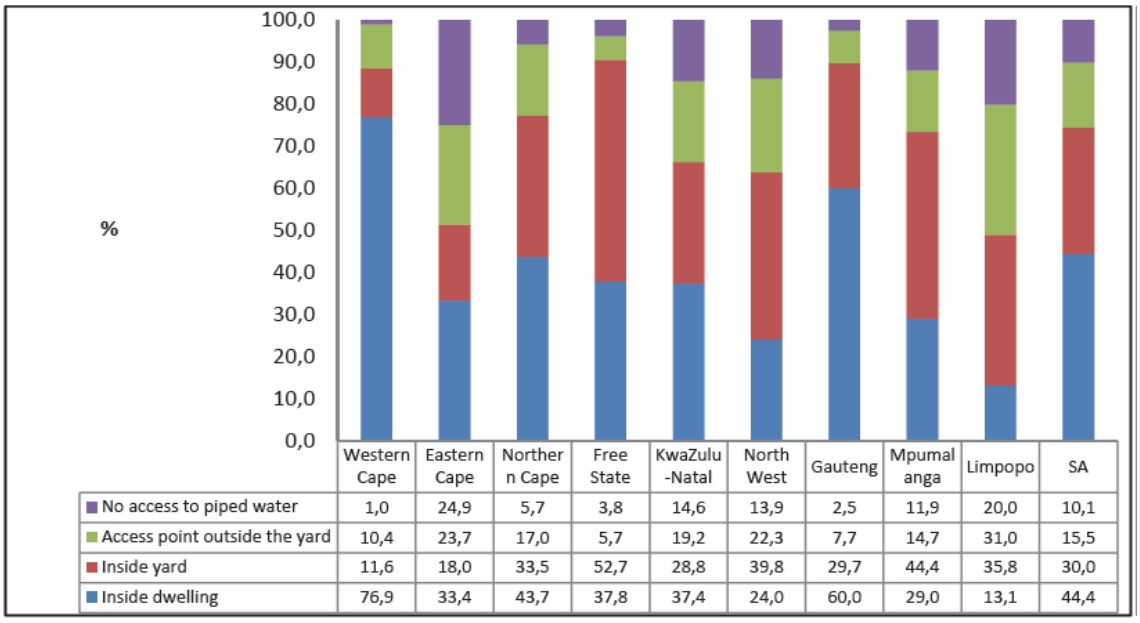


Figure 2-6: Five leading challenges facing the municipality perceived by households by province, as percentage of all main challenges: (Statistics South Africa, 2016)

When looking at Figure 2-6, Limpopo is leading the other provinces with the number of people complaining about the lack of safe and reliable drinking water at 43.9%, when compared to KwaZulu Natal (23%) and the Eastern Cape (22,7%) which are normally grouped together in terms of them lagging behind in water services infrastructure backlogs (Statistics South Africa, 2016).



	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North West	Gauteng	Mpumalanga	Limpopo	SA
No access to piped water	1,0	24,9	5,7	3,8	14,6	13,9	2,5	11,9	20,0	10,1
Access point outside the yard	10,4	23,7	17,0	5,7	19,2	22,3	7,7	14,7	31,0	15,5
Inside yard	11,6	18,0	33,5	52,7	28,8	39,8	29,7	44,4	35,8	30,0
Inside dwelling	76,9	33,4	43,7	37,8	37,4	24,0	60,0	29,0	13,1	44,4

Figure 2-7: Percentage distribution of households by province and access to piped water (Statistics South Africa, 2016)

Figure 2-7 depicts that Limpopo is the second highest at 20% with people without access to water and this indicates the dire need for water infrastructure to provide access to water services.

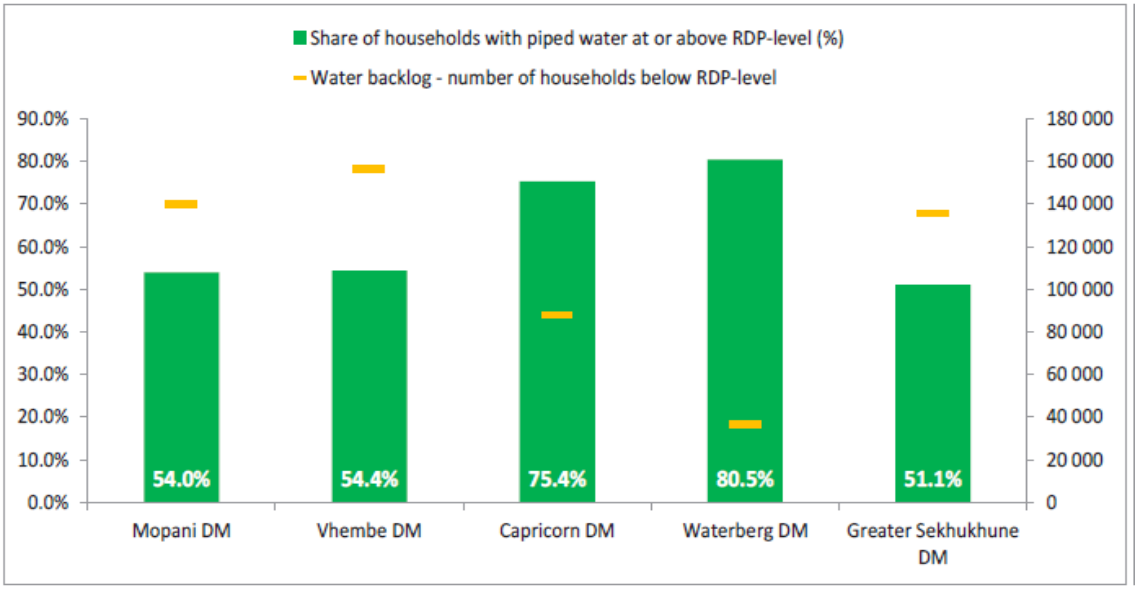


Figure 2-8: Limpopo households with piped water at or above RDP-level and those below RDP level (Limpopo Treasury, 2016)

Figure 2-9 confirms that there are still significant backlogs in Limpopo that require a different approach that will be resilient in eradicating the backlogs.

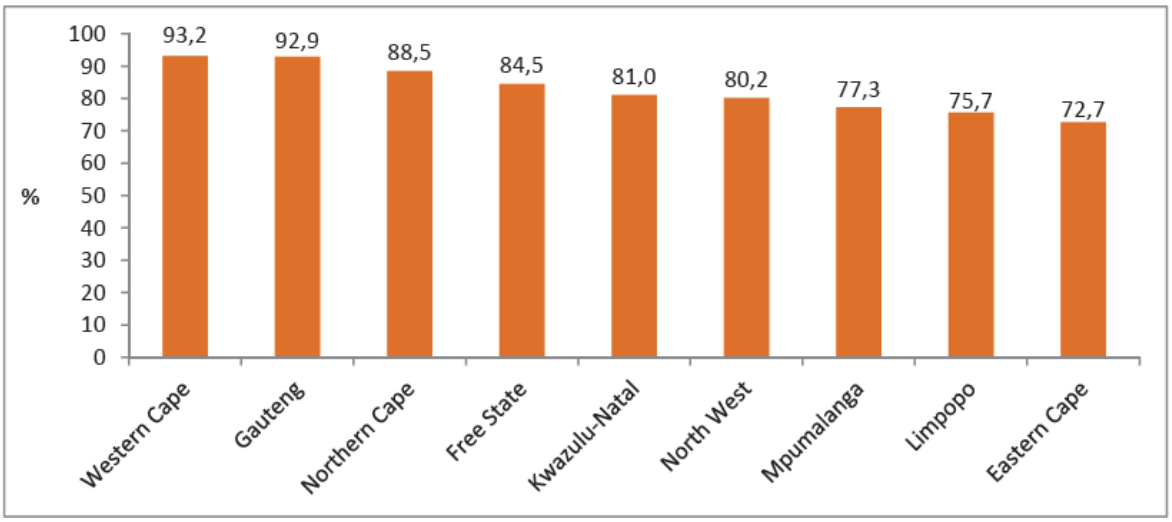


Figure 2-9: Percentage of households with access to safe drinking water by province (Statistics South Africa, 2016)

The status of water quality in Figure 2-9 reflects poor operation and maintenance. Once more Limpopo is the second last province in terms of safe drinking water at 75.7%. All these facts indicate that comprehensive and long-lasting intervention is required to uplift the standard of infrastructure in Limpopo.

2.3.4 *Support provided by government since 1994*

Besides comprehensive frameworks that the government has put in place in the form of policies, acts and guidelines, in its drive for rapid development of water infrastructure, and has developed and launched various support programmes in partnership with public and private stakeholders. This was as a result of municipalities struggling to provide effective services to their respective jurisdiction (R. Nnadozie, 2011; R. C. Nnadozie, 2013; Singo, 2012; Van der Walt, 2014).

SAICE (2010) highlighted almost all the initiatives by government in partnership with public and private entities to support the municipalities in rolling out services

namely, accelerated shared growth initiative South Africa (AsgiSA), Joint initiative for Priority Skills Acquisition (JIPSA), Project Consolidate (the hands-on approach by all spheres of government), Siyenza manje I and II (recalling of retired engineers and deploying them in various municipalities to support and capacitate the technical staff for the duration of their deployment), five-year strategic agenda for local government, expanded public works programme (EPWP), Civils Masakheni, Support Programme for Accelerated Infrastructure Development (SPAID), Neighbourhood Development Grants, Adopt a Town, Friends of the City, Good citizen campaign and numerous management and monitoring systems and scorecards.

Most of the above-mentioned interventions were programmes which were to run for a specified period with the hope that the successes would be carried over. However, each of these initiatives seem to have gained and lost momentum at a rapid rate because currently people are still protesting about service delivery and water is at the top of the list (Statistics South Africa, 2016).

2.3.5 *Research question 1*

What are the reliable and consistent solutions that can be applied in the effective and efficient delivery of water infrastructure projects?

2.4 Underspending on water infrastructure

Since 1994, the local government has been underspending on infrastructure development due to, amongst others, poor planning and corruption (Ajam, 2014). Pillay et al. (2013) highlighted the figures of underspending as R622,3 million (2007/08), R847,8 million (2008/09) and R1,3 billion (2009/10), which indicate that funding is not the ultimate challenge to roll out infrastructure, but rather there are other issues that may range from skills, political interference (council members provide a list service provider should appointed for certain projects irrespective of experience) and poor planning.

The Development Bank of Southern Africa (DBSA) indicated that “infrastructure is generally a means to an end” (DBSA, 2012b, p. 6). The African Development

Bank (AfDB, 2013, p. 1) added that “Infrastructure development is a key driver for progress across the African continent and a critical enabler for productivity and sustainable economic growth”, supported by Gnade, Blaauw, and Greyling (2016) who added that infrastructure investment supports economic growth and alleviates poverty and inequality.This means that for the communities to receive services, there must be reliable infrastructures available for providing such services. Chuene (2012) emphasised that water infrastructure availability is key to African growth. Eales (2010) reiterated that most of the municipalities fail to complete their infrastructure programmes due to lack of technical skills, amongst others. It is therefore important that appropriate measures are put in place to ensure that all allocations to economic infrastructure projects are effectively and efficiently spent.

In most of the category B and C municipalities there are projects that are incomplete, poor workmanship and some are beyond their project life cycle (Pillay et al., 2013). R. C. Nnadozie (2013) also hinted that there have been some instances where infrastructure funding allocations were returned to the National Treasury for reallocation because municipalities lacked the required capacity to spend the money on the planned projects.

Municipalities in Limpopo are not immune to underspending. National Treasury in 2014/15 had stopped Municipal Infrastructure Grant (MIG) allocation (R529.7 million of which R224.3 million was reallocated to the fast spending municipalities within Limpopo and the balance to other provinces) to Limpopo municipalities due to significant underspending (National Treasury, 2015a). Figure 2-5 depicts that Limpopo province got the highest budget cut through budget adjustments by National Treasury. Table 2-5 highlights that all the district municipalities except for Vhembe were affected by the National Treasury’s budget adjustments.

Table 2-5: Adjustments to MIG allocations for 2014/15 per province (National Treasury, 2015a)

INFRASTRUCTURE GRANT ALLOCATIONS TO MUNICIPALITIES

	Municipal Infrastructure Grant			
	Column A			Column C
R'000	2014/15 Main allocation	Roll-overs	Adjustments	2014/15 Adjusted allocation
EASTERN CAPE	2 916 227	24 000	139 062	3 079 289
FREE STATE	813 654		16 140	829 794
GAUTENG	453 318		(7 891)	445 427
KWAZULU-NATAL	3 207 141	14 131	49 118	3 270 390
LIMPOPO	3 064 058		(315 652)	2 748 406
MPUMALANGA	1 707 250		10 265	1 717 515
NORTHERN CAPE	450 944	6 500	5 500	462 944
NORTH WEST	1 598 850	23 400	103 458	1 725 708
WESTERN CAPE	472 393	12 183		484 576
TOTAL	14 683 835	80 214		14 764 049

As it can be seen in table 2-5, Limpopo is the province where huge budget cuts were experienced and that was cause for concern.

Table 2-6: : Budget adjustment per district municipality (National Treasury, 2015a)

INFRASTRUCTURE GRANT ALLOCATIONS TO MUNICIPALITIES

			Municipal Infrastructure Grant			
			Column A			Column C
R'000			2014/15 Main allocation	Roll-overs	Adjustments	2014/15 Adjusted allocation
LIMPOPO						
B	LIM331	Greater Giyani	56 046		10 000	66 046
B	LIM332	Greater Letaba	53 440			53 440
B	LIM333	Greater Tzaneen	87 083		24 000	111 083
B	LIM334	Ba-Phalaborwa	29 769			29 769
B	LIM335	Maruleng	25 309		5 000	30 309
C	DC33	Mopani District Mu	429 490		(290 000)	139 490
Total: Mopani Municipalities			**681 137**		**(251 000)**	**430 137**
B	LIM341	Musina	18 943			18 943
B	LIM342	Mutale	24 058			24 058
B	LIM343	Thulamela	126 460			126 460
B	LIM344	Makhado	107 087			107 087
C	DC34	Vhembe District Mu	486 510		20 000	506 510
Total: Vhembe Municipalities			**763 058**		**20 000**	**783 058**
B	LIM351	Blouberg	38 408		5 000	43 408
B	LIM352	Aganang	32 157		(5 000)	27 157
B	LIM353	Molemole	28 943			28 943
B	LIM354	Polokwane	266 671		38 243	304 914
B	LIM355	Lepelle-Nkumpi	49 920		20 000	69 920
C	DC35	Capricorn District M	252 059		7 000	259 059
Total: Capricorn Municipalities			**668 158**		**65 243**	**733 401**
B	LIM361	Thabazimbi	32 926		(19 756)	13 170
B	LIM362	Lephalale	35 992		(7 000)	28 992
B	LIM364	Mookgopong	15 766		27 000	42 766
B	LIM365	Modimolle	32 364		(13 014)	19 350
B	LIM366	Bela Bela	22 193			22 193
B	LIM367	Mogalakwena	138 849		(25 000)	113 849
C	DC36	Waterberg District Municipality			18 014	18 014
Total: Waterberg Municipalities			**278 090**		**(19 756)**	**258 334**
B	LIM471	Ephraim Mogale	31 070			31 070
B	LIM472	Elias Motsoaledi	50 840		15 000	65 840
B	LIM473	Makhuduthamaga	57 452			57 452
B	LIM474	Fetakgomo	21 388		(10 139)	11 249
B	LIM475	Greater Tubatse	61 745		35 000	96 745
C	DC47	Sekhukhune Distric	451 120		(170 000)	281 120
Total: Greater Sekhukhune Munici			**673 615**		**(130 139)**	**543 476**
Total: Limpopo Municipalities			**3 064 058**		**(315 652)**	**2 748 406**

Table 2-7 suggests that all the municipalities have an underspending challenge with Mopani District having the highest budget cut of R290 million and ironically being the one that was hit by protests on water services delivery.

Limpopo municipalities have underspent by R753.9 million and only spent R1.994 billion of the R2.748 allocated as at end June 2015 (Cooperative Governance, Human Settlement & Traditional Affairs (CoGHSTA), 2015). Once more, Table 2-7 highlights that Limpopo was the highest underspending province amongst the nine provinces.

Table 2-7: 2014/2015 MIG spending National Comparison (Cooperative Governance, Human Settlement & Traditional Affairs (CoGHSTA), 2015)

Province	Allocated (R'000)	Transferred to date	Transfers as % allocation	Expenditure to date	Expenditure as % allocation	Balance Unspent
Eastern Cape	3,079,289	3,079,289	100.00%	2,884,338	93.67%	194,951
Free State	829,794	829,794	100.00%	763,424	92.00%	66,370
Gauteng	445,427	445,427	100.00%	426,493	95.75%	18,934
KwaZulu Natal	3,270,390	3,270,420	100.00%	3,129,728	95.70%	140,692
Limpopo	**2,748,406**	**2,748,406**	**100.00%**	**1,994,465**	**72.57%**	**753,941**
Mpumalanga	1,717,515	1,717,515	100.00%	1,484,901	86.46%	232,614
Northern Cape	462,944	462,944	100.00%	391,706	84.61%	71,238
North West	1,725,708	1,707,104	98.92%	1,521,154	88.15%	185,950
Western Cape	484,576	484,576	100.00%	416,351	85.92%	68,225
TOTAL	**14,764,049**	**14,745,475**	**99.87%**	**13,009,097**	**88.11%**	**1,736,378**

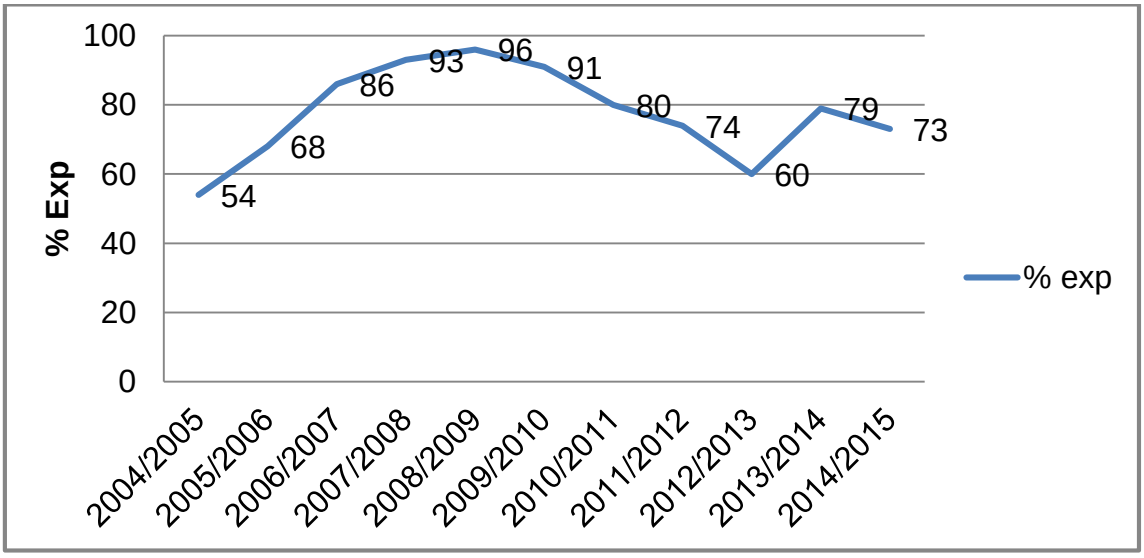


Figure 2-10: Provincial spending patterns since MIG inception (Cooperative Governance, Human Settlement & Traditional Affairs (CoGHSTA), 2015)

Figure 2-10: Highlights that since 2008/2009, there has been a rapid increase in underspending the budget in Limpopo province.

2.4.1 *Research Question 2*

What are the possible tactics that will ensure effective and efficient spending of the allocated infrastructure budget to eradicate water services backlogs?

2.5 Conclusion of Literature Review

The literature review has shown that the water infrastructure backlogs in Limpopo are huge and require attention from government and various stakeholders to come up with a resilient and long-lasting strategy that will turn the status quo around. The literature also indicated that there were programmes that were introduced by government to support municipalities in fast tracking the rollout of the infrastructure, but once those programmes end the municipalities lose the momentum. In fact, when looking at the Municipal Infrastructure Grant (MIG) spending patterns of Limpopo, when the province started regressing, this continued until 2014/15. The literature further highlights continuous underspending by the Limpopo municipalities to the extent that their budget was cut by National Treasury and allocated to other provinces.

It is against the literature review that the researcher formulated the two research questions listed in the sub-sections below.

2.5.1 *Research Question 1: What are the reliable and consistent solutions that can be applied in the effective and efficient delivery of water infrastructure projects?*

2.5.2 *Research Question 2: What are the possible tactics to be applied to ensure effective and efficient spending of the allocated infrastructure budget to eradicate water services backlogs?*

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Research methodology

This section is composed of the research design which is primarily the plan within which data is collected and scrutinised. Research design is composed of three parts i.e. sampling design that looks at the size of the population to be employed, instrument design which looks at how, when, what and where the information is collected while ensuring that the questions are in line with the type of information to be collected and lastly data collection design which looks at the method of collecting data (Pavan & Kulkarni, 2014).

Pavan and Kulkarni (2014, p. 169) define research methodology as “a way of solving the problem systematically and in an appropriate manner or as science of using methods or techniques for conducting the research”. A qualitative research strategy, in the form of interviews, was followed as it was appropriate where in-depth engagements were required to obtain the answers to the questions that were presented to the municipalities in Limpopo province. The four district municipalities (i.e. Mopani, Sekhukhune, Capricorn and Vhembe) which are Water Services Authorities (WSAs), one local municipality i.e. Polokwane City and the five local municipalities (after amalgamation of Mookgophong and Modimolle local municipalities) who are all WSAs within Waterberg district municipality are at different infrastructure backlog stages and likely to be different from each other and therefore intense engagement was required in order to achieve the intended purpose of the study.

Bryman (2012, p. 380) refers to qualitative research as “a research strategy that emphasises words rather than quantification in the collection and analysis of data”. This is supported by Erickson (2012) who indicated that the important purposes of qualitative research are to comprehensively document proceedings that are taking place on a daily basis and to detect the implications of such events for those participating and observing them. The methodology provides for a systematised approach to conducting the research for the purpose of answering the research questions. This method was deemed appropriate in that it allowed

the researcher to understand the reality of issues happening through the engagement with the society.

The assumptions in this approach were that direct engagement with the participants projected the researcher as taking seriously the subject matter that was introduced to them and in turn, required genuineness from the participants when responding to the questions. This further added credibility to the data that was collected, supported by the secondary information that was collected. Furthermore, it assisted the researcher in unearthing complex challenges as well as engaging the researcher with indigenous information of the environment where the study was conducted (Parker, 2014).

3.2 Research Design

Research design is defined as “the plan which helps in guiding the researcher in analysing and collection of data” (Pavan & Kulkarni, 2014, p. 171). The research employed semi-structured interviews in order to explore pertinent issues that might not have been covered in a questionnaire. Doody and Noonan (2013, p. 30) indicated that semi-structured interviews “involve the use of predetermined questions, where the researcher is free to seek clarification”. Therefore, questions were formulated for guiding the entire interview process. Pavan and Kulkarni (2014) and Irvine, Drew, and Sainsbury (2013) further argue that although costly, the interview is one of the fastest way of getting even information as well as saving time. It is against this background the researcher adopted the interview approach, to obtain more information, provide clarity where the respondents were unclear on the spot so that appropriate answers could be gathered.

The advantages of the semi-structured interviews are that the researcher can obtain information beyond the set of questions prepared in the form of a questionnaire. Furthermore, human interaction improves the confidence of the respondents as they provide the answers as they are encouraged by the researcher (Irvine et al., 2013). This assisted the researcher to understand clearly the causes of backlogs from about five district municipalities in Limpopo province.

Some of the disadvantages are that the respondents may hide the truth especially when there are trust issues between the researcher and the respondent (Pavan & Kulkarni, 2014). Interviews are costly and it may sometimes take longer to secure the interview particularly with executive management (Bryman, 2012; Pavan & Kulkarni, 2014). Therefore, transparency became an important part of the approach to the respondents. They were upfront provided with the personal and the university details in case they wanted to confirm, the type of research that was carried, the duration of the interview. They were further, assured of the confidentiality on the usage of data and that all the work done was the property of the university affiliated with.

3.3 Population and sample

3.3.1 *Population*

Bryman (2012, p. 714) defines population as “the universe of units from which a sample is to be selected”. In this research, the population was composed of organisations and individuals who are exposed to the study. The target population was fifteen (15) participants from the four (4) district municipalities that are WSAs, six (6) local municipalities that are WSAs and five (5) from water sector support institutions outside the municipality as per table 3-1. The identified participants are active implementers or supporters of the rollout of water services infrastructure and they assisted in providing the answers to the questions on infrastructure backlogs in Limpopo province.

3.3.2 *Sample and sampling method*

A non-probability sampling in the form of purposive sampling was applied in this research to select the respondents that were likely to assist in responding to the research questions. A purposive sampling is defined by Bryman (2012, p. 714) as “a non-probability sample in which the researcher aims to sample participants in a strategic way, so that those sampled are relevant to the research questions that are being posed” supported by Robinson (2014, p. 7). Purposive sampling ensured that the researcher obtained comprehensive information that could add

credibility to the research. Fifteen participants were identified as respondents to the questions. The exclusion criteria were used on the basis that infrastructure development challenges are at a strategic level, therefore required the respondents to be in strategic positions and technical directors were targeted for this research (Robinson, 2014). The intention was to interview all the respondents to get the in-depth information.

Table 3-1: Profile of respondents

Description of respondent type	Number to be sampled
Technical Directors (municipalities)	10
Chief Executive Officer (SALGA - Limpopo)	1
Chief Director (DWS)	1
Technical Director (CoGHSTA – Limpopo)	1
Infrastructure Director (DBSA – Limpopo Rep)	1
Infrastructure Director (MISA – Limpopo)	1
Total	**15**

3.4 The research instruments

The interview schedule was designed to engage the participants. Ten semi-structured interview questions were formulated. The first five questions sought to understand the reasons behind the infrastructure backlog persistence and what could be done to break the cycle. The last three questions focused on understanding the reasons behind the consistent underspending of the infrastructure budget over and above the various types of support that government has provided.

3.5 Procedure for data collection

Bryman (2012, p. 14) refers to data collection as “the process of gathering from the sample so that the research questions can be answered. A semi-structured

interview was applied in collecting the data from the respondents. The interview was composed of ten questions. They have been designed to respond to the two sub-problems that were formulated this research. The data was collected by means of interviews with the sampled respondents. The questions were piloted to ensure appropriate adjustments where applicable, before they were actually used to collect data to ensure that they responded to the research objective.

3.6 Data analysis and interpretation

Data analysis is the process of converting the raw data into usable information through organising, classifying and relating the data according to the themes identified (Erickson, 2012). The data was transferred from the voice recorders to transcripts, coded (i.e. label, separate, compile and organise the data), compared and analysed. This is what Bryman (2012) and Elo et al. (2014) call content analysis. In summary, codes were classified into themes and sub-themes, and then data interpreted and thereafter, the results were presented in various forms such as text, tables, or figures (Lewis, 2015).

3.7 Limitations of the study

- Credibility of the information that the respondents provided during the interviews, especially that the new local government political leadership has just started and it was possible that some technical directors are new to the municipality;
- Errors may occur during the transfer of information from voice recorders to the paper that may affect the interpretation of the findings;
- Subjectivity and bias towards certain arguments which may directly or indirectly skew interpretation of the findings;
- Member validation was not realised to seek corroboration with participants because of the limited time frame.

3.8 Validity and reliability

3.8.1 *External validity*

As opposed to quantitative research, in qualitative research it is the transferability of the findings (Bryman, 2012; Elo et al., 2014). Although the researcher could not guarantee the transferability, an attempt was made to produce “thick description” (Bryman, 2012), i.e. creating a database of information that which other researchers are able to make judgements of whether the findings can be transferred or not. So, detailed accounts of the findings were considered to achieve possible transferability.

3.8.2 *Internal validity*

Credibility is the appropriate term for qualitative research (Bryman, 2012; Elo et al., 2014). The research might not fully have met the creditability status as it depended on the principles of the respondents. However, questions piloting was done to minimise ambiguity as one of the options to capture as many possible relevant answers to the study. There was an emphasis on confidentiality to ensure that the respondents were free to speak their mind. The time frame of this research is likely to limit conducting what is called respondent validation where the findings are taken back to the respondent to confirm the findings.

3.8.3 *Reliability*

Dependability is the term used in qualitative research. (Elo et al., 2014, p. 2) briefly defines dependability as “the stability of data over time and under different conditions”. The researcher ensured that all the records were kept for the purpose of auditing should the need arise. This ensured that the research met the dependability criterion. Peers or other researchers may have access to any of the process that has been followed to arrive at a conclusion.

3.9 Demographic profile of respondents

The respondents were composed of the municipalities within Limpopo Province and the sector support institutions such as Municipal Infrastructure Support Agent (MISA), Department of Water and Sanitation (DWS), Cooperative of Governance, Human Settlement and Traditional Affairs (CoGHSTA), South African Local Government Association (SALGA) and the Development Bank of Southern Africa.

The respondents ranged from the executive to senior management responsible for or support in the development of water infrastructure. Ten (10) technical directors were identified and interviewed in the municipalities. There was only one technical director who was acting of the ten technical directors that were interviewed. In the water sector support institutions, one chief executive was interviewed and the rest were directors responsible for support to the municipalities in relation to the water infrastructure development.

The information obtained during the interviews has assisted in obtaining the challenges that persist in the rollout of the water infrastructure in Limpopo province.

CHAPTER 4. PRESENTATION OF RESULTS

4.1 Introduction

This chapter focuses on the presentation, analysis and interpretation of the data. It outlines the results that were collected through the interviews with the technical directors from the municipalities and the directors and chief executive of the water sector support institutions. The results are presented according in line with the research questions that have been formulated, describing all the figures that summarises the findings.

4.2 Results for the Research Question 1

The objective of the first research question was to understand why the water infrastructure backlogs were still experienced in Limpopo province, especially where previous studies revealed the challenges hindering speedy rollout of water infrastructure programmes and the recommendations were provided then. Interviews conducted with municipalities and water sector support institutions revealed the persistence of some of the old findings and few new findings as highlighted in the next section.

4.2.1 *Causes of infrastructure backlogs*

Various types of causes of water infrastructure backlogs were obtained during the interviews, however, the researcher consolidated those which were mostly common to all the municipalities and observed by the sector support institutions such as the Department of Water and Sanitation, Cooperative Governance and Traditional Affairs amongst others as highlighted in Figure 4.1.

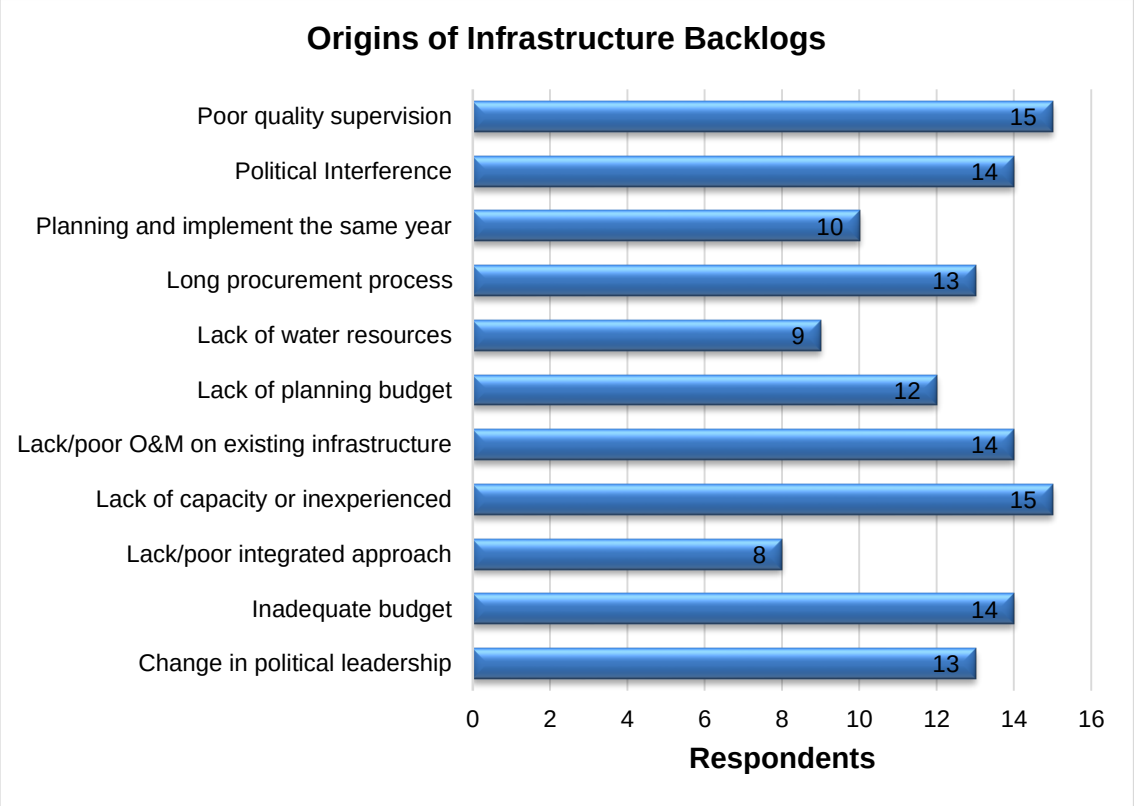


Figure 4-1: Origins of water infrastructure backlogs

Figure 4-1 depicts the most and common contributors to the water infrastructure backlogs with poor quality supervision, lack of capacity or inexperienced, political interference, lack of operations and maintenance of the existing infrastructure, inadequate budget, long procurement processes and the change in political leadership being the highest. They were followed by lack of planning budget, lack of water resources, planning and implementing the same year and lack of integrated approach.

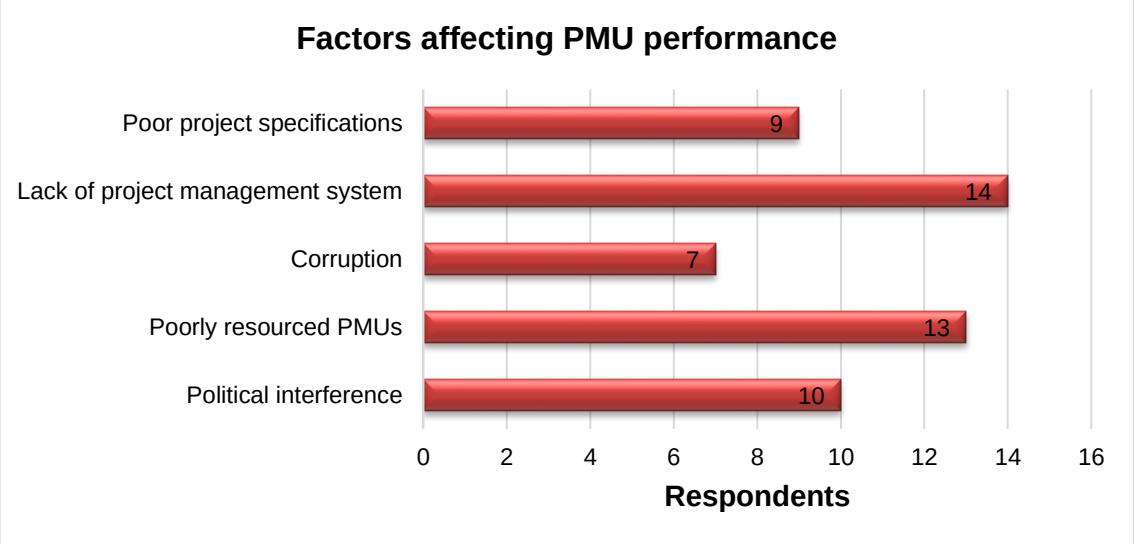


Figure 4-2: Failures of Project Management Units

Figure 4-2 highlights the factors that affect the performance of the Project Management Units (PMUs) within the municipalities. Lack of project management systems and poorly resourced are the highest contributors followed by once more political interference and the poor project specifications and corruption being the least.

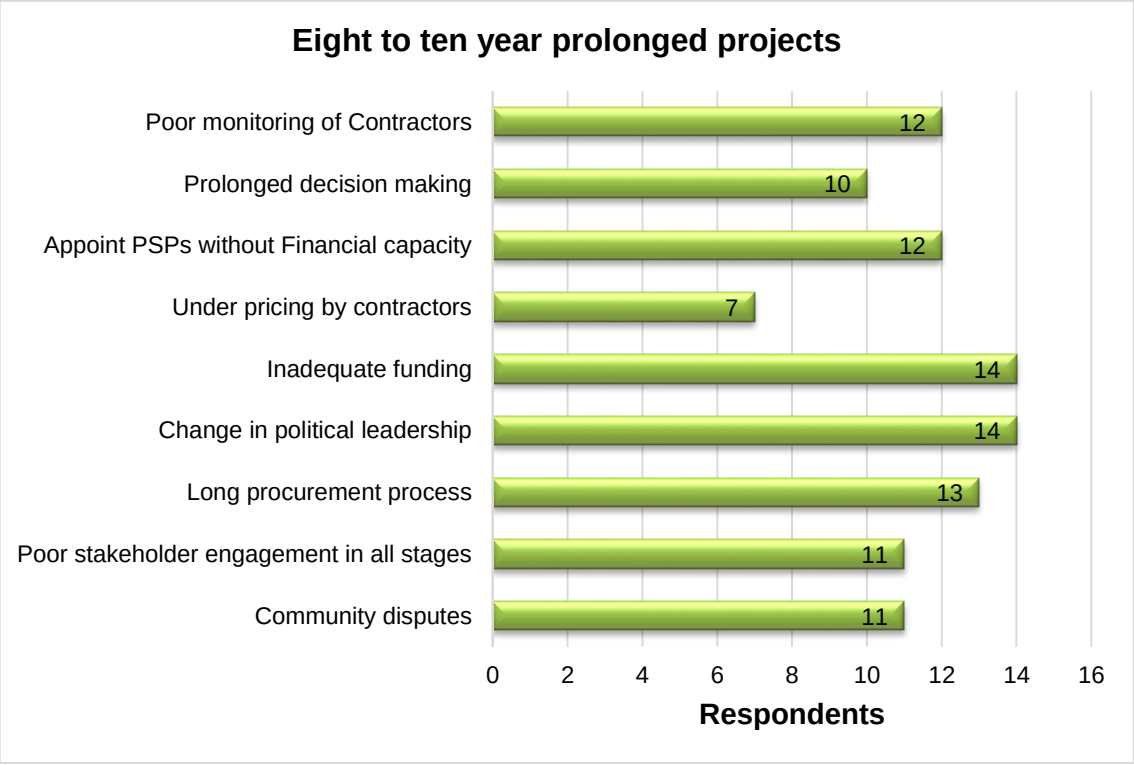


Figure 4-3: Challenges on prolonged projects up to 10 years

Figure 4-3 shed some light around the challenges that prolongs the water infrastructure project completion. Inadequate funding and change in political leadership are the highest contributors followed by longer procurement processes, appointment of professional service providers without financial capacity, poor stakeholder engagement in all project stages, community strikes and lastly the project under-pricing by the contractors.

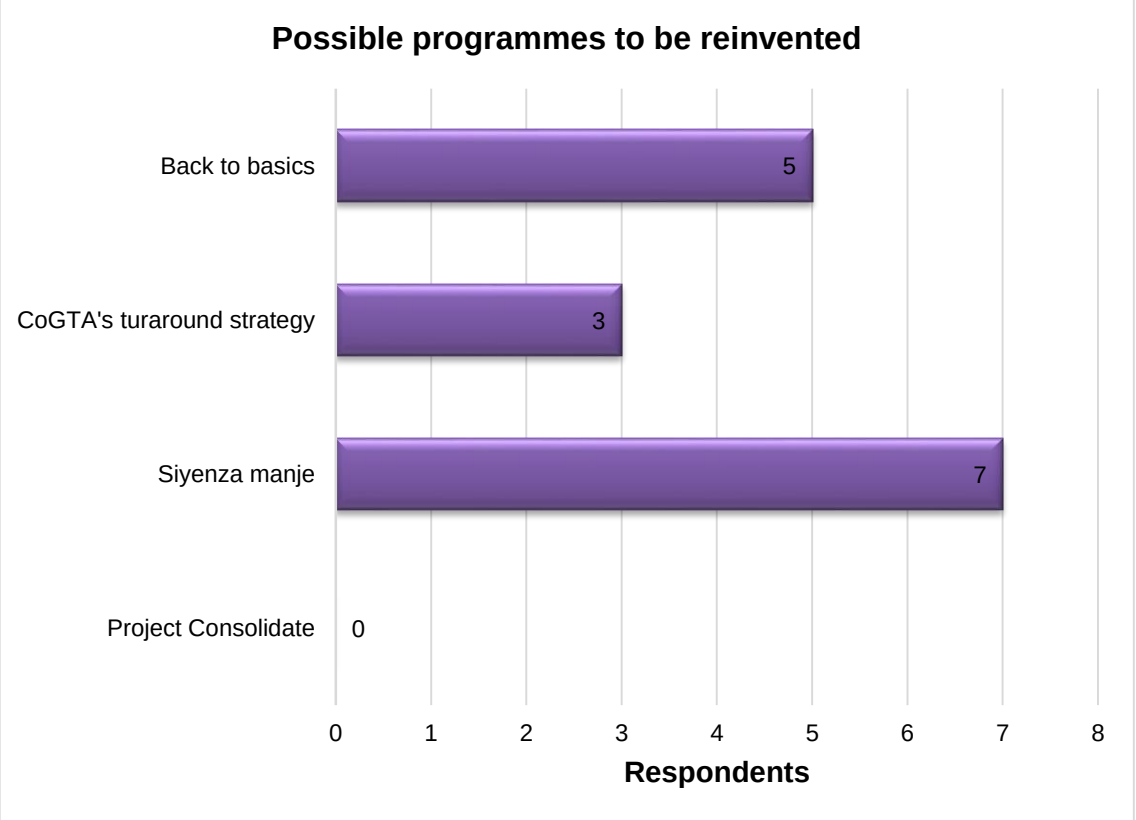


Figure 4-4: Programmes that were implemented in the previous years

Figure 4-4 reveals preferences of various respondents on the programmes that were once introduced by government and implemented within the municipalities. Siyenza manje is leading the pack followed by the back to basics and CoGTA's turnaround strategy. Project consolidate was not opted for by any respondent.

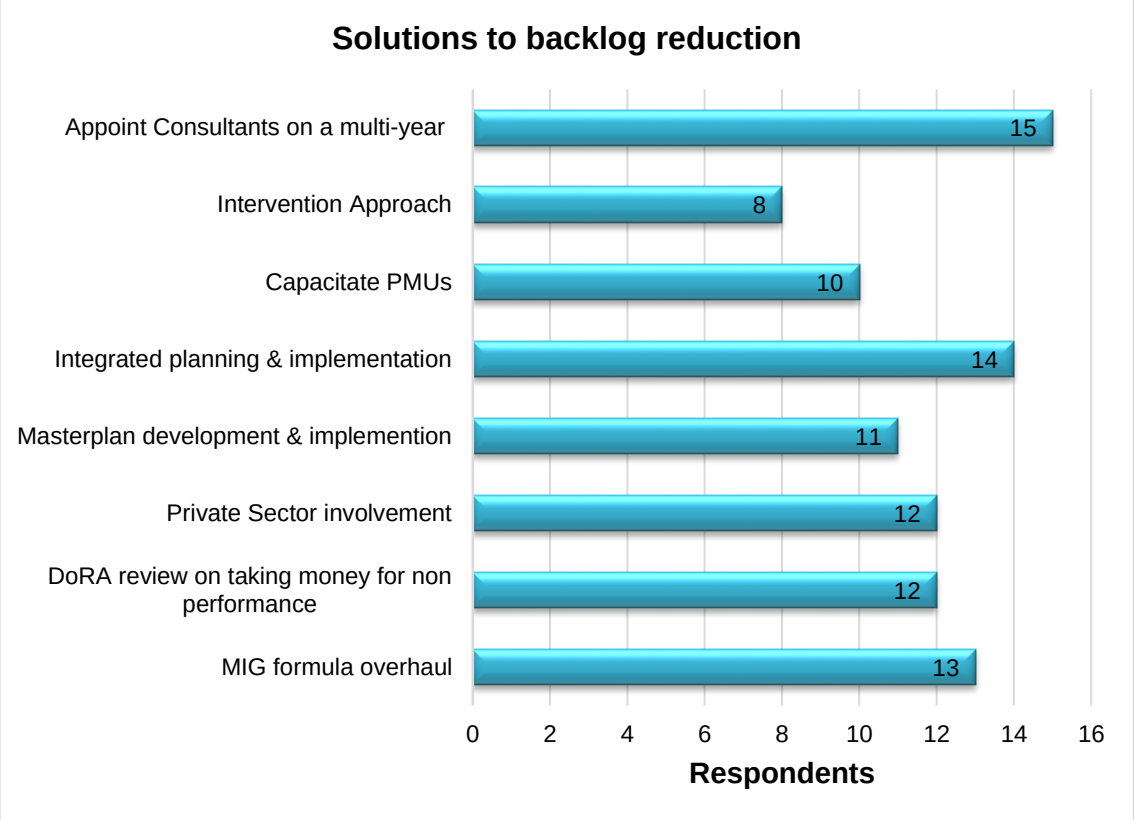


Figure 4-5: Proposed solutions to reduce infrastructure backlogs

Figure 4-5 depicts the proposals to fast track the reduction of the water infrastructure backlogs. Appointment of consultants on a multi-year basis, integrated planning and implementation are most critical ones in reducing the backlogs followed by the Municipal Infrastructure Grant (MIG) formula overhaul or review, review of the section that regularise taking of money away from the non-performing municipality to the performing municipality in the Division of Revenue Act and the involvement of the private sector. Capacitation of the PMUs and the implementation of the intervention approach are the least actions to be taken.

The first research question has been fully answered in terms of understanding what is persistently causing the water infrastructure backlogs in Limpopo Province even though some of the challenges hindering the implementation were known.

4.3 Results for Research Question 2

The objective of the second research question was to understand why the Limpopo province was continuously underspending and money being returned to the fiscus while the water infrastructure backlogs are increasing. Once more, the challenges leading to underspending of capital budget in municipalities were identified and presented to municipalities for implementation, yet the water infrastructure backlogs were creating social unrests while budgets are returned to national fiscus. The next section highlights the challenges that contribute to underspending.

4.3.1 *Causes of underspending on infrastructure projects*

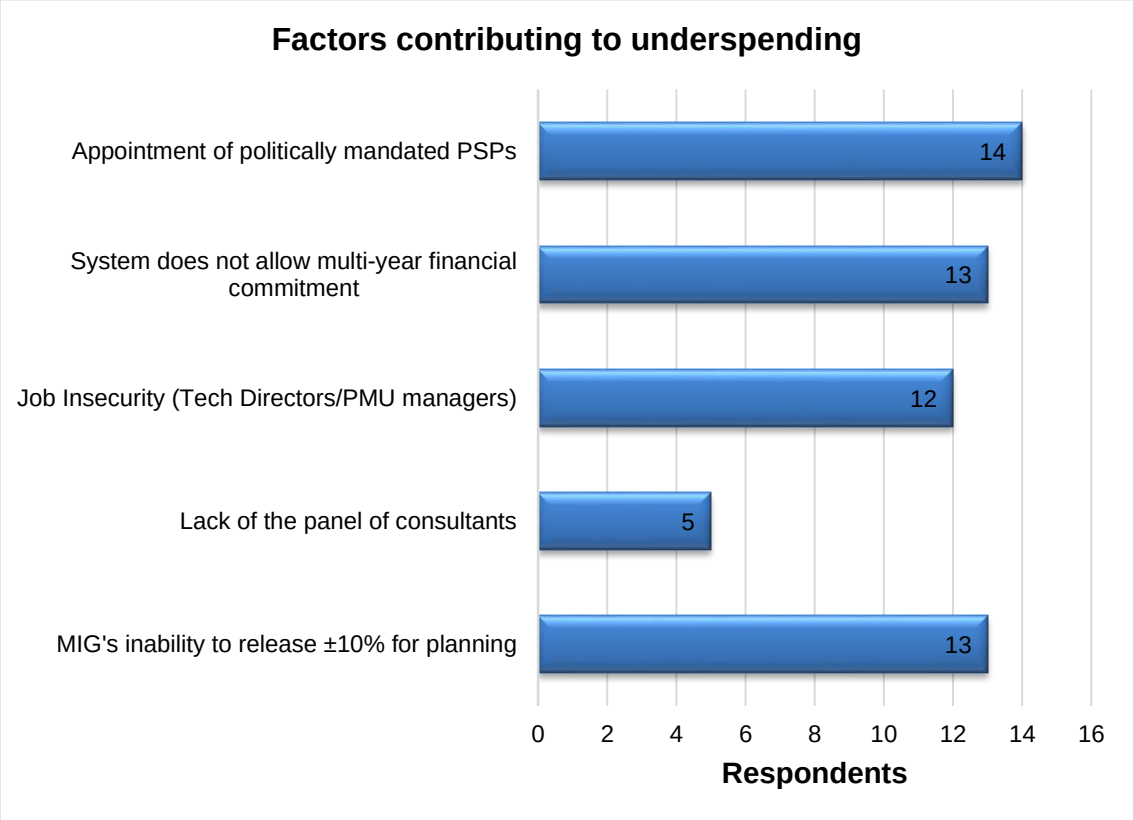


Figure 4-6: Origins of underspending in infrastructure projects

Figure 4-6 depicts the types of challenges that hinders effective and efficient spending of the capital budget. The ones that top the chart are appointment of politically mandated professional service providers (PSPs), MIG's inability to release ±10% budget for planning purposes, system that does not allow multi-

year financial commitment. These are followed by the project evaluations, job insecurity (Technical Directors and PMU managers) and the least are political interference and lack of panel of consultants.

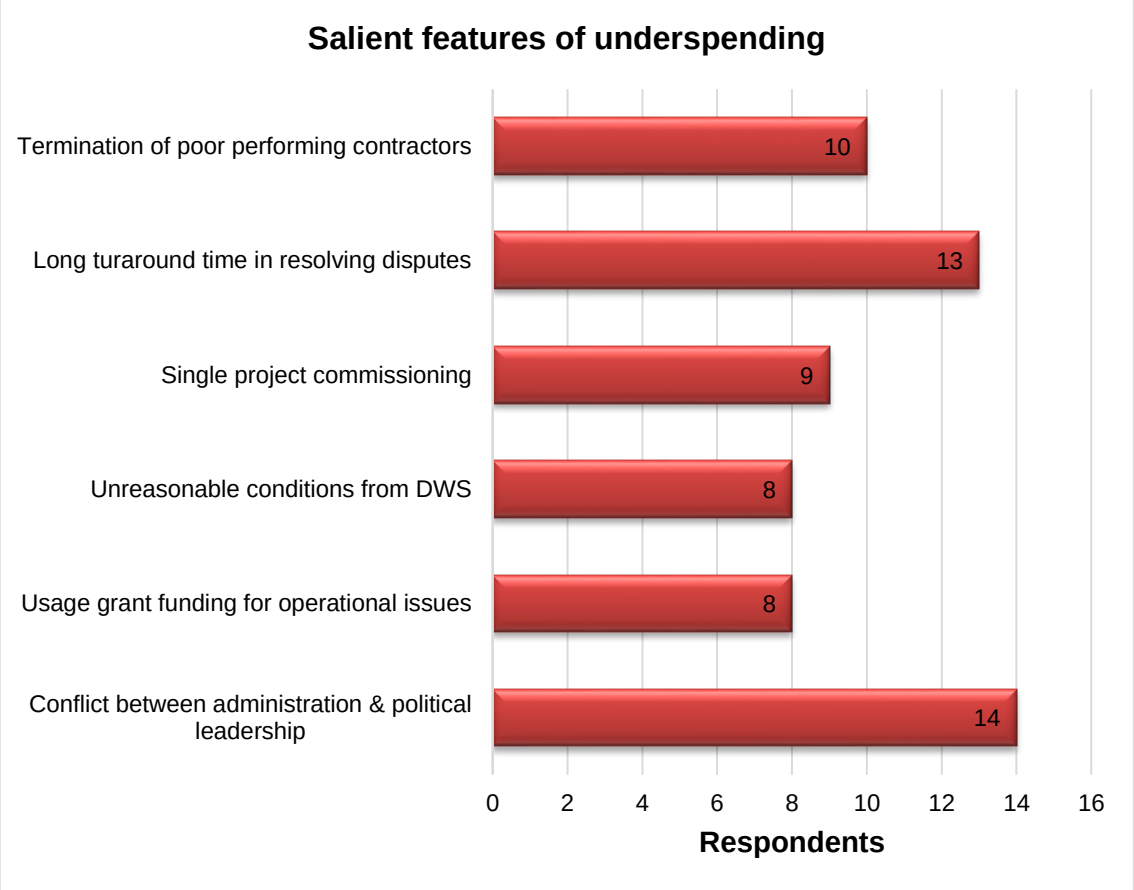


Figure 4-7: Salient features of underspending in water infrastructure

Figure 4-7 highlights the significant features that contributes to underspending of the water infrastructure budget. They are conflict between administration and political leadership and long turnaround time in resolving disputes being the highest in the chart. They are followed by the termination of poor performing contractors, single project commissioning, unreasonable conditions by the Department of Water and Sanitation on approval of technical reports and finally usage of the grant funding for operational issues instead of projects.

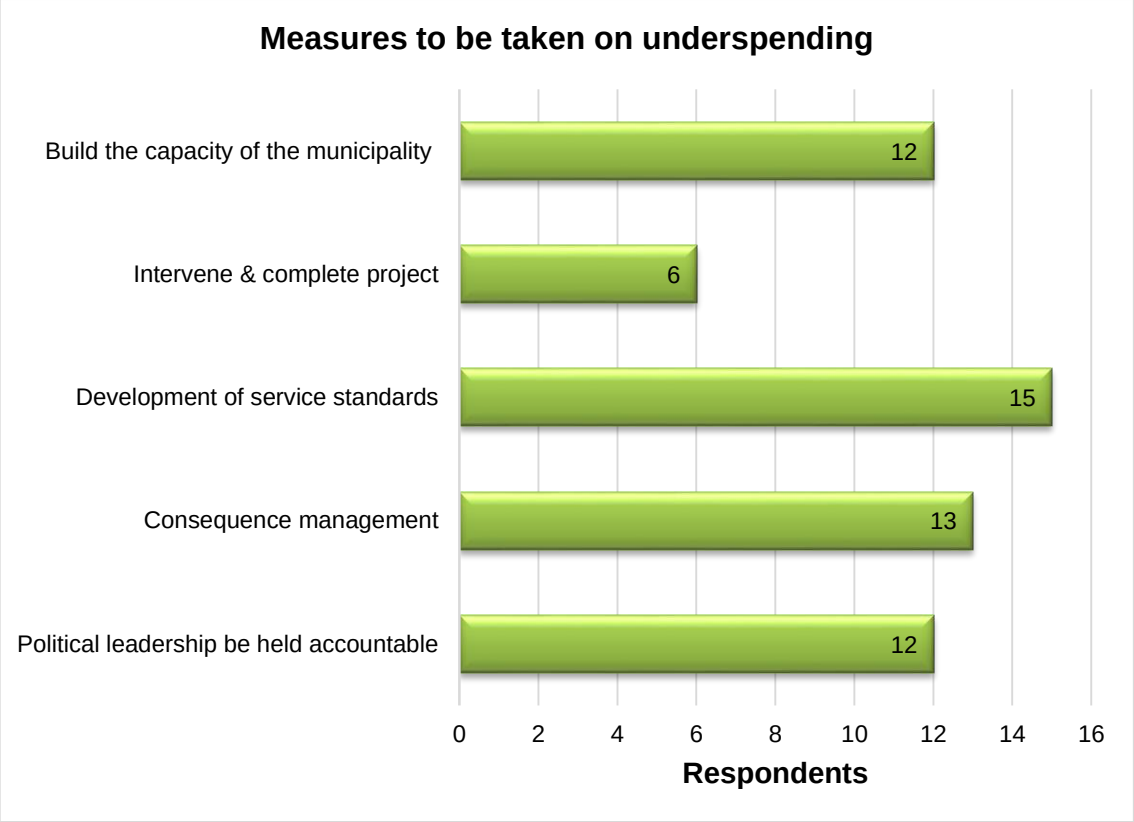


Figure 4-8: Actions to be taken on underspending

Figure 4-8 highlights key measures that should be taken in case of underspending by the municipalities. They are development of service standards for senior managers, consequence management, building the capacity of the municipalities, the political leadership be held accountable and finally come up with intervention vehicles and complete the projects under spotlight.

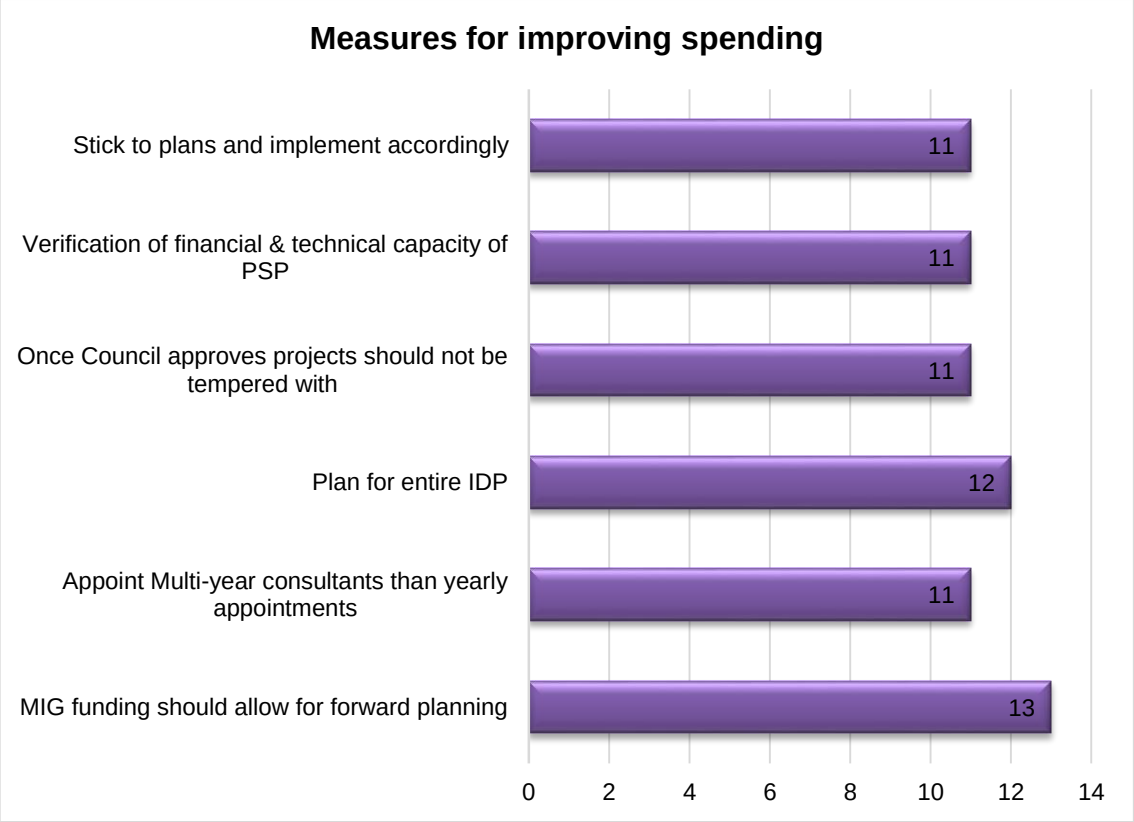


Figure 4-9: Proposed actions to improve spending

Figure 4-9 highlights the proposed measures to be done to improve spending and reduce the water infrastructure backlogs. These include Municipal Infrastructure Grant (MIG) releasing money for forward planning, planning for the entire Integrated Development Plan (IDP) of the municipalities, Appointment of multi-years consultants instead of appointing on a yearly basis, councils not to interfere with the implementation of projects once they have approved them, verification of the financial and technical capacity of the Professional Service Providers (PSPs) and sticking to plans and implement accordingly.

The second research question has been fully answered in terms of understanding the continuous underspending of the capital budget on the water infrastructure in Limpopo Province while some of the challenges were identified with solutions for implementation.

4.4 Summary of the results

This chapter highlighted the reporting structure that was be followed and provided some light on the causes of water infrastructure backlogs that are faced by the Limpopo province municipalities.

It further gave the objective for each research question prior to presenting the key findings. The major findings with respect to the first research question were poor quality supervision, lack of capacity or inexperienced, political interference, lack of operations and maintenance of the existing infrastructure, inadequate budget, long procurement processes and the change in political leadership, Lack of project management systems and poorly resourced, Inadequate funding and change in political leadership.

The major findings with respect to the second research question were politically mandated professional service providers (PSPs), Municipal Infrastructure Grant's inability to release approximately ten percent of the total capital budget for planning purposes, the government budgeting system that does not allow multi-year financial commitment, conflict between administration, political leadership and long turnaround time in resolving disputes.

CHAPTER 5. DISCUSSION OF THE RESULTS

5.1 Introduction

This chapter broadly discusses the results that were described in Chapter 4 of this report. It further, highlights the key findings of the first and second research questions and their explanations in line with the data obtained from the respondents. It further, summarises the conclusion of each research question with reference to the results provided by the respondents.

5.2 Research Question 1

The objective of the first research question was to understand why the water infrastructure backlogs are still experienced in Limpopo province, especially if previous studies revealed the challenges hindering speedy rollout of water infrastructure programmes and the recommendations were provided then. Interviews conducted with municipalities and water sector support institutions revealed the relevance of some earlier old findings and few new findings as discussed in the next section.

5.2.1 *Water infrastructure backlogs*

Causes of infrastructure backlogs

The highest contributors to infrastructure backlogs in this category were poor quality of project supervision and lack of capacity or inexperienced contractors appointed to implement the projects. Most of the respondents indicated that sometimes once the project was handed over to the contractor, nobody hardly supervises the project. They further, indicated that sometimes the people who are supervising, have no project management knowledge and there seem to be no effort towards skilling them.

The other critical factors negatively impacting on the rollout of the water infrastructure were political interference (such as the provision of the list of consultants that the officials should appoint irrespective of their experience and

capacity), which leads to long procurement processes because of the verbal instructions that are given to evaluation teams. Pillay et al. (2013) once highlighted funding was not the only challenge, rather other issues such as skills, poor planning and political interference affected the infrastructure programme. Lack of/or poor operations and maintenance of the existing water infrastructure resulting in the reduced optimal capacity of various equipment. Inadequate budget renders implementation of infrastructure practically impossible. Respondents highlighted that allocation informed the projects and not projects being informed by projects, this was obviously an incorrect way of budgeting. Change in political leadership has a negative impact in municipalities that do not have council approved water infrastructure masterplans. Therefore, care should be taken by the municipalities to develop these plans.

Lack of planning budget perpetuates the non-completion of projects on time. Municipalities planned and implemented the water infrastructure projects within the same year and that was one of the major reasons why they could spend their total capital budget and subsequently returned to fiscus. In other instances, due to time constraints, the plans were characterised by poor designs and implementation plans that excluded major project risk related issues.

Water resources scarcity brought another dimension in the water sector. Most of the respondents have highlighted that their municipalities have issued a moratorium on the development within their municipalities because of lack of water sources. Some of the respondents further, indicated that most of the water sources are in the hands of the farmers and when the municipalities request for a transfer, particularly those who are not farming anymore, they wanted to sell the water to the municipality at exorbitant prices.

Factors affecting PMU performance

The main administrative challenges for the PMUs were generally lack of project management systems, being poorly resourced and poor project specifications. The respondents highlighted that most of the PMU offices are under capacitated, ranging from the inappropriate number of personnel to inexperienced contractors appointed for projects implementation.

Some respondents even suggested that the formula for compensating the PMU offices be reviewed because one size does not fit all. This was because both urban and rural based municipalities were being treated equally, that is, six percent of the total capital budget was applied across the municipalities irrespective of their revenue collection base. This approach disadvantaged the rural based municipalities because their budget was insufficient to acquire the engineering skills required to plan and implement water infrastructure projects when compared to the urban based municipalities like metros.

The other painstaking challenges affecting the performance of the PMU were once more political interference (forcing the officials to appoint the service providers that are the council's friends with or without experience and capacity) and corruption (where officials collude with the service providers to inflate prices of certain projects so that they can benefit at the expense of the entire project) according to the respondents. Drastic measures are required to curb the political interference in the implementation of any service delivery programme.

Prolonged project completion

Besides the other common challenges, the appointment of professional services providers without financial capacity were confirmed to be the most expensive exercise in the history of the implementation of infrastructure projects. The respondents indicated that at times they paid standing time (where there were no materials on site, sometimes more than a month and sub-contractors and other employees were being paid without work done). So, it would be critical that appropriate assessments were carried out prior to the appointment of such service providers.

The other critical area of concern is community disputes. About eleven respondents had a live experience of community disputes and they indicated that if they are fuelled by politically connected people within, they took longer to be resolved while the contractors were being paid standing time. The respondents reiterated that sometimes the projects were not completed on time because of the decision makers who took long to take decisions on certain aspects of the projects like termination of a non-performing contractor, especially if that

contractor was connected to some of the council members. The respondents indicated that in some areas development of the value chain and service standards were critical and needed immediate attention.

Possible programmes to be reinverted

Most of the respondents have selected Siyenza manje programme. This was a programme that was managed by the Development Bank of Southern Africa to place retired engineers in municipalities that assisted in entire life cycle of project management. The respondents felt that this programme was practical and moreover, it has trained and registered many young engineers, technician and artisans before its lifespan expired. However, Mdunge et al. (2014) and SAICE (2010), seem to have a different view in that they indicated that these programmes had their on and off moment. The respondents have however, expressed their desire to change the way it was operating then. They were suggesting that the engineers deployed should no longer come as advisors but rather implementers with executive mandate so that they can be able to make decisions and implement them without waiting for too long.

5.3 Research Question 2

The objective of the second research question was to understand why the Limpopo province was continuously underspending and money being returned to fiscus while the water infrastructure backlogs are increasing. Once more, the challenges leading to underspending of capital budget in municipalities were identified and presented to municipalities for implementation, yet the water infrastructure backlogs were creating social unrests while budgets are returned to national fiscus. The next section discusses the challenges that contribute to underspending.

5.3.1 *Budget Underspending*

Factors contributing to underspending on infrastructure

One of the factors that respondents felt it take them ten steps backwards, was the consultants that were appointed with political mandates. These types of consultants proved to be unmanageable. The respondents emphasised that whenever these service providers were implementing wrongly, they could not reprimand them because they call their superiors and ultimately get away with poor performance. What is worse, is that even the competent service providers once they are mandated, they ignore all the faults even if they were glaring.

Another respondent highlighted that perhaps municipalities should review the appointment of the Section 57 managers. This is so because they are on contract for five years and on the third year they start applying for new jobs and lose focus on the implementation of infrastructure projects. Another area that requires attention was the review of the MIG programme to allow municipalities to utilise 10% of the total capital budget for planning purposes. To date the municipalities that could plan upfront, they used the wrong budget vote such as equitable share, which was not meant for that purpose. it is crucial that the MIG programme be looked with regard to pre-planning budget release to speed up the infrastructure rollout. The government budgeting system does not allow municipalities to commit on a multi-year approach but rather on a yearly basis which defeats the entire approach to effective implementation of the capital projects.

Other salient features of underspending

The highest concern was the conflict between administration and political leadership especially when it came to the appointment of the services providers to implement water infrastructure projects because most of the services providers provided by the council members were not experienced or lacked financial capacity. Moreover, they were not easily reprimanded even when they had implemented the infrastructure project incorrectly. The respondents indicated that the politics would win ultimately and the communities were the biggest losers in the process. This was because the chances were that the project quality could not be guaranteed due to mandates given to service providers that goes with

such projects from the involved politicians. Long turnaround time in resolving disputes is the enemy of progress on the development of the infrastructure programmes. The respondents indicated that sometimes the times are prolonged to extend project period purely because once the project was completed, they would have no other jobs. However, sometimes it was either the fight between the politicians and the Tribal Authority of such villages.

Single project commissioning when met with community strikes, prevent spending the entire budget for that project. The respondents highlighted the conflict they have with the council around changing this approach to multi projects commissioning so that they can manage the cashflow depending on what project has stopped until the disputes were resolved. Other municipalities use the capital grant for operational issues such as salaries for instance. This approach doubles or quadruple the infrastructure backlogs and cost escalations the following year would be higher as well and it becomes costly for government.

Measures to be taken for underspending

Development of service standards and consequence management tops the chart in that it would ensure that managers would be held accountable for poor performance. Clear service standards are easy for self-monitoring and make improvements where applicable. Political leadership should also be held accountable for poor performance of the municipalities.

One respondent suggested that an ombudsman like tribunal be created to investigate and discipline the senior management and the accounting officer of the municipality. Such tribunal becomes important to avoid situations where by a political lower rank but at senior position at work does not find himself/herself in the trouble after disciplining a higher rank person politically but junior position at work.

The other radical approach, was that when the signs of underspending are noticed, an implementing agent be appointed to implement the project instead of taking the money away from the municipality so that the intended recipients could receive their services.

5.4 Conclusion

This chapter focused on the discussion of the results described in Chapter 4 of this report. It is crucial that findings that are in this report be communicated to the municipalities in the country as most of them are universal challenges.

The study has indeed responded to the underlying issues that were hindering the successful implementation of the water infrastructure projects in the Limpopo province.

CHAPTER 6. CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

This chapter focuses on the overall conclusion of the study, the recommendations to various institutions and suggested future studies.

6.2 Conclusions of the study

The major findings with respect to the first research question were poor quality supervision, lack of capacity or inexperienced, political interference, lack of operations and maintenance of the existing infrastructure, inadequate budget, long procurement processes and the change in political leadership. Lack of project management systems and poorly resourced, Inadequate funding and change in political leadership.

The major findings with respect to the second research question were politically mandated professional service providers (PSPs), Municipal Infrastructure Grant (MIG)'s inability to release about ten percent budget for planning purposes, system that does not allow multi-year financial commitment, conflict between administration, political leadership and long turnaround time in resolving disputes.

Overall these findings responded to the both research questions. However, it is worth highlighting that some of the researchers in the literature suggest that some of the programmes such as Siyenza manje were not successful while this study shows that the respondents still need it particularly that it produced many engineers, artisans and process controllers who were registered with the appropriate bodies.

Areas of similarities between the literature and the findings were identified, particularly the challenges that affected effective implementation of the water infrastructure projects. These was that rolling out the water infrastructure projects was not only hindered by inadequate funding but by political interference, lack of/or poor planning and shortage of skills.

6.3 Recommendations

Based on the results obtained through the interviews the following recommendations are proposed.

6.3.1 *Municipalities*

The municipalities should engage the Department of Cooperative of Governance and Traditional Affairs Municipal Infrastructure Grant (MIG) funding model to split and release the funds for planning a year prior to the implementation year.

Engage National Treasury on the Division of Revenue Act to change the section that regularise taking away funds from a poor performing municipality to a good performing municipality. Rather ringfence the unspent budget and create or identify existing agencies that would implement the project because taking away the money does not resolve the backlogs identified in that poor performing municipality.

Municipalities should develop their masterplans for all the services that they are rendering. Such masterplans should be practical and deliverable within the specified period. A clear roadmap of how the masterplans would be rolled out for each service for the next 30 years and followed by three (3) – five (5) year implementation plans. The municipalities should then submit the masterplan to the council, once the council has approved it, the council should be requested to give the opportunity to the administration to implement the masterplan and interrogate the progress reports provided to them at the appointed period.

The PMUs once capacitated, should be assist the municipalities in integrating all the water infrastructure programmes to ensure integrated implementation, otherwise thorough coordination between CoGTA, DWS and NT should be conducted because all these moneys comes from the same coffers and should therefore be in a position to manage it;

6.3.2 *Public water utilities*

Public utilities should be ready as vehicles for intervening whenever the municipalities struggle to implement their capital budgets for reducing the water infrastructure backlogs.

Those utilities that do not have masterplans are advised to develop them in collaboration with the municipalities so that in the areas of overlap they would be able to take decisions of the approach at early stages.

Engage the municipalities and together identify areas of support to the municipalities with regard to infrastructure rollout while still allows to ensure that there are no funds that should be returned to fiscus.

6.3.3 *Other institutions and agencies*

Other institutions such as the Development Bank of Southern Africa should assist the municipalities in the development of the project risk matrix in line with the Project Management Body of Knowledge (PMBOK) so that they could be able to manage their projects effectively.

The Department of Water and Sanitation should work more closely with the municipality to support them to comply with the conditions for approval of the technical reports if they are not willing to review the conditions.

Municipal Infrastructure Support Agent (MISA), an institution established by Cooperative Governance and Traditional Affairs (CoGTA) to proactively support the municipalities in proper planning and implementation of the infrastructure projects.

6.4 Suggestions for further research

This research has not investigated the legislation and policies governing the water sector infrastructure development. It would be prudent that researchers review the legislations and policies to assess if they are still relevant.

Political interference seems to persist and contribute towards the poor quality of the infrastructure in general. More research on how to successfully separate politics from administration of the service delivery programmes should be conducted.

Municipal Infrastructure Grant conditions have been problematic for quite some time. A study to zoom into this framework would perhaps provide some guidance on how make it easy for the municipalities to do both new projects and refurbishment, currently the focus was on new projects.

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APPENDIX A: ACTUAL RESEARCH INSTRUMENT

SEMI-STRUCTURED INTERVIEW QUESTIONS

1. Infrastructure backlogs

a. Possible causes of infrastructure backlogs have been identified (such as poor operations and maintenance, poor quality of newly built infrastructure amongst others) and presented with solutions. Why in your opinion are we still faced with huge water infrastructure backlogs?

b. With PMUs established in almost all the municipalities, what in your view causes the projects failures?

c. What do you think are the reasons behind projects that take longer (up to 10 years) to be completed while they were supposed to be completed at that specified period?

d. If you were to recommend one of the old programmes such as Project consolidate, Siyenza Manje, CoGTA's municipal turnaround strategy, Back to Basics etc., which one do you think worked and if brought back can improve the infrastructure development and why?

e. Overall what do you think should be done to turnaround the current state of infrastructure?

2. Underspending on infrastructure

a. Once more possible causes of underspending such as poor planning and skills shortage amongst others have been identified and presented with possible solutions. Why in your assessment is underspending on infrastructure projects continues? Why are the gaps identified not closed in your assessment?

b. What measures are taken (or should be taken) when infrastructure budget is returned to fiscus because of non-expenditure?

c. In your own view, what is it that can be done different to consistently spend the budget in line with the infrastructure plans?