

Exploring bulk water services delivery challenges in the Dr. Ruth Segomotsi Mompati district municipality in the North West Province

PT Motshabi

 **orcid.org/0000-0003-0735-839X**

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Supervisor: Prof Nelda Mouton

DECLARATION

I, Presley Tshepo Motshabi, hereby declare that the dissertation titled "Exploring bulk water services delivery challenges in the Dr. Ruth Segomotsi Mompati district municipality in the North-West Province," submitted for the degree of Master of Business Administration at North-West University Business School, is my original work. This dissertation has been conducted in accordance with the ethical guidelines and academic integrity standards of North-West University. It contains no material previously published or written by another person, except where due reference is made. This work has not been submitted for any other degree or examination at this or any other university. I understand the seriousness of plagiarism and affirm my commitment to upholding the principles of academic honesty and integrity in my work.

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ABSTRACT

This study explores the difficulties in providing bulk water services in Dr. Ruth Segomotsi Mompati district municipality in the North West Province. The main goal of the research is to thoroughly examine these issues, with the end goal of producing comprehensive suggestions for operational and strategic improvements.

The study adopted a qualitative research approach, employing semi-structured interviews as the primary method for gathering data. This method was selected to gain deeper insights through flexible, yet guided conversations. The research participants were officials from various municipalities who are responsible for overseeing infrastructure within the geographical confines of the municipalities they serve. Their unique perspectives and experiences provided valuable insights into the challenges of municipal bulk water service delivery.

The study's findings identified themes that are indicative of the focus areas contributing to the bulk water services delivery challenges. These emphasised the importance of fostering a collaborative work environment, promoting organisational learning, and implementing effective change management to elevate service delivery standards. It identifies the necessity for heightened operational efficiency and advocates for a cultural shift within municipal operations. Strategic planning, marked by the creation and regular refinement of master plans, is highlighted alongside the implementation of robust project management practices.

The study emphasises the critical need for synchronising municipal planning processes with statutory requirements and the changing demands of the local community. The research advocates for a flexible and responsive approach to master planning, which is indispensable for adapting to shifts in administrative frameworks and community needs.

Building on these conclusions, the study recommends the development of a dynamic master plan for water services, one that is regularly reviewed and updated to reflect the evolving legislative landscape and community priorities. It also suggests that municipal authorities should ensure that the planning process remains inclusive and responsive to the residents' needs. Furthermore, training and capacity-building initiatives for municipal officials could be instrumental in enhancing their ability to adapt to these changing demands and legislative environments.

Key terms: Service delivery, bulk water, municipality, challenges, qualitative data, thematic analysis

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LIST OF ACRONYMS

COGTA	Department of Cooperative Governance and Traditional Affairs
DDM	District Development Model
DRSM	Dr. Ruth Segomotsi Mompati
DWA	Department of Water Affairs
IDP	Infrastructure Development Plan
MFMA	Municipal Finance Management Act
MSA	Municipal System Act (No. 32 of 2000)
NWA	National Water Act (No 36 of 1998)
SALGA	South African Local Government Association
SDF	Spatial Development Framework
SDGs	Sustainable Developmental Goals
SLA	Service Level Agreement
WHO	World Health Organisation
WSAct	Water Service Act (No. 108 of 1997)
WSA	Water Services Authority

DEFINITION OF TERMS

Integrated Development Plan (IDP): The Integrated Development Plan (IDP) is a statutory requirement for South African municipalities, as stipulated in the Municipal Systems Act (No. 32 of 2000). The IDP mandates municipalities to identify key development priorities, formulate a clear vision, mission, and values, develop appropriate strategies, demonstrate the organisational structure and systems to realise the vision and mission, and align resources with the development priorities (Bikam & Chakwizira, 2021). The IDP serves as a strategic tool for local government to plan and manage development in a manner that is inclusive, sustainable, and responsive to the needs of the community.

District municipality: The District Municipality in the context of the Constitution of South Africa refers to a specific tier of local government established to fulfil a range of functions and responsibilities within its designated area. According to the Constitution of the Republic of South Africa Act 108 of 1996, district municipalities are constitutionally mandated entities that play a crucial role in the decentralised system of governance in South Africa (Reddy, 2016). District municipalities are responsible for coordinating and facilitating integrated development planning, service delivery, and infrastructure development within their respective districts. They are also tasked with promoting local economic development, environmental management, and disaster management initiatives (Reddy, 2016).

Water Services Authority (WSA): The Water Service Authority, as defined in the Municipal Structures Act (No. 117 of 1998), is an entity responsible for the regulation and provision of water services within South Africa. The Act delegates the responsibility for service provision to Water Service Authorities (WSAs), which are typically municipalities (Sutherland *et al.*, 2014). The Water Service Authority is mandated to ensure the delivery of safe and sustainable water services, the management of water infrastructure, and the regulation of water resources within its jurisdiction (Sutherland *et al.*, 2014).

Water Service Development Plans (WSDPs): The Water Service Development Plans (WSDPs) in terms of the Municipal Structures Act (No. 117 of 1998) refer to the strategic plans formulated by Water Service Authorities (WSAs) to guide the development, management, and regulation of water services within their respective jurisdictions. The Municipal Structures Act mandates WSAs, typically municipalities, to develop WSDPs to ensure the provision of sustainable and efficient water services to communities (Brettenny & Sharp, 2016). WSDPs are designed to address the unique water-related needs and challenges within specific areas, promoting equitable access to water services and safeguarding water quality standards (Brettenny & Sharp, 2016).

CHAPTER 1: RESEARCH INTRODUCTION

1.1 INTRODUCTION

Access to clean and reliable water is a fundamental determinant of communities' well-being and sustainable development. In the context of Dr. Ruth Segomotsi Mompati district municipality in the North West Province, the provision of bulk water services faces significant challenges that have far-reaching implications for the socioeconomic environment of the area. The efficient delivery of bulk water services is essential for meeting the basic needs of the population, supporting economic activities, and ensuring environmental sustainability. However, the district municipality grapples with various obstacles that hinder the effective supply of bulk water services, impacting the overall development and quality of life in the region.

Governments are tasked with the provision of essential services to their population and striving for efficiency and responsiveness in their delivery. The South African government encounters similar service delivery challenges as many of its global counterparts. These issues in service delivery are not solely a South African issue but a global challenge, as detailed in a study by (Siyabonga *et al.*, 2019), which examines the specific difficulties encountered by South African municipalities in providing services, offering a thorough analysis of the operational hurdles within local governance structures in South Africa.

The Constitution of the Republic of South Africa, through Sections 26 and 27, highlights the rights of citizens to fundamental services such as health care, food, social security, housing, education, water, and information, ensuring their equitable distribution. Furthermore, clauses d) and e) of Section 195 mandate the fair, impartial, and unbiased provision of these services. They also emphasise the importance of public involvement in policymaking and the necessity of addressing the needs of the people.

Therefore, in response to these challenges, this study aims to investigate the complexities surrounding the delivery of bulk water services in Dr. Ruth Segomotsi Mompati district municipality. By identifying the fundamental problems impeding efficient water supply, the research seeks to provide valuable insights into the underlying issues and potential solutions that can contribute to enhancing the provision of bulk water services in the municipality. This investigation is crucial for understanding the multifaceted dynamics of water service delivery and for informing evidence-based strategies to address the existing challenges and improve the overall well-being and sustainable development of the community.

1.2 BACKGROUND

Numerous local municipalities in South Africa are frequently confronted with accusations of poor administration, mismanagement, financial irregularities, and corruption. As Enaifoghe (2022) notes, these issues cast doubt on the local government's ability to provide adequate services to the communities they govern. The recent demonstrations against the local government's delivery of public services in South Africa reflect the public's dissatisfaction with the poor or absence of service delivery. Consequently, it is imperative to investigate and analyse the root causes of this problem and develop recommendations for enhancing the situation.

The government's role in public service delivery encompasses providing critical services to its citizens, including healthcare, education, water and sanitation, transportation, and social welfare programs, as highlighted by (Reddy, 2016). The aim is to ensure these services are accessible to all in a fair and efficient way. However, the country has recently encountered significant challenges in effective service provision. A notable issue is the increasing frequency of service delivery protests over the last decade, stemming from the public's call for improved services and their displeasure with the present state of these services. Additionally, internal issues like political conflict and discord between political and administrative bodies within local governments have exacerbated these service delivery challenges (Reddy, 2016).

Water service delivery in South Africa is a prime example of the broader service delivery challenges in the country, as outlined by (Weaver *et al.*, 2017). This issue is complex, involving numerous actors and factors, and lacks a straightforward solution. The COVID-19 pandemic has intensified these difficulties, adversely impacting the local economy (Maxwell, 2022). To tackle these service delivery challenges, the adoption of knowledge management strategies has been proposed (Barbier & Tenge, 2022). Effective knowledge management could enhance service delivery and prevent further degradation of public services. Furthermore, the implementation of the "Batho Pele principles" is aimed at improving the quality and reach of public services in South Africa (Tintswalo *et al.*, 2021).

The White Paper on Local Government (Republic of South Africa, 1998) outlines that the primary objective of local governments is to deliver essential services such as water, sewage, electricity, and roads, as part of their development mandate. Furthermore, according to the South African Local Government Association (SALGA), "The Municipal Structures Act" established the responsibilities of district municipalities, entrusting them with the oversight of services like electricity, sanitation, health care, and water, and delegating their provision to the local municipalities within their districts (SALGA, 2015:2).

Furthermore, a district municipality is required to work toward the comprehensive, equitable, and sustainable social and economic development of its region, according to Section 83 of the Municipal Structures Act of 1998, which sets forth the division of powers and responsibilities between a district municipality and local municipalities., by:

- Planning for integrated development.
- Fostering extensive infrastructure construction and services.
- Enhancing the capabilities of the regional municipalities under its control.
- Ensuring that resources are distributed fairly across the local municipalities so that they can provide sufficient levels of municipal services.

Considering the COGTA profiling of the Dr. Ruth Segomotsi Mompati (DRSM) district municipality and the slow pace of services reticulation in some parts of the district, the study aims to explore challenges of service delivery across the DRSM jurisdiction with emphasis on bulk water services. It is a well-known fact that Covid-19 exposed the inadequate state of providing basic services in many rural areas. North West Province and DRSM district municipality were no exception to that challenge. Many rural areas were at the receiving end of this challenge, and local municipalities resorted to the mobile distribution of water to alleviate the problem, however, that interim solution also brought challenges about the quality of water delivered by trucks to the needy and maleficence in some instances. In addition, there was also a challenge for a reliable supply of electricity in some of the municipalities, which also affected the bulk water service delivery.

1.3 PROBLEM STATEMENT

Service delivery infrastructure portfolios are managed across all three spheres of government, depending on the nature and magnitude of the development required. National and provincial governments place a significant emphasis on the front-end phase of infrastructure portfolios; however, once the infrastructure portfolios and projects are commissioned, there is a need for active operational and maintenance aspects of the infrastructure life cycle where the receiving district and local municipalities play a significant role. Infrastructure components such as water pipes and pumps and electrical components are manufactured to operate for a certain design life for which they are intended. However, to realise that intended design life, all components can only be expected to deliver for that specific period if they operate optimally and within the design parameters.

DRSM district municipality is responsible for delivering bulk services to all Greater Taung, Mamusa, Kagisano-Molopo, Lekwa-Teemane and Greater-Taung local municipalities. However, for this study, the scope of bulk services will be limited to bulk water service delivery. Therefore,

the problem that this study will investigate will be regarding challenges for the provision of bulk water by the DRSM district municipality to the receiving municipalities.

1.4 RESEARCH AIM AND OBJECTIVES

1.4.1 Research aim

This research seeks to explore bulk water services delivery challenges within the DRSM district municipality. The envisaged aim of this study is to formulate a set of recommendations on how to optimise lessons learned from past and current performances of the DRSM district municipality in delivering bulk water services to communities of local municipalities within the district.

1.4.2 Primary objectives

The primary objective of this study is to explore the challenges faced by the DRSM district municipality in achieving its obligation of supplying bulk water services to the five local municipality distribution points as envisaged per “Section 83 of the Municipal Structures Act of 1998”.

1.4.3 Secondary objectives

- To identify key challenges in the delivery of bulk water services within the Dr. Ruth Segomotsi Mompati district municipality.
- To assess the impact of these challenges on water quality, availability, and accessibility for residents and industries.
- To propose recommendations for enhancing the efficiency and effectiveness of bulk water services in the district.
- Exploring opportunities for infrastructure planning and improvement in bulk water service delivery to local municipalities within the district.

1.5 RESEARCH QUESTIONS

1.5.1 Primary question

What are the challenges faced by the DRSM district municipality in achieving its obligation of supplying bulk water services to the five local municipality distribution points?

1.5.2 Secondary questions

- What are the challenges in the delivery of bulk water services within the Dr. Ruth Segomotsi Mompati district municipality?

- What are the impacts of these challenges on water quality, availability, and accessibility for residents and industries?
- How is the state of the bulk water service delivery infrastructure at local municipalities within the district municipality?
- Which processes can be implemented to enhance bulk water infrastructure planning and implementation for improved service delivery to local municipalities within the district municipality?

1.6 RESEARCH METHOD

This research followed a qualitative methodology and was conducted in two distinct stages. Initially, a comprehensive literature review was undertaken to provide essential background information and acquaint the reader with the bulk water service delivery and its challenges in both the DRSM district municipality and throughout South Africa. Following this, the second stage involved an empirical investigation. This phase explored the specific challenges faced in delivering bulk water services within the DRSM district municipality and its constituent local municipalities. To explore the specific challenges faced in delivering bulk water services within the DRSM district municipality and its constituent local municipalities, a combination of research methods is often employed, including interviews, document analysis, site visits, and field observations.

1.6.1 Review of the literature

The literature review aimed to conduct a desktop analysis focused on the bulk water service delivery by the district municipality. The review began by delineating the roles of different government spheres and related organisations in the provision of bulk water services to communities. This set the context for the study and established a foundation for the subsequent research methods.

Additionally, the review detailed the challenges in critical areas of bulk water service delivery. These areas included regulation, infrastructure, planning, project management, operations, maintenance, revenue collection, and continuous improvement.

Google, Google Scholar, and EbscoHost were used to search for information. Sources include:

- Journals and written publications
- Dissertations, mini-dissertations, and other papers on the subject
- Books

- News articles, and
- Internet articles

1.6.2 Empirical study

From the literature review, specific interview questions were formulated. During these interviews, interviewers were permitted to ask supplementary questions to gain deeper insights on certain topics. The interview format was semi-structured, allowing for exploratory questioning and discussion to obtain more comprehensive information when needed. Post-interview, the responses were transcribed, and various codes were identified from these transcriptions. These codes were then systematically organised into themes, sub-themes, and categories for detailed analysis.

1.6.3 Research approach

The interview process followed a semi-structured approach, enabling the interviewers to delve deeper into topics through probing questions and extended discussions. This approach was particularly effective in eliciting detailed and context-specific information beyond the initial questions. Following the interviews, the responses were carefully transcribed, and from these transcriptions, distinct codes were extracted. These codes were then systematically organised into a structured framework of themes, sub-themes, and categories, providing a clear and comprehensive analysis (Deterding & Waters, 2018).

The primary focus of these interviews was to explore the specific challenges encountered in bulk water service delivery by various municipalities within the district. This investigation aimed to identify and understand the unique issues each municipality faced in managing and providing bulk water services. This detailed inquiry into the local context of each municipality provided an understanding of the complexities and variances in service delivery challenges across the district (Weaver *et al.*, 2017).

Semi-structured interviews were a valuable qualitative research method that provided rich and nuanced insights into service delivery. This method was justified for its unique contributions to understanding service delivery. Its flexibility was key in exploring the complex facets of service delivery, combining predetermined questions with open-ended prompts. This approach allowed researchers to probe specific topics while enabling participants to express their views in their own words, as noted by Shaheen (2021). Additionally, as Dineen-Griffin *et al.* (2021) highlighted, these interviews encouraged participant engagement and collaboration, fostering a sense of ownership and empowerment. Participants could actively influence the interview's direction, offering insights that might have been overlooked with other methods, thus enhancing the research's relevance to service delivery practices.

1.6.3.1 Study population

The study population is defined as the group of individuals or entities a researcher aims to study to draw conclusions. In service delivery research, this usually includes service users, providers, administrators, and other relevant stakeholders. For example, Badru et al. (2022) focused on women of reproductive age in Tana River County, Kenya, to identify factors affecting the use of delivery services. Similarly, Assyahri et al, (2021) explored the impact of public managers on the quality of community services for the Mentawai ethnic group. These examples highlight the importance of clearly defining a study population to meet research goals effectively.

In the study, the population was all employees working in service delivery in municipalities within South Africa and the sample comprised of employees from the DRSM district municipality, Lekwa-Teemane, Mamusa, Kagisano-Molopo, Greater-Taung, and Naledi local municipalities. Each municipality was represented by its municipality manager and an infrastructure or technical director. The total number of participants amounted to 8. The selection of infrastructure directors and municipal managers was based on their roles in overseeing the operation and maintenance of the municipalities' water service delivery infrastructure, a key part of their job responsibilities.

Participants were recruited through phone calls, interview invitations, and a goodwill permission letter from the DRSM district municipality manager, which was emailed to participants from the five local municipalities. Informed consent forms were also sent to the research participants via email.

1.6.3.2 Collection of data

In the study, data collection involved two distinct methods. Firstly, a literature review was conducted to acquire foundational knowledge about various concepts related to the study and to gather historical data from past research on bulk water service delivery challenges, encompassing local, national, and international contexts. This historical data served as a benchmark for comparing the findings of this study with other related research.

Secondly, semi-structured interviews were conducted with officials from local municipalities within the district. These interviews carried out via MS Teams with the infrastructure director and/or municipal manager, featured open-ended questions and allowed for in-depth probing by the researcher. The interviews were held between August and October months and the schedules were flexible to allow for late requests for postponements in case of unforeseen events occurring. Each interview was scheduled on MS Teams for an hour maximum. The MS Teams links to interviews were sent to the participants via email. The interviews were recorded and subsequently transcribed, and the transcriptions were then utilised for data analysis.

1.6.3.3 Data analysis

The data from semi-structured interviews in the service delivery study were analysed using a method that provided valuable insights into various aspects of service delivery. Researchers began with a set of pre-established questions while retaining the flexibility to ask additional follow-up questions and delve into new topics that emerged during the interviews, as described by French and Mattacola (2022). Furthermore, thematic analysis was employed as the primary method in this study. Bryman and Bell (2014:350) noted that thematic analysis is a versatile technique that operates independently of any specific philosophical perspective.

1.7 SCOPE OF THE STUDY

1.7.1 Field of the study

The scope of this study is set within the domain of operational management, focusing specifically on the DRSM district municipality.

1.7.2 Sector

The sector of interest is local government, with a particular emphasis on both district and local municipalities. The DRSM district municipality is central to this study, along with its encompassing local municipalities: Naledi, Greater Taung, Kagisano-Molopo, Mamusa, and Lekwa-Teemane.

1.7.3 Geographical Demarcation

The geographical boundaries of this research are confined to the DR RSM DM, situated within the Northwest Province. Classified as a Category C municipality, DR RSM DM is one of four district municipalities in this province and is adjacent to the Northern Cape Province. In terms of landmass, DR RSM DM is the largest district in the province, accommodating a population of 522,406 as of 2019 (Cogta, 2019). For insights into the population trends in this area, refer to Figure 2.1, on page 14 below which illustrates the population growth over recent years.

1.8 STRUCTURE OF THE DISSERTATION

Chapter 1: Research Introduction

Describes the background of the study and the issue statement, highlighting the challenges in providing bulk services in the DRMS district municipality.

Chapter 2: Literature Review

Details the DRSM district municipality challenges in providing bulk services to municipalities and their communities. A better understanding of how the DRSM district municipality should manage the risks to its bulk services capacity to enhance service delivery may be gained from this chapter of the study, which identifies weaknesses in local government systems, structures, and implementation mechanisms.

Chapter 3: Research Methodology

Details the research methodology that is used to explore the challenges experienced by the DRSM district municipality and describes the research model, data collection, and analysis.

Chapter 4: Results and Discussions

Gives the results obtained from the data obtained from the selected population participants and further discusses and interprets the results.

Chapter 5: Conclusion and Recommendations

The study wraps up in this chapter with a conceptualisation of the major finding and a quick summary of the earlier chapters. The chapter's conclusions and recommendations will then be based on the findings of the literature review and the imperial inquiry. In addition, the study's contributions and limits will be discussed, and suggestions for additional research will be made.

1.9 SUMMARY

Chapter 1 serves as the foundation for this qualitative research, starting with an engaging background that places the research within a broader academic and practical context, thereby highlighting its relevance to the bulk water service delivery challenges experienced by communities within the study geographic location. This chapter articulates the research problem, shedding light on the specific gaps the study aims to explore and propose recommendations for. It then delineates the study's purpose and explicitly states its objectives, aligning them cohesively with the identified problem. The research questions, carefully crafted, are presented to guide the study, specifically tailored to probe deep into the subject matter using a qualitative approach. The choice of semi-structured interviews as the main research method is robustly justified, highlighting how this approach is particularly conducive to eliciting detailed responses that are vital for the depth this study seeks. Furthermore, the chapter illuminates the significant implications of the research, discussing how its findings could offer valuable insights and practical solutions, potentially influencing academic discourse, policy-making, and industry practices. Concluding the chapter, a well-structured overview of the dissertation's layout is provided, giving readers a clear

and concise roadmap of the study's comprehensive journey, from inception to conclusion. This chapter effectively sets the tone for the ensuing research, promising a thorough exploration of the bulk water services delivery challenges through a rigorous qualitative lens.

CHAPTER 2 LITERATURE REVIEW

2.1 INTRODUCTION

Bulk water services delivery is a critical component for the advancement of modern society, playing a pivotal role in economic development, public health, and social equity (Batac *et al.*, 2021). However, this essential service encounters numerous challenges globally, nationally, and locally, including inadequate infrastructure, limited funding, poor governance, and a lack of skilled personnel (Dithebe *et al.*, 2019). In South Africa, the challenges are particularly pronounced, with minimal private participation affecting infrastructure development (Dithebe *et al.*, 2019). Moreover, the systemic approach required to address water service delivery challenges in small South African municipalities is often not explicitly outlined (Weaver *et al.*, 2017). Additionally, the capacity development of local government structures is identified as an enabler of service delivery, influenced by skills development and municipal performance improvement (Mphahlele & Zandamela, 2021). Organizations are recognized as facilitating learning to narrow the skills gap through human capital development and performance improvement (Mphahlele & Zandamela, 2022). The interplay between civil society and local government in South Africa is explored, providing a critique of collaborative ventures in developing and delivering essential water and sanitation services, while also delving into the complexities of network governance arrangements and the opportunities they present for livelihoods (Mubangizi, 2022). Furthermore, the evaluation of factors and strategies for water infrastructure project delivery in South Africa underscores the prime responsibility of public sector organizations in ensuring the sustainability of water infrastructure and safe delivery of water (Aiyetan & Das, 2021).

The effective delivery of bulk water services faces numerous challenges at the global level. In developing countries, inadequate infrastructure, characterized by aging systems and lack of maintenance, leads to frequent breakdowns and service disruptions (Aiyetan & Das, 2021). Additionally, limited funding and financial constraints hinder investments in infrastructure development and maintenance, exacerbating the challenges faced in delivering water services (Ruiters & Matji, 2016). Moreover, poor governance and weak institutional frameworks contribute to inefficient service delivery and a lack of accountability, further complicating the global delivery of bulk water services (Aiyetan & Das, 2021). Furthermore, the impacts of climate change, including altered rainfall patterns and heightened water scarcity, pose additional challenges to the effective delivery of bulk water services globally (Murieta & Chiabai, 2015). These challenges necessitate comprehensive strategies and frameworks to address the multifaceted issues affecting the delivery of bulk water services on a global scale.

The provision of bulk water services by local governments is influenced by various factors such as financial management and capacity, municipal capacity, political and administrative

responsibilities at the local level, good governance, and citizen involvement (Ahrens & Ferry, 2015). These factors are crucial in shaping the effectiveness and sustainability of water service provision by local governments. For instance, poor service provision has been attributed to staff capacity and poor accountability mechanisms resulting from weak institutional structures among local institutions responsible for service provision (Dick-Sagoe, 2020). Additionally, participatory governance has been identified as a strategy to make public service provision resilient to changes in local circumstances (Hale & Dotterweich, 2008). Furthermore, the politicization of the local bureaucracy has been observed as the ruling party seeks to ensure that the executive leadership of municipalities shares the same political ideology and vision to facilitate local development (Martínez-Córdoba *et al.*, 2020).

In the context of South Africa, the provision of bulk water services encounters specific challenges. The maintenance of inadequate infrastructure and aging systems leads to frequent breakdowns and service interruptions Weaver *et al.* (2017). Furthermore, limited funding and financial constraints hinder investments in infrastructure development and upgrades, exacerbating the challenges faced in delivering water services (Aiyetan & Das, 2021). Poor governance and weak institutional frameworks contribute to inefficiencies in service delivery and a lack of accountability, further complicating the delivery of bulk water services (Ruiters & Matji, 2016). Additionally, socio-economic disparities and historical inequalities impact access to water services, particularly in marginalized communities (Mugejo *et al.*, 2022). These challenges underscore the need for comprehensive strategies and frameworks to address the multifaceted issues affecting the delivery of bulk water services in South Africa.

The DRSM district municipality in the North West Province also faces challenges in the delivery of bulk water services at the local level. The inadequate maintenance of infrastructure and aging systems leads to frequent breakdowns and service disruptions Weaver *et al.* (2017). Moreover, limited funding and financial constraints impede investments in infrastructure development and upgrades, exacerbating the challenges in delivering water services (Szmigiel-Rawska *et al.*, 2020). Additionally, poor governance and weak institutional frameworks contribute to inefficiencies in service delivery and a lack of accountability, further complicating the provision of bulk water services (Ruiters & Matji, 2016). Furthermore, the municipality's geographical characteristics, such as rural areas and remote communities, pose challenges in ensuring equitable access to water services, particularly in marginalized communities (Hutete & Sibanda, 2022). These challenges highlight the necessity for tailored strategies and frameworks to address the multifaceted issues affecting the delivery of bulk water services at the local level in the DRSM District Municipality.

These challenges include inadequate infrastructure, limited funding, poor governance, and socio-economic disparities. Addressing these challenges requires comprehensive approaches, including investments in infrastructure development and maintenance, sustainable funding models, improved governance frameworks, and targeted interventions to ensure equitable access to water services. By addressing these challenges, the effective and sustainable delivery of bulk water services can be achieved, promoting economic development, public health, and social equity.

2.1.1 Local government and its responsibilities

Local governments in South Africa are responsible for various functions, including infrastructure, roads, water, electricity, and waste management (Rogerson, 2020). However, challenges such as misappropriation, ineffective internal control tracking, and nepotism impede the successful implementation of oversight mechanisms meant to promote accountability (Moji *et al.*, 2022). The politicisation of the local bureaucracy and the lack of clearly enunciated definitions contribute to the challenges faced by failing local municipalities in service delivery and governance (Reddy, 2016; Magagula *et al.*, 2022). Furthermore, the government's commitment to improving service delivery is hindered by serious challenges, including a communication breakdown between councils and citizens, corruption, and depleted municipal capacity (Thinyane *et al.*, 2015).

In South Africa, like in any other part of the world, the government must make sure that services are delivered to the public in an effective, efficient, and economical manner (Van der Walddt, 2018). The importance of the local government's duty to "ensure that services are supplied to people of communities sustainably for the advancement of social and economic development within a healthy and safe environment" was emphasised by Mabitsela and Matsiliza (2020).

The North-West province in South Africa has district municipalities that are actively involved in providing bulk and regional services directly, particularly in managing functions such as wastewater and sewerage. These district councils are pivotal in the entire value-chain process and may delegate certain responsibilities to service agents through service-level agreements. However, these activities must align with the policy and legislative frameworks established by the national government, such as the Water Services Act 108 of 1997 (Rakau, 2022). This involvement of district municipalities in service provision aligns with the concept of decentralization, which has been recognized as a means to enhance the efficiency and effectiveness of service delivery at the local level (Mkoma & Rwekaza, 2021). Furthermore, the importance of legislative frameworks in guiding water governance and management has been emphasized, highlighting the need for robust environmental laws and institutional structures to support effective water management (Eyüboğlu & Eyuboglu, 2022).

2.1.2 Historical challenges of the district municipality

Previous studies illustrated several challenges experienced at the municipality level, and (Van Der Walddt, 2014) highlighted technical/administrative, financial, and political/governance challenges as the main categories to be addressed. (Magagula, 2019) also highlighted challenges encountered by the district towards cooperation with local municipalities, and below are the points they raised. Unfortunately, these challenges remain unaddressed in many of the municipalities, and the communities feel the consequences of not addressing them through lack of service delivery.

2.1.2.1 Capacity and skills shortage

In South African local governments, the most significant obstacle encountered is the scarcity of skills and limitations in capacity (Munzhedzi, 2020). This deficiency has led to ineffective spending, which plays a crucial role in the failure to provide services (Mahabir, 2014). Additionally, the absence of structured career paths, programs for skill enhancement, and insufficient investment in technical, administrative, and leadership abilities have exacerbated these capacity issues (Pooe et al., 2014). Sebola (2015) further emphasised how criticism of most district municipalities' failure to assist local municipalities stems from a lack of available skills, which undermines efforts to collaborate between the two municipalities. (Sebola, 2015) also asserts that district municipalities fail to spend their allocated funds and that this is due to a lack of project management expertise. In summary, capacity and skills shortages could be linked to a poor state of service delivery infrastructure and, ultimately, poor delivery of service to the communities.

2.1.2.2 Legislation-related challenges

South African municipalities face significant legislative obstacles that impede efficient governance and service provision. These include sluggish policy execution, limited funds for environmental conservation, and overlooking the crucial role of local governments in such efforts (Holmes et al., 2012). Section 151 of the Republic of South Africa Constitution, 1996 states that district and local municipality councils have vested legislative and executive authority to administer without interference from other national and provincial spheres. (Masehela, *et al*, 2012) have all stated that the councils' autonomy is preserved as a result. This anatomy implies that if there is no effective collaboration between the district and the local municipality, service delivery will suffer the most due to misalignment between the two structures.

2.1.2.3 Poor accountability

Manyaka and Sebola (2015) observed in their studies to support the claim that difficulties in municipal service delivery may be related to the fact that officials' performance is not monitored to the desired standard, and they are less likely to be held accountable for poor performance.

Their view is that councils, as the executive authority need to ensure that accountability tools and processes are implemented and followed where necessary to ensure accountability. Van Niekerk and Dalton (2016) believe that councils at local and district governments frequently neglect to apply consequence management when municipal officials are facing substantiated charges of misconduct and subpar performance. Poor accountability implies that service delivery is not prioritised due to officials not being held responsible for their misconduct and poor performance.

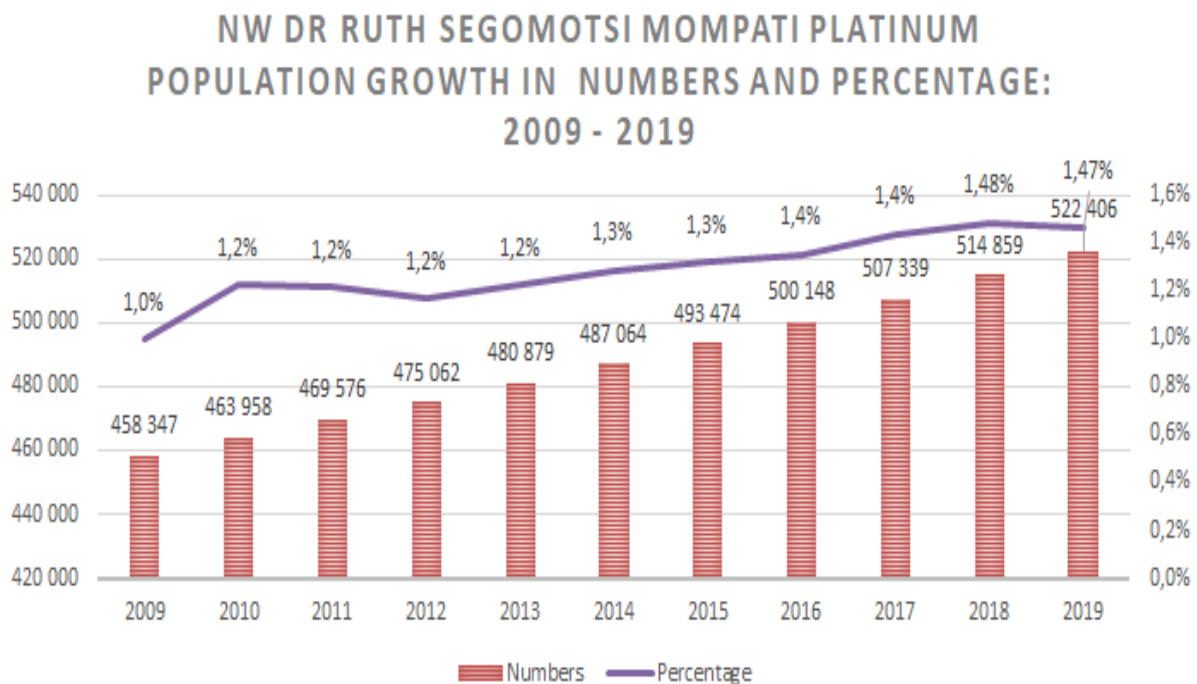
2.1.3 Status of DRSM district municipality bulk water services

The outlook on the status of the bulk water service delivery within the DRSM district municipality was the output of the profile and analysis of the performed in preparation for the rollout of the DDM across South Africa.

Almost 60% of the households within the district depend on groundwater as a source of their water supply. Only 52% have piped water within their dwellings (RSA COGTA, 2020). "In terms of the Municipal Structures Act", DRSM is the designated WSA. It is responsible for ensuring access to water and sanitation in its local municipalities.

The geographical demarcation for this study shall be limited to DRSM DM in the North-West province. DRSM district municipality is a Category C municipality in North-West Province. It is one of the four district municipalities within the North-West Province, and it is on the border of the Northern Cape Province. In terms of geographical area, the DRMS district municipality is the largest district in the province, with a population of 522,406 (COGTA, 2019). See Figure 2.1 below for population growth over the previous years.

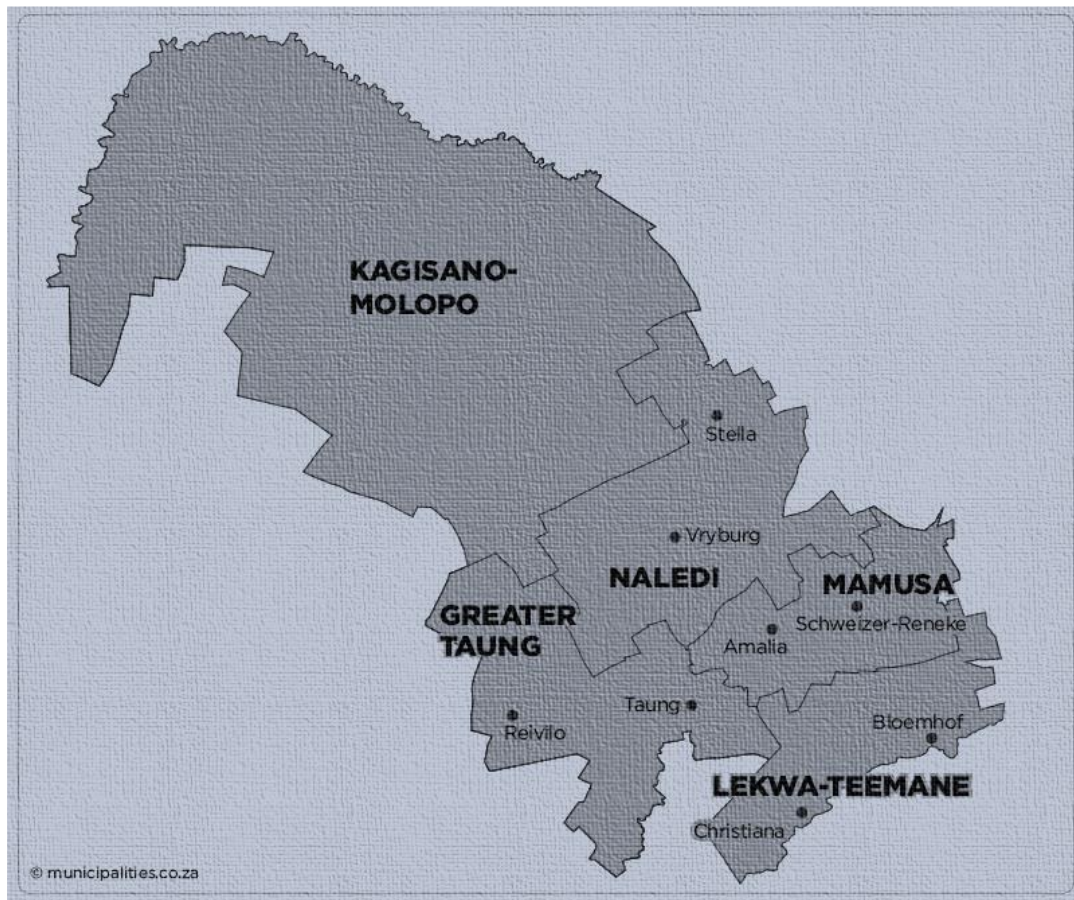
Figure 2.1: DRSM District Municipality population



Source: Cogta/DR RSM district municipality

DRSM is home to five local municipalities: Naledi, Greater Taung, Kagisano-Molopo, Mamusa, and Lekwa-Teemane (see Figure 2.2 below). The population of the DRSM district municipality is located in about 470 small villages and towns scattered in a radius of 250 kilometres. According to the COGTA profile and analysis report for DDM, the DRSM district municipality is among the areas affected by those outcomes as high poverty levels characterise them due to socio-economic inequalities. Of particular concern, COGTA raised the inability of communities to access basic services as a constraint in "improving the quality of life and achieving economic development", and this is compounded by the backlog in service delivery.

Figure 2.2: Geographical Map of DRSM DM



Source: www.localgovernment.co.za

2.2 LEGAL FRAMEWORK FOR BULK WATER SERVICE PROVISION

This section covers an overview of the legal framework of water service delivery within the South African context.

2.2.1 Water Human Rights History in South Africa

The national policy of the South African government incorporates international standards, and the emerging rights-based agenda has become the foundational framework for protecting human rights concerning water and sanitation. National policy and the South African Constitution have incorporated international human rights law (Meier *et al.*, 2013). Section 3 of South Africa's Constitution, established in 1994, along with the Water Service Act (108) of 1997, asserts the right of every individual to access basic water supply and sanitation services. To safeguard the fundamental right of every citizen to water and sanitation, it is essential for all water stakeholders, including water authorities and suppliers, to enact tangible measures. When drafting water service development plans, water service authorities are required to include provisions for these rights (RSA, 2007). The Constitution further stipulates in section 27(1)(b) that everyone has the right to

adequate water and food, and in section 27(2) that the government must take equitable legislative and other steps to ensure the gradual realisation of these rights. The three levels of government must collaborate to put the right to water into practice to fulfill its duty. The provincial government oversees and supports the local government in fulfilling its obligations in accordance with national and provincial environmental implementation and management plans. Simultaneously, the national government establishes the frameworks and standards for the provision of water services. The responsibility for delivering water and sanitation services lies with the local government. The planning, budgeting, and monitoring activities of the COGTA significantly influence the performance of municipal service delivery. COGTA oversees the implementation of the Local Government Municipal Act, No. 32 of 2000, which is responsible for drafting policies and legislation relevant to provinces. Consequently, obtaining water rights requires the support of the municipal authority responsible for each community. However, a shortage of basic facilities brought on by financial constraints makes it difficult to implement this rule (Schorr, 2017).

Furthermore, the South African government recognises the importance of achieving universal access to water by 2030 as outlined in its NDP 2030 strategy. To actualise these rights, various stakeholders including the government, water managers, policymakers, municipalities, and residents all have a part to play. The National Development Plan (NDP) 2030 guides the pursuit of water sustainability in both the present and the future. Nevertheless, there are obstacles to overcome, such as the unequal distribution of water infrastructure networks utilised for the treatment and distribution of water to communities. These networks include dead-end, gridiron, circular, and radial systems. These systems are often absent in informal settlements, resulting in unequal distribution within urban areas. Additionally, the municipality encounters challenges in accurately estimating the population of informal settlements as a result of rural-urban migration and international migration. This poses difficulties in formulating policies that foster equitable water distribution and access in these settlements (Muzondi, 2014).

The historical development of water human rights in South Africa has been instrumental in shaping the landscape of service delivery. The nation's constitution recognises the fundamental human right to access safe water. However, persistent challenges remain in achieving universal access to safe drinking water, particularly in rural regions (Edokpayi *et al.*, 2016). The lack of access to safe water affects millions of people in South Africa, highlighting the need for effective service delivery in this sector.

The issue of water rights and access has been a topic of international concern. The human right to water has been acknowledged by the United Nations and has gained increasing recognition in national legislation, including in South Africa (Wutich *et al.*, 2016). The recognition of water as a fundamental human right emphasises the importance of ensuring equitable and universal access

to safe water for all individuals, regardless of their socio-economic status or geographical location. According to (Takacs, 2016), the water right encompasses and fulfills all other human rights, serving as the fundamental element necessary for human survival. These rights are in accordance with international human rights laws and are acknowledged as economic, social, and cultural rights. In contrast to the UN development program's recommendation of 20 liters per day, (Takacs, 2016) highlights that access to a minimum of 50 liters of water per day is essential for human survival. In accordance with international human rights law, it is imperative to provide every citizen, including vulnerable individuals such as expectant mothers, children, and workers in challenging conditions, with access to 50-100 liters of water. This ensures a dignified standard of living for those who are less fortunate.

Water pollution is an additional noteworthy concern in the context of service delivery in South Africa. Research has indicated the existence of trace metals in surface water, which can potentially jeopardise both human health and the environment (Edokpayi *et al.*, 2016). Efforts to protect freshwater sources from contamination are crucial to safeguarding the rights of individuals and preventing environmental deterioration (Edokpayi *et al.*, 2016).

The environmental and biodiversity implications of water service delivery are also a matter of concern. The effective management of protected areas and the preservation of freshwater biodiversity are crucial for attaining biodiversity objectives (Juffe-Bignoli *et al.*, 2016). Striking a balance between the requirements of human populations and the conservation of ecosystems and non-human species is a multifaceted challenge that necessitates meticulous deliberation in the development and implementation of service delivery.

In the realm of water service delivery, community radios in South Africa have a notable role in disseminating information to rural communities (Fombad & Jiyane, 2016). These radios serve as essential platforms for providing valuable insights on water resources, conservation practices, and water-related concerns to rural women and communities (Fombad & Jiyane, 2016). Having access to accurate and timely information is of utmost importance as it empowers individuals and communities to make informed decisions regarding water usage and conservation.

The historical path of water service delivery in South Africa is intricately intertwined with issues of social justice and environmental sustainability. The recognition of water as an essential human right has laid the foundation for addressing inequalities and fostering equitable access to safe water resources (Wutich *et al.*, 2016). However, challenges remain in achieving universal access and protecting water resources from contamination and degradation.

2.2.2 South African National Water Act

The South African National Water Act, No. 36 of 1998, is a crucial piece of legislation that governs the management and allocation of water resources in South Africa (Reddy, 2016). This act provides a framework for the sustainable use and protection of water resources, ensuring equitable access to water for all stakeholders, and promoting the conservation and protection of aquatic ecosystems (Reddy, 2016). The Act also recognises the importance of public participation in water resource management (Reddy, 2016). It requires the government to engage with and consult affected communities and stakeholders in decision-making processes related to water resource management (Reddy, 2016). This ensures that the voices and concerns of the public are considered and that water management decisions are transparent and inclusive. The South African National Water Act has also led to reforms in water and sanitation provision, particularly in municipalities such as eThekweni Municipality (Sutherland et al., 2014). These reforms aim to improve access to water and sanitation services, particularly for poor citizens (Sutherland et al., 2014). The Act has also contributed to the establishment of effective archives infrastructure in South Africa, ensuring compliance with legislative components (Netshakhuma, 2019). However, despite the existence of the Act and other corporate governance frameworks, municipalities in South Africa still struggle to provide services to citizens due to poor implementation (Masegare & Ngoepe, 2018). This highlights the need for effective governance and implementation of the Act to ensure the successful delivery of water services to all South Africans.

The main purpose of the National Water Act No. 36 of 1998 in South Africa is to provide a comprehensive framework for the sustainable management and allocation of water resources (Peters *et al.*, 2017). This act aims to ensure equitable access to water, promote the conservation and protection of aquatic ecosystems, and facilitate integrated water resource management (Peters *et al.*, 2017). The Act also recognises the significance of public participation in water resource management (Peters *et al.*, 2017). It requires the government to engage with and consult affected communities and stakeholders in decision-making processes related to water resource management (Peters *et al.*, 2017). This ensures that the voices and concerns of the public are taken into account, promoting transparency and inclusivity in water management (Peters *et al.*, 2017).

2.2.3 Municipal Structures Act of 1998 (Act.117 of 1998)

The South African Municipal Systems Act (Act 32 of 2000) is a key piece of legislation that governs the functioning of municipalities. It enables municipalities to exercise their executive and legislative authority (John *et al.*, 2022). The act allows municipalities to appoint external service providers or mechanisms, known as Municipal Service Partnerships (MSPs), to provide municipal services (John *et al.*, 2022). Municipal service partnerships, also known as Public-Private

Partnerships (PPPs), regulate the interface between a municipality and an external service provider (John et al., 2022). The importance of promoting active public participation in municipal affairs is emphasised by the Municipal Systems Act (Mamokhere, 2022). This is in line with the United Nations Department of Economic and Social Affairs' recommendation that institutions in all spheres of government and sectors should work together and cooperatively with non-governmental actors to address common problems (Mamokhere, 2022). Public participation during development planning is seen as a means to foster collaboration in South African municipalities (Mamokhere, 2022). The delivery of municipal services in South African municipalities can face impediments due to a range of factors. Challenges such as a dearth of specialised expertise, non-compliance with good governance principles, and the absence of a comprehensive performance monitoring and evaluation system are among the significant hurdles encountered (Worku, 2017).

The collaboration and engagement between municipalities and the Department of Health in matters pertaining to healthcare services are mandated by the Municipal Systems Act (Worku, 2017). Nevertheless, research indicates that these challenges frequently undermine the quality of municipal service delivery in townships (Worku, 2017). The involvement of stakeholders in local government matters is strongly advocated for in regulations such as the South African Constitution, the Municipal Systems Act, and the White Paper on Local Government ("Accountability in Public Services in South Africa", 2011). While these regulations support public participation, they do not specify concrete mechanisms to facilitate such participation (Accountability in Public Services in South Africa, 2011). Therefore, the South African Municipal Systems Act 32 of 2000 is a crucial legislative framework that governs the functioning of municipalities in South Africa. It empowers municipalities to exercise their jurisdiction, regulates partnerships for municipal services, encourages public participation, oversees waste management, and facilitates local economic development. However, obstacles such as skill shortages, governance concerns, and the lack of comprehensive monitoring and evaluation systems can undermine the quality of municipal service delivery. Stakeholder participation is also emphasised to ensure collaboration and cooperation in local government issues. As per Section 23 of the Structures Act, local municipalities designate councilors to act as their representatives in the district council. These council members aim to address pertinent matters affecting the local municipality and ensure coordination between district and local municipality planning and programs. In line with Section 88(3) of the Structures Act, the Member of the Executive Council for the Department of COGTA is obligated to support the district to help local municipalities face challenges.

2.3 BULK WATER SERVICES DELIVERY CHALLENGES

This section covers a review of water service delivery challenges across the following levels: global, South African, North-West province, and DRSM district.

2.3.1 Global Bulk Water Services Delivery Challenges

The delivery of bulk water services faces several global challenges that impact its effectiveness and sustainability. These challenges encompass various aspects, including governance, social-ecological systems, geomorphology, refractory materials, urban health, collaboration, access to services, neoliberalism, water law, and eco-hydrology. The political dimension of water governance is highlighted in the re-theorisation of politics in water governance (Wilson *et al.*, 2019). This emphasises the importance of decision-making, usage, and management of water, and the need to consider diverse ontologies, epistemologies, and values related to water. According to Weaver *et al.*, (2017), effective governance is essential for addressing the challenges faced in delivering water service. Water service delivery is a complex social-ecological system (C-SES) that requires a systemic approach. These systemic approaches are necessary to address bulk water delivery challenges and achieve just transitions in water service delivery. The management of transboundary rivers and the increasing pressure on ecosystem service delivery are recognised as key global challenges (Brierley *et al.*, 2018).

Geomorphological hazards and human activities significantly contribute to the degradation of water resources and ecosystem services (Grabowski *et al.*, 2014). Geomorphology, the study of landforms and the processes that shape them plays a crucial role in understanding river and water resources management. It provides valuable insights into river dynamics, sediment transport, and flood risk, which are essential for sustainable water management and infrastructure planning (Grabowski *et al.*, 2014). However, poor governance can hinder effective water service provision, leading to inadequate access to clean water and sanitation, particularly in urban areas (Chng, 2012). Effective governance structures, including transparent decision-making processes and stakeholder engagement, are essential for improving water service delivery and promoting urban health (Wuijts *et al.*, 2020). Geomorphological hazards, such as erosion and sedimentation, can have a significant impact on water resources and ecosystem services. These hazards can lead to the degradation of water quality and aquatic habitats, affecting the availability and quality of water resources (Grabowski *et al.*, 2014). Human activities, including urbanisation and land use changes, can exacerbate geomorphological hazards, further contributing to the degradation of water resources (Grabowski *et al.*, 2014). Understanding geomorphological processes is crucial for effective river and water resource management. Geomorphological assessments can inform the design of water infrastructure, such as dams and levees, to mitigate the impact of

geomorphological hazards and ensure the sustainable use of water resources (Grabowski *et al.*, 2014).

According to (Marrengane & Croese, 2020), collaboration and co-production of public services are important in addressing water and sanitation challenges. Collaborative approaches involve different stakeholders and can lead to more effective service delivery. The concept of collaboration has evolved from a focus on service delivery to encompass broader relationships, negotiation, and partnerships between various role players involved in service provision. In informal urban settlements, Victor *et al.* (2022) noted that access to a reliable supply of potable water is a major problem. Factors such as distribution network engineering, housing and network expansion planning, and public policy failures contribute to inequitable access to water and sanitation services. Addressing these challenges necessitates holistic solutions that guarantee equitable access to dependable and superior services for all individuals.

Neoliberalism has also influenced the marketisation of public services, including water delivery (Birch & Siemiatycki, 2015). The interests of private businesses have become prominent, leading to the transfer of public services to private providers. This shift raises concerns about the equitable and sustainable delivery of water services, as private interests may prioritise profit over public welfare. Water law and administration play a significant role in water governance (Araral & Yu, 2013). However, there is a lack of consensus on the scope, definition, and measurement of water governance. This hinders the development of effective policies and practices for water service delivery. Further research and collaboration are needed to enhance the understanding and implementation of water governance frameworks. Eco-hydrology is crucial for balancing food production and the preservation of water-dependent ecosystems (Rockström, 2003). Water scarcity poses a significant constraint to sustainable development, particularly in semi-arid rain-fed agriculture. Shifting towards productive green water flow and considering the eco-hydrological challenges are essential for achieving sustainable delivery of water services. Therefore, global challenges in bulk water services delivery encompass various dimensions, including governance, social-ecological systems, geomorphology, refractory materials, urban health, collaboration, access to services, neoliberalism, water law, and eco-hydrology. Addressing these challenges requires comprehensive approaches that involve effective governance, systemic thinking, collaboration, and sustainable practices.

2.3.2 Water service delivery challenges in other African countries

The delivery of water supply services in Africa faces numerous challenges that impact its effectiveness and sustainability. These challenges encompass a range of dimensions, including issues related to infrastructure failures, access to improved water and sanitation, water quality, sustainability, governance, and the implementation of technological solutions. Failures including

persistent malfunctions and complete failures of water withdrawal taps, according to (Offiong *et al.*, 2021), present a difficult situation for both water users and service providers. Important obstacles preventing the delivery of household water services in rural Africa include early identification and forecasting of smart water tap failures. Water service providers in Africa have made significant investments to ensure the long-term viability of water supply and withdrawal systems (Offiong *et al.*, 2021).

Access to improved water and sanitation is a persistent challenge in sub-Saharan Africa (Armah *et al.*, 2018). The provision of water and sanitation services is influenced by a combination of biosocial, sociocultural, and contextual factors, underscoring the importance of conducting multidisciplinary research and implementing policy interventions. (Armah *et al.*, 2018) noted that international organisations and national governments are stepping up their efforts to address the challenge due to the size and complexity of the water and sanitation problem (Armah *et al.*, 2018).

Drinking water contamination is more prevalent in rural areas compared to urban areas, with Africa and Southeast Asia experiencing higher levels of contamination. Microbial contamination affects all types of water sources, including piped supplies, highlighting the need for improved water quality management (Bain *et al.*, 2014). According to (Foster, 2013), sustainability is a long-standing policy challenge in rural water supply in sub-Saharan Africa. Factors such as system age, distance from district/county capitals, and absence of user fee collection are associated with the non-functionality of community-managed handpumps. These risk concerns must be addressed for rural water supply systems to be sustainable (Foster, 2013). Townships, which are urban areas of towns historically reserved for Black people, confront unique difficulties in providing water services. Local municipalities, categorised as Category B2 municipalities, are responsible for household water supply and face significant challenges in delivering water services in townships (Weaver *et al.*, 2017).

Technological solutions can contribute to improving water service delivery in Africa. Deep learning tools have been used to model failures in smart water taps, enabling early detection and prediction of failures (Offiong *et al.*, 2021). Cellular instrumentation on rural handpumps has also been evaluated to improve service delivery and ensure reliable and sustained water supply (Nagel *et al.*, 2015). Therefore, the delivery of water supply services in Africa faces several issues that compromise its effectiveness and sustainability. These encompass issues such as deficiencies in infrastructure, the availability of improved water and sanitation facilities, water quality concerns, the sustainability of water services, governance challenges, and the implementation of technological solutions. Addressing these challenges requires interdisciplinary approaches, improved governance frameworks, investment in infrastructure, and the adoption of appropriate technological solutions to ensure reliable and sustainable water service delivery in Africa.

2.3.3 Challenges in Bulk Water Services Delivery in South Africa

In South Africa, the provision of bulk water services faces complex issues that substantially affect the efficiency of water service delivery across the nation. The factors influencing the delivery of these services encompass governance, infrastructure management, institutional challenges, and societal change. These issues notably affect the availability, quality, and long-term viability of water services, particularly in local municipalities. The governance structure in South Africa is a key determinant in shaping the delivery of these services. Significant obstacles like political interference and institutional inefficiencies have been identified as impediments to effective water service delivery (Mngomezulu, 2020). Effective political administration is crucial for improving service delivery at the municipal level and for fostering effective local governance (Reddy, 2016). Additionally, the models of governance and funding strategies for water infrastructure play a pivotal role in investment decisions and access to fundamental water and sanitation services (Ruiters & Matji, 2016).

The delivery of bulk water services in South Africa faces numerous challenges that impact its effectiveness and sustainability. These challenges encompass a variety of elements, including concerns related to infrastructure, the accessibility of enhanced water and sanitation services, water quality issues, governance obstacles, financial limitations, and the impact of external factors such as climate change and the COVID-19 pandemic. The delivery of bulk water services in South Africa faces a significant challenge in the form of infrastructure failures (Ditthebe *et al.*, 2019). These challenges arise due to the aging of infrastructure, insufficient maintenance, and inadequate investment in water infrastructure assets. These challenges can result in setbacks in the timely delivery of water infrastructure assets and impede the provision of dependable water services (Ditthebe *et al.*, 2019). The challenge of ensuring access to improved water and sanitation continues to persist in South Africa (Aiyetan & Das, 2021). Despite endeavors to enhance access to basic water services, certain regions, particularly small centers and rural nodes, still face ongoing issues with infrastructure quality (Mutamba, 2019). To tackle these challenges, it is imperative to implement focused interventions that guarantee equal access to water services for all individuals in South Africa. Water quality is a pressing issue that demands significant attention in the delivery of bulk water services in South Africa (Mutamba, 2019). Contamination of water sources, particularly in rural areas, poses health risks to communities. Ensuring water quality standards and implementing effective monitoring and treatment measures are essential for delivering safe and clean water to the population. The significance of governance cannot be overstated in the provision of water services in South Africa (Ruiters & Matji, 2016). The current water institutions and governance models have encountered difficulties in terms of insufficient investments, restricted availability of essential water and sanitation services, and ineffective

management of water infrastructure (Ruiters & Matji, 2016). Addressing these governance challenges is essential to enhance the provision of bulk water services.

Funding and financing are significant challenges in the water infrastructure value chain in South Africa (Ruiters & Amadi-Echendu, 2022). Limited financial resources and competing priorities pose constraints on investment in water infrastructure. Developing sustainable investment models and prioritising funding for water infrastructure projects are essential for ensuring the long-term delivery of bulk water services. The provision of bulk water services in South Africa is additionally confronted by external factors, such as the impacts of climate change (Maphela & Cloete, 2019). Changing rainfall patterns, increased frequency of droughts, and rising temperatures impact water availability and quality. Adapting water infrastructure and management strategies to the changing climate is crucial for ensuring resilient and sustainable water service delivery.

The challenges in water service delivery in South Africa have been further underscored by the COVID-19 pandemic (Blignaut *et al.*, 2020). The lack of personal protective equipment, interruptions to electricity and water supplies, and the need for infection control measures have posed additional challenges for dental professionals delivering water-dependent services. It is crucial to implement and embrace suitable measures to alleviate these challenges, ensuring the secure provision of water services during the pandemic. Therefore, the delivery of bulk water services in South Africa faces various challenges that impact its effectiveness and sustainability. The challenges encompassed in this context consist of issues related to infrastructure deficiencies, access to enhanced water and sanitation facilities, water quality concerns, governance matters, funding and financing limitations, and the influence of external factors like climate change and the COVID-19 pandemic. Addressing these challenges requires comprehensive approaches that involve investment in infrastructure, improved governance frameworks, sustainable funding models, and adaptation to changing circumstances to secure the provision of dependable and sustainable delivery of bulk water services.

2.3.4 Challenges of Bulk Water Services Delivery in the North-West Province

The delivery of bulk water services in the North-West Province faces numerous challenges that impact its effectiveness and sustainability. These challenges encompass a range of factors, including issues with infrastructure, the availability of enhanced water and sanitation services, concerns about water quality, governance matters, funding and financing limitations, and the influence of external factors like climate change and the COVID-19 pandemic. According to Ditsebe *et al.*, (2019) provision of bulk water services in the North-West Province is significantly hampered by infrastructure failures. These failures can result from aging infrastructure, lack of maintenance, and inadequate investment in water infrastructure assets. Ditsebe *et al.*, (2019) also observed that the perceived presence of these challenges leads to delays in the provision of

water infrastructure assets and impedes the delivery of dependable water services. According to (Coetzee *et al.*, 2016), access to improved water and sanitation remains a persistent challenge in the North-West Province. Despite endeavors to enhance the availability of essential water services, there are still regions, particularly in rural communities, where challenges related to infrastructure quality persist. The provision of water services in these areas requires targeted interventions to ensure equitable access for all residents of the North-West Province. Coetzee *et al.*, (2016) also highlighted water quality as another critical concern in the North-West Province's bulk water services delivery. Contamination of water sources, particularly in rural areas, poses health risks to communities. Ensuring water quality standards and implementing effective monitoring and treatment measures are essential for delivering safe and clean water to the population of the North-West Province.

According to Ruiters and Matji (2016), the water institutions and governance models currently in place have encountered difficulties in terms of insufficient investments, restricted availability of basic water and sanitation services, and ineffective management of water infrastructure. Addressing these governance challenges is essential to enhance the provision of bulk water services in the North-West Province. The water infrastructure value chain in the North-West Province faces significant challenges in terms of funding and financing (Ruiters & Matji, 2016). Limited financial resources and competing priorities pose constraints on investment in water infrastructure. To ensure the sustainable provision of bulk water services in the province, it is crucial to establish viable investment models and prioritise funding for water infrastructure projects in the long run.

External factors, including climate change, present additional obstacles to the delivery of bulk water services in the North-West Province (Gräwe *et al.*, 2016). Changing rainfall patterns, increased frequency of droughts, and rising temperatures impact water availability and quality. Adapting water infrastructure and management strategies to the changing climate is crucial for ensuring resilient and sustainable water service delivery in the province. As per Weaver *et al.* (2017), the COVID-19 pandemic has highlighted the pre-existing challenges in water service delivery in the province. The lack of personal protective equipment, interruptions to electricity and water supplies, and the need for infection control measures have posed additional challenges for delivering water services during the pandemic. Adapting and adopting appropriate measures to mitigate these challenges is essential for ensuring the safe and reliable provision of water services in the North-West Province.

2.3.5 DRSM district municipality bulk water services delivery challenges

The efficiency and long-term viability of bulk water service delivery in the DRSM District Municipality are impacted by a range of challenges. These challenges encompass diverse

elements, such as issues with infrastructure, the availability of enhanced water and sanitation facilities, water quality concerns, governance matters, funding and financing constraints, and the necessity for ecosystem-based approaches. The DRSM District Municipality encounters a substantial obstacle in the provision of bulk water services as a result of infrastructure failures (Hellberg, 2019). These failures can result from aging infrastructure, lack of maintenance, and inadequate investment in water infrastructure assets. According to (Hellberg, 2019), the perceived prevalence of these difficulties delays the delivery of water infrastructure assets and impedes the supply of reliable water services.

Access to improved water and sanitation remains a persistent challenge in the DRSM district municipality (Harris, 2019). Despite efforts to enhance the availability of essential water services, there are still areas, particularly in rural communities, where infrastructure quality challenges persist (Harris, 2019). To ensure fair access for all residents in the district, targeted interventions are required in the provision of water services in these areas. Moreover, the DRSM district municipality places great emphasis on water quality in the delivery of its bulk water services (Makaya *et al.*, 2020). Contamination of water sources, particularly in rural areas, poses health risks to communities. Ensuring water quality standards and implementing effective monitoring and treatment measures are essential for delivering safe and clean water to the population of the district. Governance plays a crucial role in water service delivery in the DRSM district municipality (Makaya *et al.*, 2020).

The existing water institutions and governance models have faced challenges in terms of inadequate investments, limited access to basic water and sanitation services, and ineffective management of water infrastructure (Makaya *et al.*, 2020). Addressing these governance challenges is crucial for improving the delivery of bulk water services in the district. Funding and financing are significant challenges in the water infrastructure value chain in the DRSM district municipality (Knüppe, 2011). Limited financial resources and competing priorities pose constraints on investment in water infrastructure. Developing sustainable investment models and prioritising funding for water infrastructure projects are essential for ensuring long-term bulk water services delivery in the district. Ecosystem-based approaches have the potential to play a pivotal role in tackling water challenges in the DRSM district municipality (Stosch *et al.*, 2017). These approaches recognise the importance of healthy ecosystems in providing water-related services and benefits. Restoring wetlands and implementing catchment-based solutions can improve water quality, flood buffering, carbon storage, and habitat provision (Stosch *et al.*, 2017). The analysis of public policies and programs is essential for addressing water security in the DRSM district municipality (Adom & Simatele, 2021).

Understanding the interactions between water management institutions and the roles they play is crucial for effective water resources management. Involving community leaders in water resources management can enhance local participation and ensure the sustainable delivery of water services (Adom & Simatele, 2021). Therefore, bulk water delivery services in the DRSM district municipality face various challenges that impact their effectiveness and sustainability. These challenges include infrastructure failures, the availability of enhanced water and sanitation facilities, water quality concerns, governance matters, funding and financing constraints, and the necessity for ecosystem-based approaches. Addressing these challenges requires comprehensive approaches that involve investment in infrastructure, improved governance frameworks, and sustainable funding models. Table 2.1 below is an illustration of the challenges as perceived by the DRSM district municipality in 2014. Operations and maintenance, staff skills levels, and management skills levels were recorded as some of the areas that need attention and focus.

Table 2.1: Self-assessment indicators and their corresponding scores

Component	Rating
Management skill level (technical)	35%
Staff skill levels (technical)	40%
Infrastructure asset management	Not provided
Operation and maintenance (O & M) of assets	40%
Financial management	Not provided
Revenue collection	Not provided

Source: 2014 DRSM district municipality Annual Municipal Strategic Self-Assessment

2.4 THE RIGHT TO WATER ACCESS

Woodhouse and Muller (2017:226) propose the concept of water as a "fugitive" resource, highlighting its uneven distribution, variability, and potential for regeneration within the ecosystem. This perspective aligns with the notion that water is essential for both social and economic purposes. However, detractors claim that the idea of human rights does not bind together the various social strata because special privileges are accorded to royalty and powerful people, which results in structural oppression (Brysk, 2017:4).

Even though these rights were initially established to protect common people, sadly they are still being violated (Brysk, 2017). According to (Colin *et al*, 2016), others doubt the viability of each country's policy. Although numerous countries have enshrined the right to clean water and sanitation in their constitutions, there is a debate regarding the insufficient reflection and implementation of the underlying principles of these rights in the national laws, policies, and regulations of those countries (Colin *et al.*, 2016). According to Wutich *et al.* (2016), ensuring the

application of human rights to water for all citizens within a nation is an exceedingly difficult undertaking. The authors assert that despite the government's efforts to improve urban water access, many squatter settlements, shanty towns, and slums continue to be excluded from municipal water schemes. Because of the continual proliferation of these communities in metropolitan regions, the government cannot maintain a detailed database of informal settlements in desperate need of water.

2.5 ELEMENTS AFFECTING LOCAL GOVERNMENT SERVICES DELIVERY

Local governments in South Africa face various elements that can make it difficult for them to deliver services effectively. One of the challenges is the historical advantage of certain areas, which need to be maintained and upgraded to ensure the financial sustainability of municipalities (Reddy, 2016). Furthermore, the rising occurrence of protests related to service delivery is a cause for alarm, as the ineffectiveness of local government can have adverse consequences on the overall welfare of South Africa (Reddy, 2016). Corporate governance practices also play a role in service delivery. Implementing a framework for corporate governance in the municipal sector can improve performance and practices (Masegare & Ngoepe, 2018).

Integrating governance elements into the development of municipal sector Integrated Development Plans (IDPs) can facilitate the implementation of good governance practices (Masegare & Ngoepe, 2018). Community leaders in informal settlements play a crucial role in the maintenance of public services. They act as intermediaries between the communities and the city, facilitating access to public services (Vivier & Sanchez-Betancourt, 2020). These leaders navigate different social and institutional contexts, fulfilling their roles without the same authority and legitimacy as leaders in formal organisations (Vivier & Sanchez-Betancourt, 2020).

Service delivery inequality is another challenge faced by local governments in South Africa. Service delivery levels exhibit significant disparities between affluent urban districts and impoverished rural areas (Sartorius & Sartorius, 2016). Although the absolute levels of service delivery may vary, there is minimal inequality in service delivery between the wealthiest urban districts and the most deprived rural areas (Sartorius & Sartorius, 2016).

The implementation of policies and the provision of public services are shaped by the democratic nature of the government. Generally, democratic systems exhibit greater proficiency in delivering public services in comparison to autocratic regimes (Kroth et al., 2016). The enfranchisement and liberalisation of political organisations contribute to improved service delivery (Kroth et al., 2016). Compliance with the Access to Information Act is another challenge for local governments in South Africa. Public engagement with local government is lower compared to other levels of government, and public services remain poor, leading to service delivery protests (Berliner 2016).

Ensuring compliance with access to information acts can improve transparency and accountability in local government (Berliner, 2016).

Lastly, the inability of decentralisation to stimulate regional and local economic development is acknowledged as a challenge confronted by local governments in South Africa (Khambule 2021). Deconcentration, which involves allocating national administrative powers and resources to the regional level, has the potential to rejuvenate local economies and address the constraints of decentralisation (Khambule, 2021).

In the DRSM district municipality, ensuring the sustainability of bulk water delivery services necessitates the presence of effective financial management and capacity, strong municipal capabilities, the fulfillment of political and administrative responsibilities at the local level, good governance practices, and active public involvement (Muzondi, 2014). The municipality must prioritise investments in water infrastructure, equipment, and personnel and develop appropriate financial management practices. In addition, the municipality must prioritise the development of essential technical and managerial capabilities to effectively manage water supply systems. It is crucial to establish appropriate institutional structures and procedures that facilitate the efficient and effective delivery of water supply services (Muzondi, 2014).

2.5.1 The state of Infrastructure

The state of municipal infrastructure is influenced by a multitude of factors that dictate how essential services are provided and maintained. These include governance, political dynamics, the management of infrastructure, public accountability, engagement with the community, and financial planning strategies. Grasping these components is vital for tackling the prevailing challenges and enhancing infrastructure in these municipalities.

The influence of governance and politics is paramount in determining the effectiveness of infrastructure services. (Sartorius & Sartorius, 2016) demonstrate the value of geospatial mapping in assessing and visualising disparities in service delivery at the local level in South Africa, highlighting the importance of tailoring policy actions to reflect differences across jurisdictions. Additionally, (Reddy, 2016) underscores the significance of competent political administration in improving services at the municipal level and achieving effective governance locally.

The management of infrastructure and fiscal planning also play key roles in the state of municipal infrastructure. Halfway (2008) points out the difficulties in integrating processes for managing municipal infrastructure assets, stressing the need to overcome fragmentation in processes and data for efficient management approaches. Smith and Hanson (2003) explore the implications of cost-recovery policies and the underinvestment in infrastructure, particularly in the water sector.

Their work focuses on the balance between equity and cost recovery in ensuring water access for impoverished urban populations in Cape Town.

Moreover, the aspects of public accountability and community involvement are fundamental to the betterment of municipal infrastructure. Brown-Luthango (2010) accentuates the pivotal role of municipal infrastructure in eliminating socio-spatial disparities as a component of broader poverty alleviation strategies. In addition, Mngomezulu (2020) analyses the effects of political meddling in the management of service delivery in the Umlalazi Local Municipality in KwaZulu-Natal, South Africa. This study sheds light on the obstacles encountered by municipal staff and political factions within the administrative realm of the municipality.

According to the Auditor-General, municipalities frequently receive funding and support from the federal government for infrastructure projects, but they frequently underspend on their budgets and fall short of project deadlines due to poor financial, performance, and project management. Project delays are unnecessary because of poor planning, insufficient monitoring and oversight of contractors, and subpar workmanship. Targets are still being missed or severely delayed. The recurrent breakdown of water infrastructure, leading to disruptions in the continuous provision of water services, underscores the necessity to tackle systemic challenges and enhance the operational efficiency of water infrastructure in developing nations (Adeniran *et al.*, 2021). This is particularly relevant in the context of the DRSM district municipality, where the malfunctioning of water infrastructure can lead to disruptions in water supply and sanitation services.

According to the Green Drop Report, 2013, approximately 49.6% of South Africa's 824 wastewater treatment facilities were classified as being in critical or poor condition, necessitating immediate attention and the situation has been worsening ever since. Unfortunately, there has been no subsequent information published regarding their current state. There have been growing reports of untreated sewage overflowing into vital water resources, posing a significant threat to water quality. In response to the pollution crisis in the Vaal River, the national government has recently intervened by involving the military to provide engineering and other necessary expertise. As a result, the South African Human Rights Commission is currently conducting an urgent investigation into the matter.

2.5.2 Infrastructure planning

Planning infrastructure within South African municipalities is vital for sustainable growth and the efficient delivery of services. Recent discussions have raised concerns about the condition of infrastructure in South Africa, particularly the lack of focus on maintaining and renewing assets in both metropolitan and rural areas (Bikam & Chakwizira, 2021). The complexities surrounding the planning of green infrastructure in the country have been explored, underlining the necessity for progress in this area (Cilliers, 2019). Additionally, it has been observed that South Africa's

infrastructure performance falls short when measured against international benchmarks, revealing a noteworthy deficiency in existing research (Dithebe *et al.*, 2019).

The critical need for enhancing capabilities in under-resourced local municipalities, especially those looking to leverage tourism for local economic growth, has been stressed, thus underscoring the significance of infrastructure planning in economic development at the local level (Rogerson, 2016). Moreover, a study focusing on the execution of water infrastructure projects in South Africa has identified various challenges and strategic approaches for effective project implementation, filling an important research gap (Aiyetan & Das, 2021). Furthermore, the deliberate allocation of funds for infrastructure projects by municipalities has been employed as a means to correct the social and economic disparities entrenched by apartheid, thus highlighting the social and economic implications of strategic infrastructure planning (Kgobe & Mamokhere, 2021).

According to the Municipal Systems Act (2000) municipalities are obligated to adopt an IDP to guide the overall development of the municipality. This plan necessitates aligning the municipality's resources and capacity with the implementation of the IDP, along with meeting other specified requirements. Additionally, each municipality, acting as a water services authority, is required to establish a water services development plan (WSDP) that outlines the municipality's strategy for providing water services to all consumers (Brettigny & Sharp, 2016). However, despite the importance of these plans, IDPs and WSDPs often suffer from being outdated or inadequately implemented.

According to the Auditor General, approximately 50% of municipalities categorised as water services authorities did not have a maintenance strategy in place for their water infrastructure (AGSA, 2022). Additionally, a significant number of municipalities failed to conduct condition assessments of their infrastructure to inform their plans and budgets. The majority of municipalities are now subject to crisis management as a result of the municipal trend of inadequate planning. For instance, most of the time maintenance is now done on a reactive basis rather than as a preventive measure.

2.5.3 Infrastructure funding

Securing funds for infrastructure in South African local governments is pivotal for achieving sustainable growth and ensuring the effective provision of services. The guidelines for the Municipal Infrastructure Grant (MIG) detail the sources of funding for infrastructure, which encompass national and provincial allocations, internal revenue generation, and borrowing by the municipalities. This funding is allocated for the creation of new infrastructure, including roads, water supply systems, electrical grids, and sewerage facilities (Bikam & Chakwizira, 2021). Furthermore, research on the delivery of water infrastructure projects in South Africa has

pinpointed both obstacles and strategic solutions for the successful execution of these projects, thereby filling a notable void in existing research (Aiyetan & Das, 2021). In addition, the hypothesis of beneficial productive externalities arising from new infrastructure developments in South Africa has been proposed, highlighting the prospective economic gains from such development (McCallum & Viviers, 2020).

One approach to funding water infrastructure projects is through Public-Private Partnerships (PPPs). Ruiters and Matji (2016) proposed a conceptual framework and models for financing and funding water services infrastructure in South African municipalities. The research identifies three PPP models that can be employed to finance water infrastructure projects at the local government level. These models entail collaboration between the public and private sectors to combine resources and expertise for infrastructure development.

Another barrier to investment in water infrastructure is the restricted availability of funding from state and federal programs. Mullin (2022) emphasises that grants provided by these programs account for less than 3 percent of investments in drinking water systems in the United States. Consequently, local governments frequently resort to debt financing to support capital projects, with approximately 65 percent of water infrastructure investments being financed through loans.

In addition to funding challenges, municipalities also face obstacles in managing and maintaining water infrastructure. (Alm *et al.*, 2021) highlight the importance of capacity building in municipalities to overcome a "run-to-failure" mentality in infrastructure maintenance. The study emphasises the need for effective management and organisation of maintenance activities for municipal roads and water and sewage infrastructure.

To address the funding gap for water infrastructure projects, governments need to explore new institutional structures and funding models. Ruiters (2013) highlights the significance of creating alternative funding models to enhance the management of national water infrastructure. The study suggests investigating funding models implemented in similar emerging economies, such as Brazil, Mexico, and India, to identify potential solutions. Therefore, funding water infrastructure projects is a significant challenge for municipalities. Public-private partnerships, debt financing, and alternative funding options like municipal Islamic bonds can provide avenues for funding. However, governments must establish novel institutional frameworks and financing mechanisms to guarantee the delivery of secure and dependable water services to communities. The development of capacity and the implementation of efficient maintenance strategies are also vital for the long-term sustainability of water infrastructure management.

2.5.4 Infrastructure Project management

Management of infrastructure projects in municipalities across South Africa is essential for sustainable growth and the delivery of effective services. Concerns have been raised regarding the upkeep and renewal of infrastructure assets in both urban and rural areas, with insufficient attention being paid to these aspects (Mazele & Amoah, 2021). The need for capacity enhancement in under-resourced municipalities, especially those focusing on tourism for local economic advancement, has been stressed, underlining the significance of infrastructure planning in regional economic growth (Halfawy, 2008). Moreover, the root causes of inadequate infrastructure management and maintenance within these municipalities have been pinpointed, highlighting the necessity for efficient management and upkeep strategies to ensure effective service provision and to reduce service delivery protests (Mazele & Amoah, 2021).

The challenge of integrating municipal infrastructure asset management processes has been acknowledged, along with specific recommendations to overcome these challenges (Halfawy, 2008). In addition, issues leading to inefficiencies in the South African construction sector have been identified, stressing the importance for public sector entities to ensure that project management responsibilities in construction are assigned to suitably skilled and competent in-house professionals (Emuze et al., 2014). Furthermore, a study on supply chain management within a South African metropolitan municipality has uncovered indications of declining accountability in municipal financial management and performance (Sibanda et al., 2020).

To maximise economic and social welfare without jeopardising the sustainability of essential ecosystems, a process known as integrated water resource management (IWRM) is advocated (Global Water Partnership, 2000; DWAF, 2004a). IWRM coordinates the development and management of water and land. IWRM seeks to gradually enhance all facets of water resource management, including the methods for gathering, storing, distributing, conserving, and maintaining clean water. The goal of IWRM is to strike a balance between the social, environmental, and technological facets of managing water resources.

The National Water Act of South Africa Act 36 of 1998 (NWA) encourages the management of water resources using an integrated catchment-based strategy. By making water "everybody's business," the law encourages a more equitable and environmentally responsible use of our water resources. We all have a right to water, Likewise, they are entitled to a say in how it is managed and distributed, with that sway being organised according to catchments (NWA, Chapters 2 and 7). Strategically positioned between the national policy-making process is the Local Government (LG). The active participation of local communities and water consumers is essential in the management of water resources, particularly through their engagement in Integrated Water Resources Management (IWRM) processes. The United Nations emphasises the importance of

safeguarding freedom, quality of life, and the fulfillment of all human rights, including the right to access water. According to (Takacs, 2016), human rights to water encompass the entitlement to a minimum quantity of water necessary to meet basic daily needs. (Schorr, 2017) further defines these rights as the guarantee of access to a sufficient amount of water to fulfill essential requirements. Baquero, De Palencia, and Foguet, (2016) argue that in the context of the Sustainable Development Goals (SDGs), measuring water access necessitates framing it within a human rights framework. This definition aligns with the perspective that discussions on water access should exclusively take place within the framework of human rights to ensure coherence with the objectives of the relevant SDGs.

2.5.5 Operations and Maintenance

Operation and maintenance of municipal infrastructure are fundamental to ensuring the continued functionality and sustainability of vital public services. A growing concern has been observed regarding the state of municipal infrastructure across South Africa, where both metropolitan and rural municipalities often neglect the essential maintenance and renewal of their infrastructure assets (Bikam & Chakwizira, 2021). This oversight has implications for the longevity and effectiveness of these assets. Further, Bikam and Chakwizira (2021) stress that the careful operation and regular maintenance of municipal infrastructure assets are indispensable for local governments to provide basic yet crucial services to their communities. These services range from water and electricity supply to road maintenance and waste management, all of which are critical for the day-to-day life of residents.

Moreover, research conducted by Mazele and Amoah (2021) identifies the root causes of the prevalent issues in infrastructure management and maintenance within South African municipalities. Their study emphasises the necessity for implementing effective management strategies that not only maintain infrastructure but also ensure the efficient delivery of services. This is crucial to avoid protests and dissatisfaction among citizens due to poor service delivery. In addition, the work of Simelane *et al.* (2020) advocates for the maintenance of existing infrastructure, particularly focusing on water systems. Their findings indicate that such maintenance is vital for improving water use efficiency and is key to achieving sustainable water security in South African urban areas. Furthermore, the study by Magagula *et al.* (2022) examines the role of district municipalities in service provision within South Africa. Their research reveals challenges such as political interference and fiscal mismanagement, which significantly hinder effective infrastructure maintenance and the provision of services. These challenges not only impact the quality of services but also the trust and confidence of the public in local governance.

Lastly, an investigation into the control and accountability aspects of supply chain management in a South African metropolitan municipality, as discussed by Mazele and Amoah (2021), reveals

a concerning decline in accountability in municipal financial management and performance. This decline signals broader challenges in the financial management and allocation of resources, which are essential for the maintenance and upgrading of infrastructure.

2.5.6 Revenue Collection of the DRSM district municipality

The efficiency of revenue collection by South African municipalities plays a pivotal role in local governance and the provision of services. Collecting revenue is fundamental for financing public utilities and infrastructure development. Nevertheless, various challenges in this area can affect the financial stability and the capability of municipalities to deliver services. Recent scholarly investigation has focused on the existing mechanisms of revenue collection and their influence on the financial health of municipalities (Bikam & Chakwizira, 2021). Bikam and Chakwizira (2021) have highlighted the difficulties particularly faced by rural municipalities in South Africa in enhancing their revenue streams, which is crucial for the effective operation and maintenance of municipal infrastructure. The research points out the restricted capacity of rural municipalities to expand their revenue sources, impacting their potential to sustain and develop infrastructure. This situation stresses the critical role of revenue collection in maintaining municipal operations and ensuring service delivery.

The effect of intergovernmental fiscal transfers on local revenue collection has also been a subject of interest in academic circles (Litschig & Morrison, 2013). Litschig and Morrison (2013) examined areas with low self-generated revenue, probing whether this situation results from a strategic decision or reflects an inherent difficulty in raising local revenue. This examination sheds light on the intricate relationship between intergovernmental transfers and local revenue collection, suggesting that a more comprehensive understanding of the variables that affect revenue collection at the local level is needed.

The maintenance and revenue collection of the DRSM district municipality's bulk water services face various challenges that impact their effectiveness and sustainability. These challenges encompass aspects such as infrastructure maintenance, revenue collection strategies, financial constraints, and the need for effective governance and institutional frameworks. Infrastructure maintenance is a crucial aspect of ensuring the reliable delivery of bulk water services in the DRSM district municipality (Bikam & Chakwizira, 2021). Proper maintenance of water infrastructure, including pipelines, treatment plants, and storage facilities, is essential to prevent failures and ensure the continuous supply of clean water to the residents. Neglecting maintenance can lead to infrastructure deterioration, increased costs, and service disruptions.

Revenue collection strategies play a vital role in sustaining the operation and maintenance of bulk water services in the district (Kaza *et al.*, 2018). Effective revenue collection mechanisms, such as billing systems, metering, and tariff structures, are necessary to generate sufficient funds to

cover operational and maintenance costs. Implementing efficient revenue collection strategies can help ensure the financial sustainability of water services. Financial constraints pose a significant challenge to the maintenance and revenue collection of bulk water services in the DRSM district municipality (Keller, 2014). Limited financial resources, competing priorities, and high levels of poverty can hinder the municipality's ability to invest in infrastructure maintenance and collect sufficient revenue. Finding innovative funding and financing mechanisms is crucial to overcome these financial constraints. Effective governance and institutional frameworks are essential for the maintenance and revenue collection of bulk water services (Alm *et al.*, 2021). Clear policies, regulations, and procedures need to be in place to guide maintenance activities and revenue collection processes. Strong governance structures, including effective oversight and accountability mechanisms, can help ensure the efficient and transparent management of water services. Inadequate maintenance of water infrastructure can lead to increased costs and service disruptions (Vogt *et al.*, 2015). Neglecting maintenance can result in the need for costly repairs or replacements, which can strain the municipality's financial resources. On the other hand, investing in regular maintenance can help prevent major failures and reduce long-term costs.

The implementation of effective revenue collection strategies is crucial for sustaining the operation and maintenance of bulk water services (Silombela *et al.*, 2018). Efficient billing systems, accurate metering, and fair tariff structures can help ensure that users pay for the services they receive. Implementing measures to address non-payment and improve revenue collection can enhance the financial sustainability of water services. Financial constraints can pose challenges to the maintenance and revenue collection of bulk water services (BenDor *et al.*, 2020). Limited financial resources can hinder the municipality's ability to invest in infrastructure maintenance and upgrade projects. Finding innovative funding sources, such as partnerships with the private sector or accessing government grants, can help overcome these financial constraints. Effective governance and institutional frameworks are essential for the maintenance and revenue collection of bulk water services (Manara, 2022). Clear policies, regulations, and procedures need to be in place to guide maintenance activities and revenue collection processes. Strong governance structures, including effective oversight and accountability mechanisms, can help ensure the efficient and transparent management of water services.

2.5.7 Infrastructure governance

The governance of water infrastructure at the municipal level plays a vital role in ensuring the efficient management and provision of water services to communities. Several challenges and factors impact the governance of water infrastructure in municipalities. According to Dithebe *et al.* (2019), several challenges contribute to delays in the delivery of water infrastructure assets.

These challenges include corruption, weak project structuring, high fiscal deficits by state governments, constraints in cost recovery, high credit risk for private financing, and unreliable planning and procurement processes. The study also highlights the importance of addressing corruption and improving financial management transparency to enhance municipal creditworthiness. The recent fate of local economic development (LED) in many parts of South Africa has been affected by a combination of corruption and poor governance in local governments, chronic power shortages, and desperate drought conditions ((Nel & Rogerson, 2015). This highlights the significant impact of governance on the trajectory of applied LED and the challenges faced in local economic development initiatives. Additionally, the implementation of improved legislation and the inclusion of foreign investment are suggested to overcome these challenges (Dithebe *et al.*, 2019). These challenges hinder the efficient and timely completion of infrastructure projects, leading to delays in providing essential water services to communities.

The governance of municipal infrastructure also intersects with broader issues of urban governance and public service provision. Through the example of a major instance of governance collapse in the Emfuleni local municipality, the fault lines in the legal and structural architecture underlying governance of South African cities and towns have been discussed, shedding light on the challenges faced in urban municipal governance (Pieterse, 2020). In the realm of governance, municipal governments play a pivotal role as the primary stewards of water infrastructure delivery. However, they frequently encounter challenges in securing support from private capital due to factors such as political-administrative instability, uncertainty in legislation and policies, and insufficient risk-adjusted returns (Dithebe *et al.*, 2019). Enhancing governance requires addressing issues of corruption and non-transparent financial management, which can ultimately bolster the creditworthiness of municipalities. Furthermore, the implementation of improved legislation and the inclusion of foreign entities can contribute to the advancement of governance practices (Dithebe *et al.*, 2019).

Furthermore, the governance of water infrastructure in municipalities requires a hybrid model that involves the private sector in financing, planning, implementation, and maintenance (Dithebe *et al.*, 2019). This model allows for the leveraging of private sector expertise and resources, leading to more efficient and effective infrastructure development and management.

In the context of developing countries like Pakistan, urbanisation poses additional challenges to water infrastructure governance. Haider and Badami (2010) emphasise the importance of local governments and the need for constitutional cover to address the deteriorating state of municipal services and infrastructure. Strengthening local governance structures can contribute to improved service delivery and infrastructure management in urban areas.

2.6 SUMMARY

The literature review thoroughly investigates a range of studies, theoretical perspectives, and key findings that are directly relevant to the posed research question. It meticulously identifies and discusses central themes, emerging trends, and notable deficiencies within the existing literature. Additionally, the review delves into the theoretical underpinnings that are crucial for the study, thereby offering a well-rounded context and strong justification for the selected research methodology. It specifically validates the employment of semi-structured interviews, underscoring their unique ability to unearth deep, detailed, and complex insights, which might remain undiscovered through quantitative research methods. This comprehensive review thereby creates a robust foundation and context for the forthcoming empirical investigation, enabling a meaningful comparison and discussion of the new research findings against the backdrop of existing knowledge.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

This research explores the challenges in delivering bulk water services in the DRSM district municipality in the North-West Province. The main objective of this chapter is to describe the methodology utilised for gathering and analysing data. It provides a detailed explanation of the research design, data collection methods, sampling strategy, data analysis techniques, and ethical considerations. The chapter delves into the various data collection methods utilised, such as surveys and focus group discussions. Furthermore, it elucidates the sampling strategy employed to select participants and the data analysis methods employed to scrutinise the collected data. The chapter concludes by addressing the study's limitations and highlighting the ethical considerations that were taken into consideration. A comprehensive methodology is crucial for ensuring that the study provides valid and reliable results that can inform policy and practice in delivering bulk water services in the DRSM district municipality in the North-West Province.

3.2 RESEARCH METHODOLOGY

The primary objective of this study is to explore the challenges faced by the DRSM district municipality in achieving its obligation of supplying bulk water services to the five local municipality distribution points as envisaged per "Section 83 of the Municipal Structures Act of 1998". Therefore, the research was to extract lessons from previous experiences to pinpoint areas for enhancement, thereby facilitating the development of novel approaches to ameliorate conditions within the DRSM district municipality. This necessitated an acknowledgment of the existing shortcomings and strategies for their rectification to enhance the delivery of bulk water services within the DRSM district municipality. Accordingly, the research adopted an interpretivist paradigm.

Reflecting the nature and goals of this study, a qualitative methodology was identified as the most fitting. As such, data collection methods (like interviews) and data analysis approaches (such as data categorisation) that generate or employ non-numerical data are commonly classified as 'qualitative', as elucidated by (Saunders, 2016).

Exploring bulk water services delivery challenges in the DRSM district municipality in the North West Province required a qualitative data collection method. The qualitative approach was chosen to understand the experiences and perspectives of the stakeholders involved in delivering bulk water services in the district.

Qualitative research methodology in service delivery research contributes to the development of evidence-based practices and policies. This offers a more profound comprehension of the intricacies and difficulties associated with delivering services, enabling the implementation of

focused interventions and enhancements. By employing rigorous qualitative research methods, researchers can generate valuable insights that inform service delivery practices and contribute to the overall enhancement of service quality and outcomes (Ojiako, 2012).

3.2.1 Justification for using qualitative research

One key justification for using qualitative research approaches in service delivery was the ability to gain in-depth insights into the experiences, perspectives, and needs of service users. Qualitative research methods, such as interviews allow researchers to engage directly with individuals and explore their subjective experiences and perceptions (İldeş & Göçer, 2019). This qualitative data provides rich and detailed information that can inform service design, delivery, and improvement efforts. Another justification for using qualitative research approaches is the opportunity to explore complex and context-specific factors that influence service delivery. Qualitative research allows for a deep understanding of the social, cultural, and organisational dynamics that shape service provision (Curry et al., 2009). By examining the perspectives of service providers, administrators, and other stakeholders, qualitative research can uncover barriers, facilitators, and best practices in service delivery.

3.3 DATA COLLECTION METHODS

Data collection is one of the most crucial stages in any research effort (Bryman & Bell 2015). For the study, data was collected through two primary methods. Initially, a literature review was conducted to gather background information on the bulk water services delivery within the DRSM district municipality. This review served to establish a contextual framework for the study. In this study, semi-structured interviews were conducted with eight officials from five local municipalities and the district municipality. These interviews employed open-ended questions, allowing for extensive probing by the researcher, as detailed in the interview questionnaire located in Appendix D. The schedule included five questions, one of which was demographic. The limited question set necessitated in-depth probing, especially on challenges highlighted in the literature review. Before each interview, participants received a consent letter, as shown in Appendix C. Conducted via MS Teams, these interviews lasted between 30 to 60 minutes, averaging 45 minutes. Each interview session was recorded to ensure accurate and comprehensive data collection for subsequent analysis.

By adhering to the minimum standards, which include accepting responsibility and ensuring that the contact details are used for only legitimate and legal purposes of the research, the researcher adhered to the POPI Act in terms of the contact details of the prospective participant (POPIA, 2019). Furthermore, in accordance with the POPI Act, the researcher protected the integrity and confidentiality of the potential participant's contact information.

3.3.1 Study Population and Sampling

In service delivery research, selecting an appropriate study population and employing an effective sampling strategy is crucial for obtaining valid and reliable qualitative data. This section discusses the importance of study population and sampling in service delivery research and highlights relevant studies in the field.

3.3.1.1 Study Population

The study population refers to the cohort of individuals or entities that the researcher intends to investigate and derive conclusions from. In the realm of service delivery research, the study population typically encompasses service users, service providers, administrators, and other stakeholders involved in the provision of services. For instance, research conducted by (Badru *et al.*, 2022) centered on women of reproductive age in Tana River County, Kenya, to identify the factors that influence the utilisation of delivery services (Badru *et al.*, 2022). Similarly, Assyahri *et al.*, (2021) conducted a study that examined the external role of public managers in enhancing the quality of community services through delivery to the Mentawai ethnic group (Assyahri *et al.*, 2021).

For this study, the population consisted of employees working in service delivery in municipalities within South Africa and the sample was from the DRSM district municipality, Lekwa-Teemane, Mamusa, Kagisano-Molopo, Greater-Taung, and Naledi local municipalities. The total study population consisted of 8 participants. The reason for that was based on the fact that they are responsible for the operations and maintenance of the municipalities water service delivery infrastructure. See Table 3.1 below for research participants from municipalities and the section or department.

The inclusion criteria for the study population were to interview municipality employees who had direct experience or knowledge related to the bulk water service within their local municipalities and the district, such as municipal employees, local government officials, and community leaders. These participants are chosen for their potential to provide rich, in-depth insights. Exclusions involved individuals who do not have direct experience or relevance to the topic, such as those outside the municipality's jurisdiction or unrelated to the municipal operations being studied.

Participants were recruited telephonically and invitations for interviews together with a signed goodwill permission letter from the DRSM district municipality manager were emailed to participants from each of the five local municipalities. Informed consent forms were also forwarded to research participants via email.

Table 3.1: Participants demographics

No.	Participant (Municipality)	Location	Designation	Experience in Local Government
1	Lekwa-Teemane		Employee 1	6 years
2	Lekwa-Teemane		Employee 2	20 years
3	Kagisano-Molopo		Employee 3	12 years
4	Mamusa		Employee 4	5 years
5	Naledi		Employee 5	5 years
6	Naledi		Employee 6	22 years
7	Greater-Taung		Employee 7	19 years
8	DRSM		Employee 8	5 years

3.3.1.2 Sampling

In service delivery research, sampling strategies should aim to capture diverse perspectives and experiences. For instance, Savard and Kilpatrick (2022) conducted a study that examined the difficulties encountered in recruiting participants from harder-to-reach populations and proposed strategies to overcome these challenges in quantitative survey studies (Savard & Kilpatrick, 2022). The authors emphasised the significance of customising recruitment strategies to suit the target population and adopting a flexible and innovative approach in devising recruitment methods.

In this study, two non-probability sampling methods were employed to choose the participants. The sampling approach utilised a judgment technique. The researcher purposefully selected participants within a pool of employees of municipalities based on their wide scope of work and the contributions they would offer to the study.

Although the number of participants initially planned for this study was predetermined, it was determined that further interviews were unnecessary based on the information gathered during the conducted interviews. The interviews were continued until the data reached a point of saturation, where the researcher felt that the research question had been adequately addressed. A total of 8 interviews were conducted, and it was observed that after the seventh interview, there was minimal new information being obtained. This was probably due to the fact that each of the municipality was already covered. However, one additional interview was conducted to confirm that the saturation point had indeed been reached. The subsequent interviews reaffirmed the

findings from the previous interviews, thus confirming that the data had reached a state of saturation. At this point, the researcher made the decision to conclude the interviewing process and proceed with the analysis.

3.4 DATA ANALYSIS

Bryman and Bell (2014:342) identify analytical induction, grounded theory, and thematic analysis as the most frequently employed techniques in data analysis. Furthermore, this study incorporated thematic analysis, a method noted for its flexibility and absence of a predefined philosophical framework (Bryman & Bell 2014:350). This approach allowed for a more adaptable examination of the data, facilitating nuanced interpretation without the constraints of a specific theoretical stance.

According to Braun and Clarke (2006:87), thematic analysis involves a six-step process, as detailed in Table 3.2 below. These steps were adhered to in transcribing the data gathered from the interviews in the study. This structured approach ensured a systematic and comprehensive analysis of the interview data.

Table 3.2: Phases of thematic analysis

Phase	Description
Familiarising yourself with the data	Verbal data need to be transcribed first. Then read and re-read the data while noting down initial ideas
Generating initial codes	Systematically code interesting features of the data and collect data relevant to each code
Searching for themes	Sort codes in potential themes and gather all relevant data for each theme
Reviewing themes	Check if the themes work in relation to the coded extracts and the entire data set, then make a thematic map of the analysis
Defining and naming themes	Refine the specifics of each theme. Name and define each theme
Producing the report	Produce a scholarly report of the analysis by selecting vivid, compelling extract examples that relate to the research question and the literature

Source: (Braun & Clarke, 2006:96)

3.4.1 Transcribing Interviews

The transcription of interviews plays a vital role in the data analysis phase of thematic analysis in service delivery research (Wilson et al., 2013). Transcription is the process of transforming audio or video recordings of interviews into written text, capturing the participants' responses and any other relevant information (Lemmenmeier-Batinić, 2021). This process allows researchers to have a clear and accurate representation of the data, making it easier to analyse and identify themes (Lyon et al., 2013).

The transcription of the interviews was obtained from recorded Microsoft Teams sessions. After the initial transcription, the accuracy was cross-checked with the audio recordings. Owing to time limitations, a basic transcription approach was adopted, following the guidelines by (Dresing & Schmieder, 2015:28), detailed below. An example of a transcribed interview can be found in Appendix C.

- Transcriptions were done verbatim without summarising the content.
- Spoken jargons like “gonna” were converted to formal language, such as “going to.”
- Original sentence structure was preserved, even if it contained syntactic errors.
- Stutters or repetitions were excluded unless they were for emphasis.
- Punctuation was adjusted to enhance readability.
- Pauses in speech were denoted by ellipses (...).
- Simple affirmative sounds like “Uh-huh” were not included in the transcription.
- Each speaker's dialogue was separated by a blank line.
- Expressions of emotion, such as laughter, were included in parentheses, e.g., (laughing).
- Any unclear or unintelligible parts were marked with (inc.).
- The participants' and interviewer's dialogues were labeled as “P:” and “I:” respectively.

Once the interviews had been transcribed, the researchers proceeded to the analysis phase of thematic analysis. This stage involved meticulously reading and then re-reading the transcriptions to become thoroughly acquainted with the data and to identify initial codes or patterns. The transcriptions acted as the fundamental data source for the analysis, enabling the researchers to systematically identify and categorise the themes that emerged from the participants' responses. This detailed examination of the transcripts was crucial in uncovering underlying patterns and themes relevant to the research study.

3.4.2 Coding

Phases 2 through 5 in the thematic analysis process are closely linked to the coding phase, which involves a detailed examination of the transcriptions. In this stage, categories were developed followed by the coding was executed manually, utilising Microsoft Excel as the primary tool. This

methodical approach entailed categorising the responses of all participants based on each interview question. By organising the data in this manner, it facilitated an efficient and structured analysis. Each response was carefully assigned to relevant groups corresponding to the specific interview questions. This systematic classification not only aided in maintaining an organised dataset but also ensured that the analysis was comprehensive and aligned with the thematic framework. The use of MS Excel in this process was instrumental in enabling a clear visualisation and manipulation of the data, which is crucial for the subsequent stages of thematic analysis.

During the coding process, researchers reviewed the transcriptions and identified recurring ideas, concepts, or patterns (Wilson *et al.*, 2013). These were assigned descriptive codes that captured the essence of the content (Henderson *et al.*, 2019). The codes were derived from the participants' own words and in some instances from the researchers' interpretations of the data (Washietl *et al.*, 2005). It was crucial to maintain a rigorous and systematic coding process, incorporating well-defined criteria for the assignment of codes (Balducci & Marinova, 2018).

Upon completion of the initial coding, the codes were structured into seven themes, 22 sub-themes, and 53 categories. These three tiers of organisation served as a framework, although it was not always feasible or accurate to employ all three levels for the representation of the data. A comprehensive list of the codes is available upon request. The concluding stage of thematic analysis involved the preparation of the report. To ensure the high quality of the dissertation, this study adhered to the 15-point checklist for proper thematic analysis as outlined by (Braun & Clarke 2006:96). Table 3.3 below is an illustration of these steps.

Table 3.3: 15-point criteria for thematic analysis

Process	Step	Criteria
Transcribing	1	The data has been transcribed with a high level of detail, and the transcripts have been verified against the recordings for accuracy.
Coding	2	In the coding process, every piece of data has received consistent and equal consideration.
	3	A comprehensive collection of all pertinent excerpts for each theme has been compiled.
	4	The themes are derived from an extensive, inclusive, and complete coding process, not just from a handful of striking examples.
	5	Themes have undergone a review in relation to one another and in reference to the original dataset.
	6	The themes are marked by their internal coherence, consistent, and distinctiveness.
Analysing	7	The data has been thoroughly analysed, moving beyond paraphrasing or description.
	8	There is clear alignment between the analysis and the data, with the excerpts effectively illustrating the analytical points.
	9	The analysis presents a compelling and well-structured narrative about the data and the subject matter.
	10	The report strikes a balanced mix of analytical narrative and examples for illustration.
Overall	11	Sufficient time has been dedicated to each phase of the analysis to ensure thoroughness, avoiding any rushed or superficial examination.
Report Writing	12	The chosen approach and underlying assumptions about thematic analysis are clearly articulated.
	13	There is a strong alignment between the methodology described and the analysis conducted, showcasing consistency in practice and reporting.
	14	The terminology and concepts used in the report align with the epistemological stance on the analysis.
	15	The researcher's active role in the research process is acknowledged, emphasising that themes are the result of deliberate analysis rather than spontaneous emergence.

Source: (Braun & Clarke, 2006:96)

3.4.3 Trustworthiness

Bryman and Bell (2014:44) highlight that trustworthiness is a critical factor in evaluating the quality of qualitative research. This concept encompasses four distinct criteria: credibility, transferability, dependability, and confirmability.

3.4.3.1 Credibility

To establish credibility in the research, several key steps were undertaken. Initially, participants received the interview schedule a minimum of one day prior to their interview, allowing them ample time to prepare. Throughout the interview process, there was an opportunity for participants to contribute any extra information they felt was relevant, ensuring a comprehensive data collection.

Following each interview, a word-for-word transcription was carried out to capture the exact details of the conversations. These transcriptions were then reviewed to confirm their accuracy.

3.4.3.2 Transferability

Bryman et al. (2015:44) define the application of research findings to different contexts as transfer, emphasising that successful transfer encourages readers to engage more deeply with the original study, often to draw comparisons with their unique situations. The research achieved data saturation through exhaustive interviews, ensuring thoroughness and depth in data collection. Additionally, transferability, a key aspect of trustworthiness as noted by (Golafshani, 2015), relates to the extent to which research findings are applicable or relevant to other contexts or populations.

3.4.3.3 Dependability

Dependability in the study was bolstered by employing triangulation, specifically through corroborating the collected data with findings from an extensive literature review. This literature review was not confined to research solely from the study's geographic area; instead, it encompassed studies from various countries, provinces and district municipalities. By integrating insights from a diverse range of sources, the research ensures a more reliable and comprehensive understanding, strengthening the dependability of its findings. This approach helps validate the data and supports the study's conclusions by demonstrating consistency with existing research in the field.

3.4.3.4 Conformability

Confirmability in the study was ensured through consultations with the study's supervisor and referencing literature on qualitative research methodology, providing an external check on the research process. This ensured that the findings, interpretations, and conclusions were grounded in the data, free from the researcher's personal biases. Moreover, no conflict of interest existed between the researcher, an employee of a power utility, and the participants from district and local municipalities. The researcher's goal was to interpret and conclude based on the collected data, maintaining objectivity and not being influenced by personal opinions.

3.5 RELIABILITY

Qualitative research rigour, validity, and reliability are essential considerations in ensuring the trustworthiness and credibility of qualitative research findings. While these terms are conventionally associated with quantitative research, they have been adapted and redefined to fit the unique characteristics and goals of qualitative research (Noble & Smith 2015).

3.5.1 Rigour

Rigour refers to the overall quality and integrity of the research process. It encompasses the use of appropriate research designs, rigorous data collection and analysis methods, and the transparency and coherence of the research findings (Palermo *et al.*, 2021). Rigour is often assessed through criteria such as dependability, credibility, confirmability, and transferability (Palermo *et al.*, 2021).

3.5.2 Validity

In the qualitative research conducted, the researcher adhered to established practices to ensure validity, as emphasised by Creswell and Poth (2018), focusing on accurately representing the studied phenomenon. A key practice was member checking, involving participants' verification of their responses or the study's findings. This step confirmed that interpretations aligned with participants' intended meanings. Furthermore, the researcher employed triangulation of data sources and methods, as recommended by Forero *et al.* (2018), enhancing the credibility and depth of the findings. By utilising multiple data sources and methods, cross-verification of data points and interpretations was possible, bolstering the validity of the research outcomes. These strategies collectively reinforced the reliability and contextual relevance of the study's conclusions.

3.5.3 Reliability

In the qualitative research undertaken, the concept of reliability was approached as defined by Golafshani (2015), with a focus on ensuring the research procedures could be replicated and the consistency of outcomes in similar studies. The study also recognised the vital link between reliability and trustworthiness in qualitative research, as noted by Forero *et al.* (2018). Key elements such as dependability, credibility, confirmability, and transferability were emphasised to uphold the integrity and relevance of the research findings, ensuring that they are both reliable and applicable in similar contexts.

3.6 ETHICAL CONSIDERATIONS

Throughout the research, adherence to ethical principles was a primary focus, as emphasised by Rahman (2016), to ensure the well-being of participants and maintain the integrity of the research process. Ethical considerations were integral, involving informed consent, confidentiality, privacy, voluntary participation, and harm minimisation, in accordance with Braun and Clarke (2022). Informed consent was obtained from all participants, clarifying the study's aims, methods, and potential risks and benefits, as advocated by Owino and Namande (2022). This process was crucial for transparent and respectful participant engagement. Confidentiality and privacy were

paramount, achieved through data anonymisation and secure data storage, following Owino and Namande (2022) recommendations, to protect participant identities and sensitive information.

Additionally, the researcher was mindful of power dynamics and potential conflicts of interest that could affect the research, as highlighted by Dubé *et al.* (2022). This awareness assisted in navigating the research process ethically and responsibly, ensuring that the findings were both credible and ethically sound.

3.6.1 Permission and informed consent

Informed consents were established as the cornerstone of ethical practice, following the principles outlined by Denzin and Lincoln (2011). Participants were fully informed about the study's requirements, the intended use of the data, and any potential negative consequences. This process was a vital aspect of maintaining transparency and ethical integrity in the research.

3.6.2 Anonymity

During research, maintaining anonymity and confidentiality as essential measures to protect participants from potential harm were prioritised. While the researcher was aware of the participants' identities, and they were clearly informed of the purpose of their involvement through the permission letter, specific steps were adhered to safeguard participants privacy. Anonymity was strictly applied to the responses provided by the participants. This meant that the transcripts of their interviews were handled with the utmost confidentiality. Transcripts were not shared with other participants in the study or any external parties. This approach was crucial in creating a secure environment for participants to share information freely, knowing that their identities and responses would remain confidential throughout and after the conclusion of the research.

3.6.3 Confidentiality

To safeguard the participants from any possible harm due to their involvement, the researcher rigorously implemented confidentiality measures. This involved ensuring that all information shared by participants was used exclusively for the study and was not revealed in any way that might lead to their identification or cause them harm. This strict adherence to confidentiality was not merely a procedural necessity but a fundamental aspect of building a trusting relationship with the participants. It empowered them to communicate candidly, thereby enriching the study with their genuine and uninhibited viewpoints.

3.7 SUMMARY

In the methodology chapter a thorough perspective of the qualitative research approach was provided. This detailed account included a justification for choosing qualitative methods, with a

specific emphasis on the use of semi-structured interviews. This methodology was selected due to its efficacy in eliciting detailed, nuanced responses that are essential for a deeper understanding of the research topic. The process of selecting participants was outlined, emphasising criteria for inclusion and the rationale behind participant selection. The development of interview questions was also described, detailing how these questions were designed to probe key aspects of the bulk water services delivery challenges while allowing flexibility for participants to express their perspectives fully. The execution of the interviews was explained, including the settings, duration, and the approach used to create a comfortable environment conducive to open and honest dialogue. The chapter further detailed the data analysis process, which involved coding the interview transcripts, identifying emerging themes, and interpreting these in the context of the research questions.

Ethical considerations, such as informed consent and confidentiality, were thoroughly addressed, ensuring adherence to research ethics standards. The limitations inherent in the methodology were acknowledged, with discussions on how these might impact the findings and their generalizability. Finally, the chapter elaborated on the measures taken to bolster the reliability and validity of the research findings, including strategies like triangulation and member checking. This comprehensive overview of the methodology underscored the rigor and thoughtfulness underpinning the empirical study.

CHAPTER 4 RESULTS AND DISCUSSION

4.1 INTRODUCTION

In the Results and Discussion chapter, the narrative unfolded as a retrospective analysis of the gathered data. The chapter commenced with a reflective overview of the research objectives and its qualitative methodological underpinning, emphasizing how the semi-structured interviews were pivotal in data collection. It then provided a structured summary of the findings, detailing the 7 main themes, 22 sub-themes, and 53 categories identified through the meticulous processing of interview transcripts. This comprehensive framework guided a rich discussion, interlinking empirical findings with existing scholarly literature. The chapter served as a critical juncture, connecting the in-depth empirical data with broader theoretical and contextual underpinnings, paving the way for an extensive and insightful analysis.

4.2 DEMOGRAPHIC INFORMATION

This research primarily concentrates on the difficulties associated with the delivery of bulk water services, rather than the characteristics or roles of the officials involved. In alignment with this focus, the demographic data gathered and presented here is more concerned with aspects of bulk water service delivery, rather than detailed profiles of the individual participants. To differentiate among the study participants, each has been assigned a unique code that corresponds to the municipality they represent. The summarised demographic information pertinent to this study is systematically presented in Table 4.1. This table serves as a concise reference point, offering an organised overview of the key demographic data related to the participants and their corresponding bulk water service delivery contexts.

Table 4.1: Participants demographics

Participant	Municipality	Role	Experience in Local Government
LTLM1	Lekwa-Teemane Local Municipality	Employee 1	6 Years
LTLM2	Lekwa-Teemane Local Municipality	Employee 2	20 Years
KMLM1	Kagisano-Molopo Local Municipality	Employee 3	12 Years
MLM1	Mamusa Local Municipality	Employee 4	5 Years
NLM1	Naledi Local Municipality	Employee 5	5 Years
NLM2	Naledi Local Municipality	Employee 6	22 Years
GTLM	Greater-Taung Local Municipality	Employee 7	19 Years
DRSMDM	Dr. Ruth Segomotsi Mompati District Municipality	Employee 8	5 Years

4.3 BULK WATER SERVICE DELIVERY CHALLENGES

In the conducted interviews, participants articulated a range of challenges confronting bulk water service delivery. These challenges have been methodically categorised into seven distinct themes. These themes are visually represented in Figure 4.1, providing a clear and structured overview of the key challenges within DRSM district municipality.

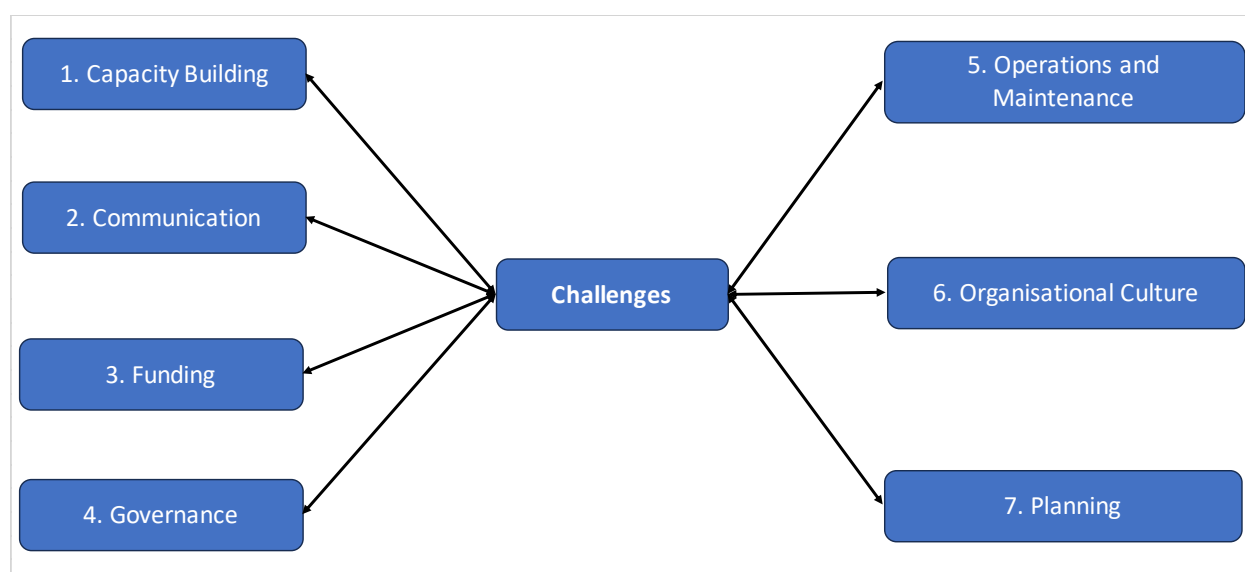
Figure 4.1: Themes for bulk water service delivery challenges

Table 4.2 below illustrates the number of times a particular theme was mentioned during the interviews. Operations and maintenance is the most common theme among the seven themes developed from the interview transcripts.

Table 4.2: Theme statistics from the interviews

Theme number	Theme name	Number of times "Theme" was mentioned (across all interviews)	Percentage (%)
1	Capacity Building	26	11%
2	Communication	16	7%
3	Funding	19	8%
4	Governance	30	13%
5	Operations & Maintenance	85	36%
6	Organisational Culture	7	3%
7	Planning	55	23%
	TOTAL	238	

Figure 4.2 below is a graphical illustration depicting the order of themes prevailed during the interviews. This makes practical sense given the nature of the research in unearthing challenges experience in delivering bulk water services within the DRSM district municipality.

Figure 4.2: Theme frequency on bulk water service delivery challenges

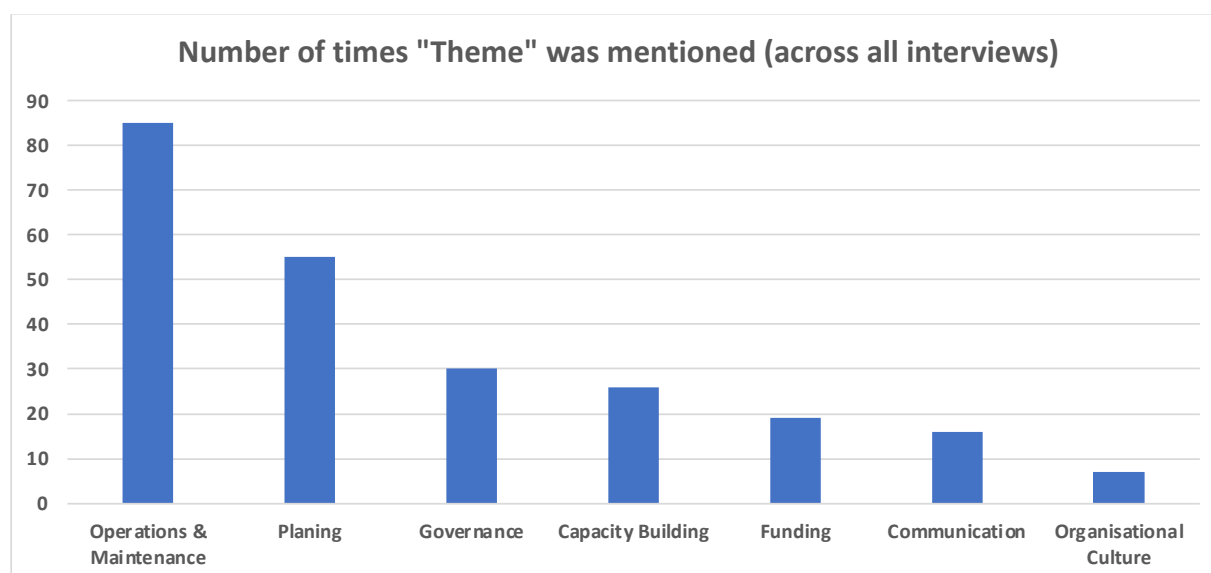
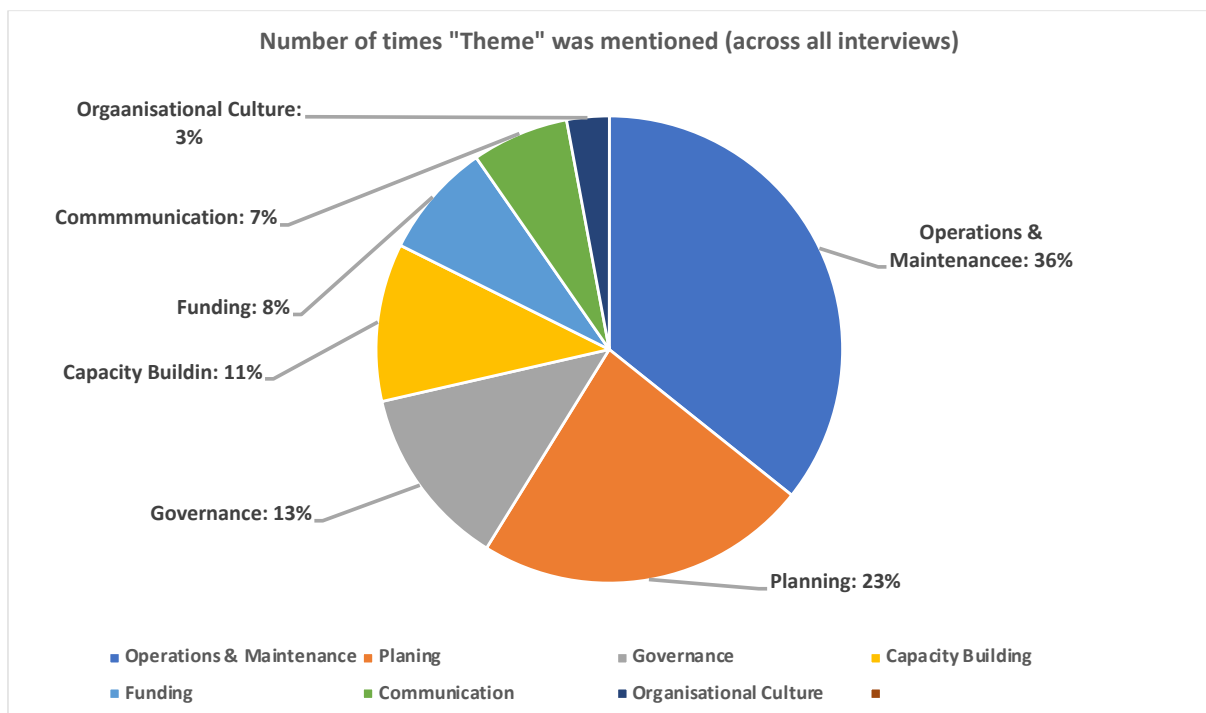


Figure 4.3 is the pie-chart developed from the transcript data and is representative of the themes which were developed from the study data. This is indicative of what the research participants perceive to be where the majority of the challenges emanate from.

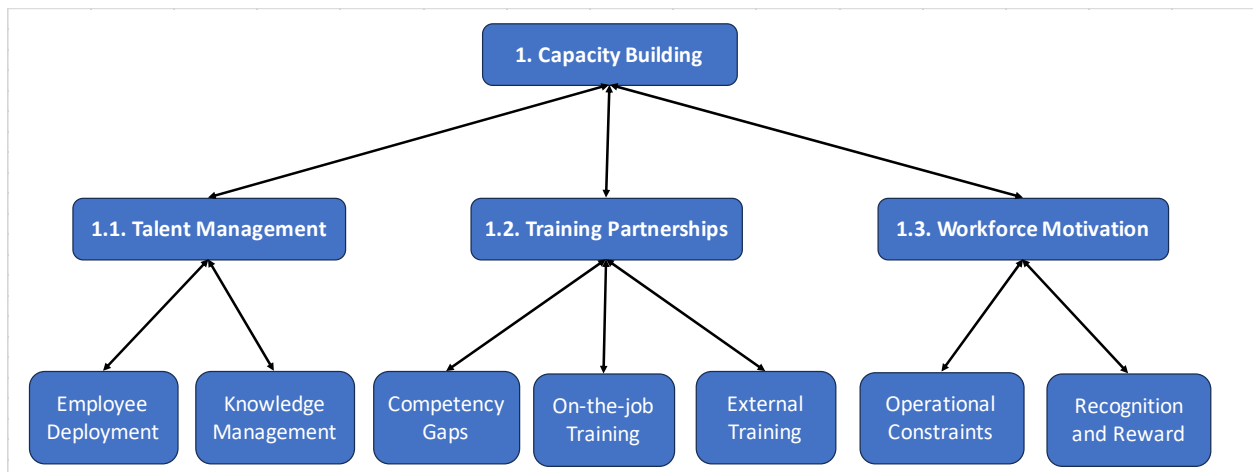
Figure 4.3: Theme prevalence on bulk water service delivery challenges



4.3.1 Theme 1: Capacity Building

Figure 4.4 represents the analysis of the challenges extracted from theme 1, Capacity Building theme and its sub-themes Talent Management, Training Partnerships and Workforce Motivation based on participant quotations from the interview According to Cloete (2016), strengthening institutional structures and processes is key to enhancing service delivery, as it ensures more effective governance and management within municipalities. Therefore, capacity building in municipalities is more than just about improving individual skills; it's about enhancing the overall institutional capability to deliver quality services. Through effective capacity building initiatives, municipalities can better respond to service delivery challenges, thereby contributing to the well-being and development of their communities.

Figure 4.4: Theme 1 - Capacity building



4.3.1.1 Sub-theme 1.1: Talent Management

Talent management is a key aspect of capacity building in municipal governance. Participant NLM1 discusses the challenges related to the aging infrastructure and the need for skilled talent within the municipality:

- *"It is five (5) because 50% of the infrastructure is old. New lines have to be revamped... the problem is people come with their knowledge and they mess up the design."* (Participant NLM1)

This statement highlights the necessity for skilled talent in managing and revamping existing infrastructure, emphasising the challenges posed by external contractors and the need for in-house expertise. In their study, (van Dyk & Coetzee, 2016) emphasised the strategic importance of talent management beyond mere human resource functions. They argue that municipalities exhibiting robust talent management, characterised by continuous training and career advancement opportunities, show marked improvements in service delivery. This effective management of talent ensures a skilled, dedicated, and efficient workforce, which in turn leads to enhanced service delivery and increased community satisfaction. This highlights the vital role of talent management in achieving organisational success and community well-being in South African municipal contexts.

4.3.1.1.1. Employee Deployment

Employee development is a critical aspect of talent management, as evidenced by the experiences of municipal staff. Participant KMLM1, who is responsible for learning and development, illustrates this focus:

- *"Currently I'm the director responsible for learning and development. I've been on the same position since September 2020. So it is 3 years. Since I've been on this position." (Participant KMLM1)*

This statement underscores the municipality's commitment to learning and development, highlighting the long-term focus on employee growth and skills enhancement.

4.3.1.1.2. Knowledge Management

Knowledge management is crucial for the effective operation and development of municipal services. Participant NLM1, who holds a technical director role, addresses the challenges of managing infrastructure knowledge:

- *"The problem is people come with their knowledge and they mess up the design. Now the design is always working on contingency plans which also affect the core business case of the design." (Participant NLM1)*

This quote reflects the difficulties encountered in integrating external knowledge with internal processes, emphasising the need for effective knowledge management strategies that can align external expertise with the municipality's core objectives.

4.3.1.2 Sub-theme 1.2: Training Partnerships

Training partnerships are crucial for enhancing the capacity of municipal employees. Participant NLM1 touches on the implications of outsourcing, which affects the internal capacity for water and sanitation management:

- *"Challenges are also because of outsourcing activities, which is your core mandate like water and sanitation to contractors and not work capacity in house..." (Participant NLM1)*

This reflects the need for training and development partnerships that can build internal capacity and reduce reliance on external contractors. Mkhize (2018) argues that partnerships do more than just enhance skills; they also bring in new ideas and practices, significantly improving service quality. This underlines the importance of training collaborations in municipalities for strengthening human resource capacities. Such engagements ensure that the municipal workforce is not only skilled but also equipped to address both present and future service delivery challenges, thereby greatly benefiting the communities they serve.

4.3.1.2.1. Competency gaps

The lack of structured training programs leads to competency gaps, as revealed in the responses. The absence of a formal training program is acknowledged by Participant GTLM1:

- *"How do you ensure continuous training and upskilling of personnel responsible for water service delivery operations?... it's not something within our purview." (Participant GTLM1)*

This response indicates a gap in the systematic development of competencies, relying instead on ad hoc methods and external resources.

4.3.1.2.2. On-the-job training

On-the-job training is a practical approach adopted within the municipality. As Participant GTLM1 notes, much of the learning occurs in the field:

- *"We don't have a structured training and upskilling programme for water team. However, in terms of the actual works on site, it continues to be a skill sharing exercise... it's more of a skilled sharing exercise on the ground rather than really well-structured operation." (Participant GTLM1)*

This emphasises an informal, experience-based training method that relies heavily on skills sharing among team members.

4.3.1.2.3. External training

The reliance on external training is evident in the municipal context. Participant NLM2 reflects on the utilisation of external service providers for major services and the experience of in-house staff:

- *"We outsource like the major services to the external service provider. Operators are mostly working on self-taught knowledge, trained while at work and mostly have long service of work experience." (Participant NLM2)*

This highlights the balance between external expertise and internal, experience-based learning, suggesting a gap in formal training for in-house personnel.

4.3.1.3 Sub-theme 1.3: Workforce Motivation

Workforce motivation is integral to maintaining and enhancing the capacity of municipal governance. Participant LTLM1 notes the impact of vacancies in senior management on strategic planning and communication:

- *"The frequency of having those meetings and those interactions became less and less... for quite some time both the district and the local there was a high degree of vacancy in the senior management positions..." (Participant LTLM1)*

The lack of consistent leadership due to vacancies can demotivate the workforce and hinder effective communication and strategic planning, thereby impacting overall capacity. (Govender, 2017) asserts that strategies such as recognition, career development opportunities, and supportive leadership play a pivotal role in enhancing employee motivation, which in turn positively impacts the quality and efficiency of services. Therefore, motivation in municipalities extends beyond traditional human resources concerns to become a strategic necessity. By cultivating a motivated and engaged workforce, municipalities can significantly improve their service delivery, thereby effectively meeting community needs and contributing to broader socio-economic advancement.

4.3.1.3.1. Operational constraints

Operational constraints can pose challenges to workforce motivation. Participant LTLM2 also touches upon the issues related to aging staff and the need for training:

- *"I would say 4 out of 10 because most of our staff involved in the water operations and maintenance are near the age of retirement... Why do you want to train me at the tail end of my exit. I wouldn't need that. Forgetting that each and every day there is a household with needs water connection." (Participant LTLM2)*

This illustrates the demotivating impact of operational constraints, such as an aging workforce and the reluctance to engage in training later in one's career. It points to the necessity of maintaining a motivated and skilled workforce despite these challenges.

4.2.1.3.2. Recognition and reward

Recognition and reward play a pivotal role in motivating the workforce. Participant LTLM2 addresses the importance of acknowledging employees, especially in the context of their experience and contribution:

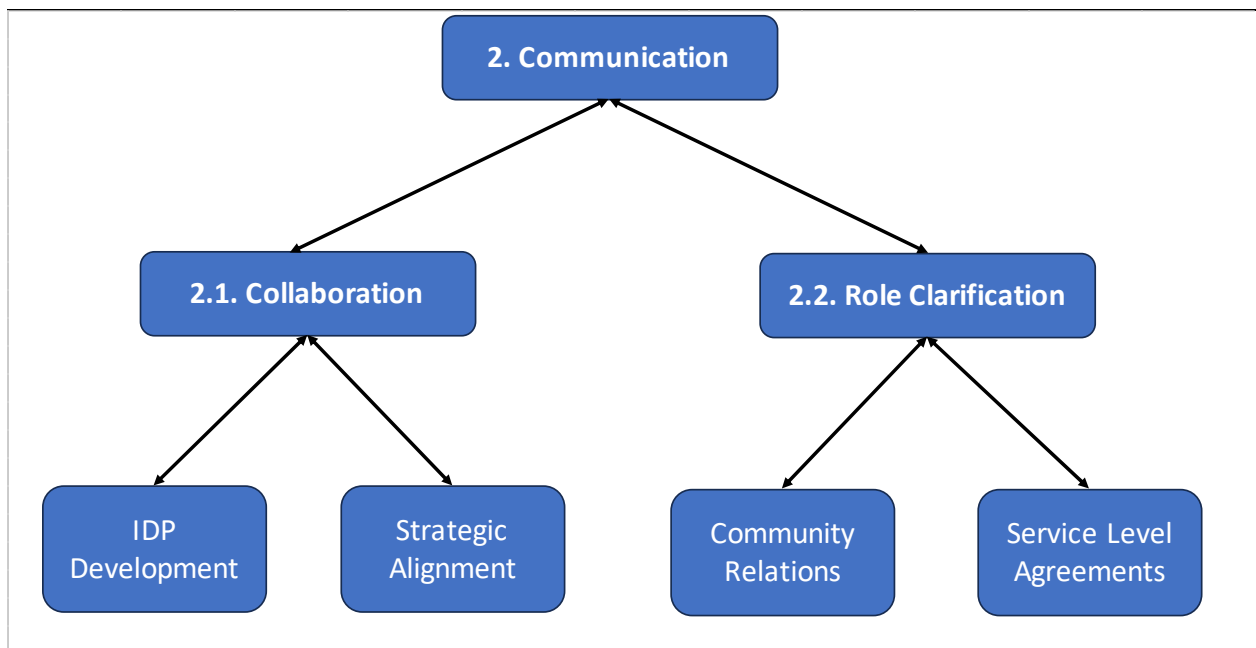
- *"There's nothing as good as being acknowledged as an employee. Acknowledged for work done. Acknowledged for good performance. Small, initiatives that motivate would always go a long way." (Participant LTLM2)*

This highlights the value of recognition in employee motivation, suggesting that even small gestures of acknowledgment can significantly impact workforce morale.

4.3.2 Theme 2: Communication

Figure 4.5 represents the analysis of the "Communication" theme and its sub-themes "Collaboration", and "Role Clarification" based on participant quotations from the provided document, offers insightful perspectives on the dynamics of communication in municipal governance. Van Zyl (2018) argues that clear and consistent internal communication strategies are essential for effective coordination among various municipal departments, and this can be linked to more efficient service delivery. Therefore, this emphasises the importance of effective communication in municipalities, highlighting that it is not just a means of information dissemination, but a strategic asset. By prioritising robust internal and external communication channels, municipalities can substantially improve their service delivery, thereby effectively addressing the needs of their communities.

Figure 4.5: Theme 2 - Communication



4.3.2.1 Sub-theme 2.1: Collaboration

Collaboration is a crucial aspect of effective communication within municipalities. Participant LTLM1 comments on the challenges of communication across different spheres of the organisation:

- *"We end up having poor channel of communications between the three spheres of organisations... People only want to see water coming out of their taps, they do not care if the water is from the district municipality or Magalies water board." (Participant LTLM1)*

This statement underscores the need for streamlined communication among various entities to ensure effective service delivery. Another participant highlights the importance of collaboration in planning processes:

- *"For instance, when a service provider is appointed, they usually start by coming to our municipality to get introduced... So, most of the work is done in collaboration with us." (Participant LTLM2)*

This reflects the collaborative effort necessary for successful project implementation and highlights the municipality's central role in coordination. Mkhize (2017) discovered that collaboration not only involves community participation and engagement but also results in services that are more closely aligned with the needs and expectations of the community. This highlights the critical role of collaborative efforts within municipalities. It suggests that collaboration goes beyond simply combining resources; it's about fostering a culture of cooperation and shared responsibility. By engaging in effective collaborations, municipalities can significantly improve their service delivery, thereby more accurately addressing community needs and supporting sustainable development.

4.3.2.1.1. IDP development

The development of the Integrated Development Plan (IDP) is another area where collaboration is pivotal. However, participants have pointed out challenges in this collaborative process, particularly in aligning the IDP with actual service delivery needs and budgeting practices:

- *"The current situation is quite poor. On a scale of 1 to 10, I would rate it at two. The core issue is the lack of effective communication and collaboration. Even in terms of budgeting and Integrated Development Plans (IDP), there is a significant gap." (Participant NLM2)*

Furthermore, Participant NLM2 highlights a disconnect between the legal requirements for collaboration in IDP development and the actual practices:

- *"Although legally, they are required to consult with local municipalities before finalising their IDPs, in practice, they often work with incremental budgeting, increasing expenses by a standard 5% from the previous year without in-depth analysis. This approach doesn't consider the actual costs of delivering services, hindering proper planning." (Participant NLM2)*

These statements underscore the challenges in achieving strategic alignment in IDP development, suggesting that without genuine collaboration, municipalities may struggle to plan and deliver services effectively.

4.3.2.1.2. Strategic alignment

Strategic alignment is crucial in ensuring that different departments and external entities work towards common goals, and it often involves joint planning and execution of major projects. A participant describes the initiation of such collaborative efforts:

- *"For instance, when a service provider is appointed, they usually start by coming to our municipality to get introduced. We work closely with them in preparing for the master plan. The majority of the relevant information is with us rather than other entities like the district or Magalies. So, most of the work is done in collaboration with us." (Participant MLM1)*

This indicates that while the municipality plays a central role in strategic projects, the success of these endeavours is contingent upon the effective collaboration with service providers and higher-level entities.

4.3.2.2 Sub-theme 2.2: Role clarification

Role clarification is essential in municipal communication, as it helps define responsibilities and expectations. Participant MLM1 notes the importance of keeping plans up-to-date and the role of collaboration in this process:

- *"I don't have specific information on its workings, but I can certainly provide details about how the roads master plan is managed and updated... we'll ensure it is kept up to date in collaboration with the district." (Participant MLM1)*

This emphasises the significance of clearly defined roles and responsibilities in maintaining effective communication for project management. Participant KMLM1 speaks to improved communication through the introduction of structured processes:

- *"There was the proposal of an SLA, but at least the communication has been improved... the municipality becomes part of the project, steering committees over the projects that are being introduced to the local municipality." (Participant KMLM1)*

The establishment of formal agreements such as Service Level Agreements (SLAs) is cited as a mechanism for improving communication and clarifying roles within the municipality. Clear role definitions within municipalities aid in better decision-making and resource allocation and ultimately contribute to improved service delivery (Van der Walddt, 2018). Therefore, by establishing and communicating clear roles and responsibilities, municipalities can create a more focused and accountable workforce, significantly boosting their ability to provide effective services to their communities.

4.3.2.2.1. Community relations

Community relations are significantly influenced by the clarity of roles within the municipality. Participant MLM1, in their role as the Acting Director of Technical Services, discusses their responsibilities and the effect on community services:

- *"I manage various aspects, including water, sewer, roads, and all infrastructure projects within the Directorate of Technical Services, including house plans." (Participant MLM1)*

This statement highlights the comprehensive nature of their role, emphasising the importance of clear role delineation in managing community expectations and delivering effective services.

4.3.2.2.2. Service level agreements

Service Level Agreements play a key role in formalising responsibilities and expectations. Participant LTLM1, who works in the project management unit, touches on the interaction between the municipality and the district:

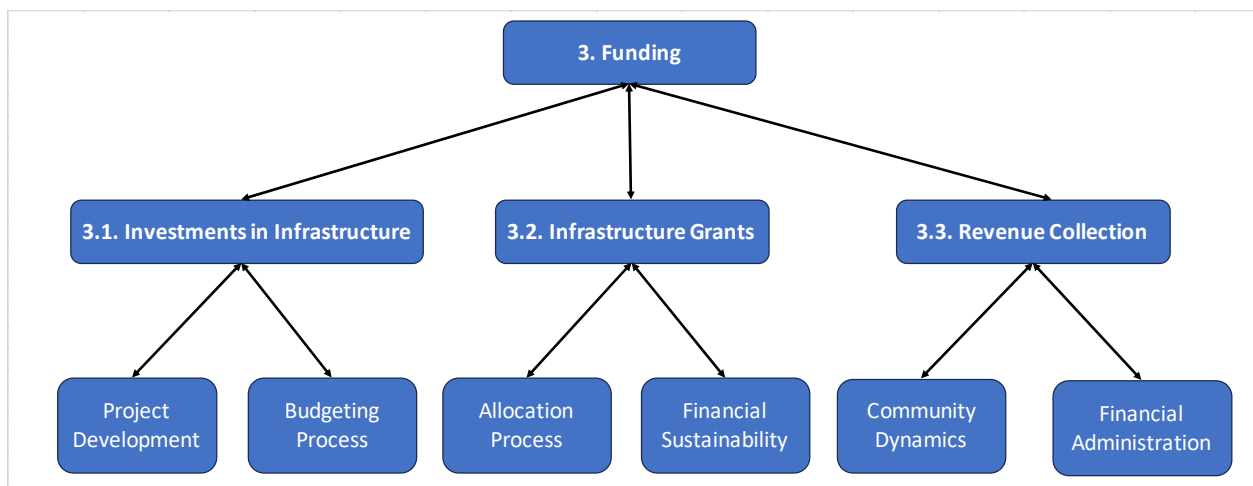
- *"We still play a supporting role to the district even though they implement these projects on our behalf, we are still the receiving municipality." (Participant LTLM1)*

This quote underscores the importance of clearly defined roles and responsibilities in SLAs, ensuring that both parties understand their obligations in project implementation and service delivery.

4.3.3 Theme 3: Funding

Figure 4.6 depicts the analysis of the theme "Funding" in municipal governance, with a focus on the sub-themes "Government Grants" "Investment in Water Infrastructure" and "Revenue Collection" that are enriched by direct quotations from the participants. These quotations provide insights into the real-world challenges and strategies employed in managing municipal infrastructure finances. Zwane (2019) asserts that enhanced investment in infrastructure, enabled through better funding methods, is vital for the improvement of service delivery, especially in municipalities that are lacking resources. This emphasises the fact that funding transcends being merely a financial issue; it is a crucial tool for governance. Appropriate and efficiently managed funding is key to enabling local governments to fulfil their service delivery obligations effectively.

Figure 4.6: Theme 3 - Funding



4.3.3.1 Sub-theme 3.1: Investments in infrastructure

The complexities of investments in water infrastructure are evident in the experiences of local municipalities. The challenges of sustaining operational activities through external funding are encapsulated in the following statement:

- *"Previously, Naledi Local Municipality used to receive funding of about R4 million from DRSM per quarter to support their operational activities as the Water Services Provider (WSP). However, this funding was cancelled, and now there are discussions to reinstate it." (Participant NLM2)*

This highlights the reliance on external funding for critical services and the vulnerability municipalities face when such funding is uncertain or discontinued. Strategic and sustainable investments in water infrastructure are crucial in addressing service delivery backlogs, especially in communities that are currently underserved (van Dijk & van der Molen, 2018). These highlight the critical importance of water infrastructure investments for municipalities. These investments are more than just financial outlays; they are fundamental for ensuring effective, efficient, and sustainable service delivery. Such strategic investments significantly contribute to improving the quality of life for residents, highlighting their role as a key element in municipal development and community well-being.

4.3.3.1.1. Project development

The development of water infrastructure projects often requires extensive planning and feasibility studies, as highlighted by another participant:

- *"For villages surrounding Baga-Mothibi, we recently appointed a service provider to do a feasibility study to check if we can tap into Spiskop dam, that is surface water, in order to supply all those areas around that site." (Participant GTLM1)*

This quotation reflects the complex process of project development, where feasibility studies are integral to ensuring that the planned infrastructure meets the specific needs of the community and is financially and environmentally viable. Another participant notes the challenges of relying on different water sources, which directly impact project development strategies:

- *"Kagisano-Molopo is 100% reliant on underground water from boreholes... We also have massive water infrastructure projects going on there, but its sole source would be boreholes." (Participant KMLM1)*

This insight points to the diverse challenges in project development, particularly when dealing with different types of water sources and the unique technical and financial implications each presents.

4.3.3.1.2. Budgeting process

The budgeting process for water infrastructure projects is a critical element of municipal financial management. Participant NLM2 elaborates on the scale and scope of these projects, emphasising the financial planning involved:

- *"In the recent past, the district implemented massive water infrastructure projects with the intention to tap into what we have in Taung dam and to supply all those villages around downtown." (Participant NLM2)*

This statement underscores the substantial financial planning and budgeting required for such large-scale projects, aiming to maximise resource utilisation and address community needs effectively.

4.3.3.2 Sub-theme 3.2: Infrastructure grants

Government grants play a crucial role in the development and execution of infrastructure projects. The process of acquiring and utilising these funds is highlighted by a participant's description of the collaboration between local and district municipalities:

- *"The district will take [local municipalities'] demands and then concretise them into projects and apply for funding. And once they receive funding from MIG, Cogta and Department of Water and Sanitation, they then appoint contractors and consultants to implement projects within our area of jurisdiction..." (Participant LTLM1)*

This statement illustrates the pivotal role of government grants in transforming local needs into actionable projects, emphasising the intergovernmental cooperation necessary for successful implementation. Proficient handling of government grants results in more efficient and focused service delivery, which in turn enhances overall municipal performance (Van der Walt, 2019). This finding emphasises that government grants represent more than mere financial assistance; they are pivotal in enabling municipalities to elevate their service delivery. By judiciously using these grants, municipalities are better positioned to tackle diverse local challenges, ultimately leading to an improved quality of life for their residents.

4.3.3.2.1. Allocation process

The allocation process for government grants is characterised by its collaborative and strategic nature. Participant NLM1 highlights the involvement of various stakeholders in this process, stating:

- *"We have a master plan and the only challenge for now is the implementation... The district municipality [is] not having the financial muscle... But we are busy engaging in a technical team which [includes] the political head and the minister of water and sanitation."* (Participant NLM1)

This quotation emphasises the collaborative efforts required in the allocation process, balancing the technical needs with political and administrative considerations. The need for a comprehensive approach to funding allocation is further underscored by Participant KMLM1:

- *"The district will take [local municipalities'] demands and then concretise them into projects and apply for funding... they then appoint contractors and consultants to implement projects within our area of jurisdiction."* (Participant KMLM1)

4.3.3.2.2. Financial sustainability

The aspect of financial sustainability in relation to government grants is a critical area of focus for municipalities. Participant MLM1 response reflects this concern:

- *"Our process involves signing a water services agreement with the authority. Financially, we don't have the master plan at hand, but the district has appointed a service provider on our behalf to handle this."* (Participant MLM1)

This statement highlights the importance of strategic planning and the challenges faced when financial aspects are not fully integrated into the planning process. Moreover, LTLM2 speaks to the dependency on grants:

- *"We are entirely dependent on this grant for maintenance and operations of our water plants." Participant LTLM2)*

The dependency on government grants for both capital and operational expenses emphasise the need for financial sustainability strategies that extend beyond immediate grant funding.

4.3.3.3 Sub-theme 3.3: Revenue collection

Revenue collection is a critical component of municipal funding, impacting the ability to deliver services effectively. Participant GTLM1 discusses efforts to improve this aspect:

- *"The revenue is being collected in Reivillo and Taung for services at an estimate of 80% collection. New prepaid are being installed to enable us to improve our revenue collection." (Participant GTLM1)*

This quotation underscores the ongoing efforts to enhance revenue collection mechanisms, which is essential for financial sustainability and the ability to fund key municipal functions. According to (Mkhize, 2017), the adoption of improved revenue collection methods is linked to greater financial stability for municipalities and this stability, in turn, empowers them to more effectively meet the service needs of their communities. These insights highlight that efficient revenue collection by municipalities is more than just a fiscal responsibility; it is a crucial component in ensuring the provision of adequate and sustainable services. By focusing on efficient revenue collection strategies, municipalities can secure the necessary funds to enhance their service delivery, thereby playing a pivotal role in the development and well-being of their communities.

4.3.3.3.1. Community dynamics

Community dynamics play a significant role in the effectiveness of revenue collection. The way a community interacts with and perceives municipal services can greatly impact payment behaviours and overall revenue generation. For instance, Participant GTLM1 provides an insight into the community's response to revenue collection initiatives:

- *"The revenue is being collected in Reivillo and Taung for services at an estimate of 80% collection. New prepaid are being installed to enable us to improve our revenue collection." (Participant GTLM1)*

This statement illustrates an adaptive approach to revenue collection, acknowledging the role of community engagement and acceptance. The introduction of new systems, like prepaid services, reflects an attempt to align revenue collection methods with community preferences and behaviours, thereby improving collection efficiency.

4.3.3.3.2. Financial administration

The financial administration aspect of revenue collection involves the processes and systems that municipalities use to manage and track payments for services. Efficient financial administration is critical for ensuring the sustainability of municipal operations. However, the challenges in this area are evident in the reflections of another participant:

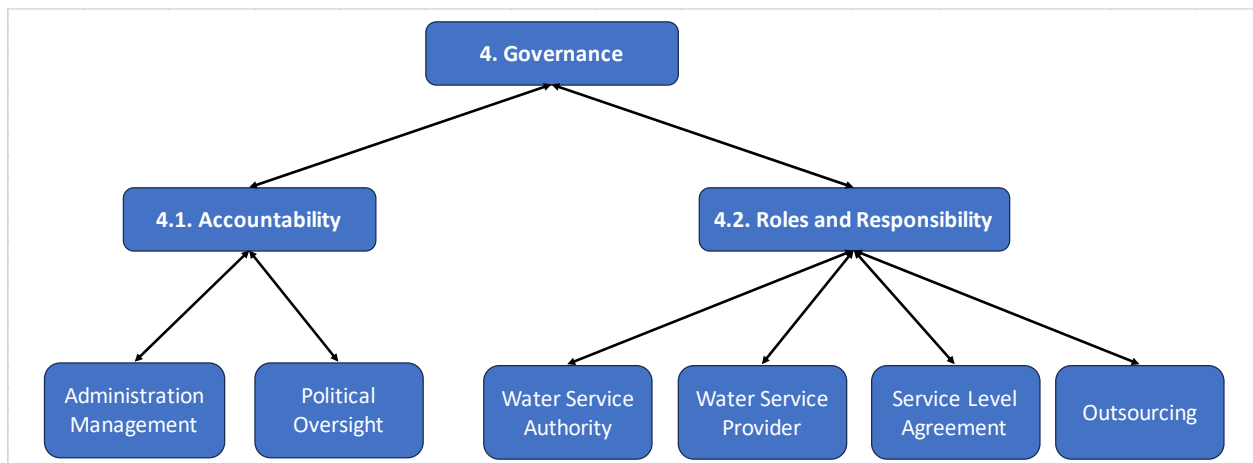
- *"We are facing challenges with our billing system, which affects our revenue collection. There's a need to revamp our financial systems to ensure more accurate billing and effective collection of revenues." (Participant MLM1)*

This quotation highlights the direct impact of administrative systems on revenue collection efficiency. Issues such as inaccurate billing can lead to reduced trust in the system and consequent challenges in revenue collection, pointing to the need for robust financial administration systems.

4.3.4 Theme 4: Governance

Figure 4.7 illustrates the theme "Governance" in the context of municipal operations, particularly focusing on the sub-themes "Accountability" and "Roles and Responsibilities" and is highlighted through participant quotations. These insights underline the significance of clear role demarcation and accountability in the effective functioning of local government institutions. According to (van der Waldt, 2017), the implementation of transparent and accountable governance practices significantly improves service delivery, and this is attributed to the fostering of trust and the effective utilisation of resources. These findings emphasise that governance within municipalities extends beyond being a mere regulatory necessity; it plays a central role in driving service delivery. By adopting and upholding good governance practices, municipalities can substantially enhance their service delivery functions, thus more effectively catering to the varied needs of their communities.

Figure 4.7: Theme 4 - Governance



4.3.4.1 Sub-theme 4.1: Accountability

Accountability in local governance is crucial for ensuring that municipal operations are conducted ethically and effectively. Participant NLM2, who has extensive experience in local governance, emphasises the importance of accountability in their role:

- *"My title is the municipal manager at the Naledi local municipality, so I'm the accounting officer for Naledi local municipality... I've been in local government since the 5th of December 2000... I've been an administrator, I've been an expert from the province, but I've spent all of my time apart from the 18 months... In total, I am 22 years in the local government." (Participant NLM2)*

This statement reflects the participant's long-standing commitment to public service and underscores the responsibility associated with their role as a municipal manager, highlighting the importance of accountability in such positions. Strengthening accountability within municipalities correlates with more responsible and effective resource utilisation, which in turn, enhances service delivery (Van Dijk, 2019). Far from being just a regulatory obligation, accountability is a fundamental component of good governance. By prioritising and embedding accountability across operations, municipalities can significantly elevate their service delivery effectiveness, thereby more adeptly addressing the diverse needs of their communities.

4.3.4.1.1. Administration management

Accountability within administrative management is central to the effective operation of municipalities. Participants highlight the complexities and responsibilities associated with managing municipal projects and services. For example, Participant 1, involved in project management, emphasises their role:

- *"I have been with Lekwa-Teemane local municipality for a period of 6 years now. I'm appointed as the project management unit the PMU. So essentially, we are responsible for the infrastructure projects that have been undertaken within the municipality..." (Participant LTLM1)*

This statement underscores the responsibility and accountability inherent in managing significant infrastructure projects, pointing to the importance of sound administrative practices.

4.3.4.1.2. Political oversight

Political oversight is another crucial aspect of accountability in local governance. Participants discuss the involvement of political leaders and the impact of their decisions on municipal operations. Participant NLM1 provides an insight into this dynamic:

- *"We have a master plan and the only challenge for now is only the implementation of it... But we are busy engaging in a technical team which [includes] the political head and the minister of water and sanitation..." (NLM1)*

This quotation illustrates the interaction between technical planning and political decision-making, highlighting the importance of political oversight in the successful implementation of municipal plans.

4.3.4.2 Sub-theme 4.2: Roles and responsibility

The delineation of roles and responsibilities is fundamental to the smooth operation of municipal governance. Participant NLM2 provides insight into the division of responsibilities, particularly in the context of water services:

- *"Moreover, the role of a Water Services Provider can be further subdivided, with responsibilities shared between a local municipality and a water board. In our case, Magalies Water Board is involved... Naledi local municipality then handles the distribution to individual households, conducts monthly billing for water services, and ensures the collection of payments, guaranteeing that everyone pays for the purified water they receive from their taps. This is how the functions are allocated." (Participant NLM2)*

This quote highlights the collaborative aspect of governance, where different entities share responsibilities to ensure the effective delivery of services. It illustrates the need for clear role demarcation and coordination among various stakeholders in local governance. Khumalo (2017) discovered that clearly defined roles within a municipality contribute significantly to improved decision-making and resource allocation, leading to enhanced service delivery. This finding

emphasises that clarity of roles and responsibilities within municipalities transcends mere organisational structure; it is a key factor in boosting service delivery. By ensuring that every segment of the municipal framework is efficiently organised and operational, municipalities are better positioned to address the needs of their communities, fostering sustainable development in the process.

4.3.4.1.1. Water service authority

The role of the Water Service Authority is crucial in the governance of water services. Participant NLM2 provides clarity on this role:

- *"The district municipality serves as the Water Services Authority, and let me define what a Water Service Authority is. These entities possess both the legal authority and the responsibility, as outlined in the national Water Services Act, to deliver water. In other words, this function is exclusively vested in the district municipality (DRSM)." (Participant NLM2)*

This explanation emphasises the legal and functional responsibilities of the Water Service Authority, highlighting its pivotal role in water service delivery.

4.3.4.1.2. Water service provider

The role of Water Service Providers is equally important. Participant NLM2 explains how local municipalities fit into this framework:

- *"The district municipality subsequently designates local municipalities as Water Services Providers (WSP), with Naledi being one of the designated WSPs." (Participant NLM2)*

This statement points to the delegated responsibility of local municipalities in the provision of water services, indicating a layered structure of governance in this sector.

4.3.4.1.3. Service level agreement

Service Level Agreements are instrumental in defining the terms of service delivery. Participant LTLM1 talks about the relationship with the Water Service Authority:

- *"With our interactions with the Water Service Authority, there has never been a master plan or water master plan in place. The local municipalities sign a 5-year SLA with the district and it is reviewed annually." (Participant LTLM1)*

This highlights the importance of SLAs in outlining the roles and responsibilities of different stakeholders in water service provision, as well as the need for ongoing review and adaptation of these agreements.

4.3.4.1.4. Outsourcing

Outsourcing is a critical aspect of managing municipal services, especially in the domain of water and sanitation. Participant NLM1 sheds light on the implications of outsourcing core functions:

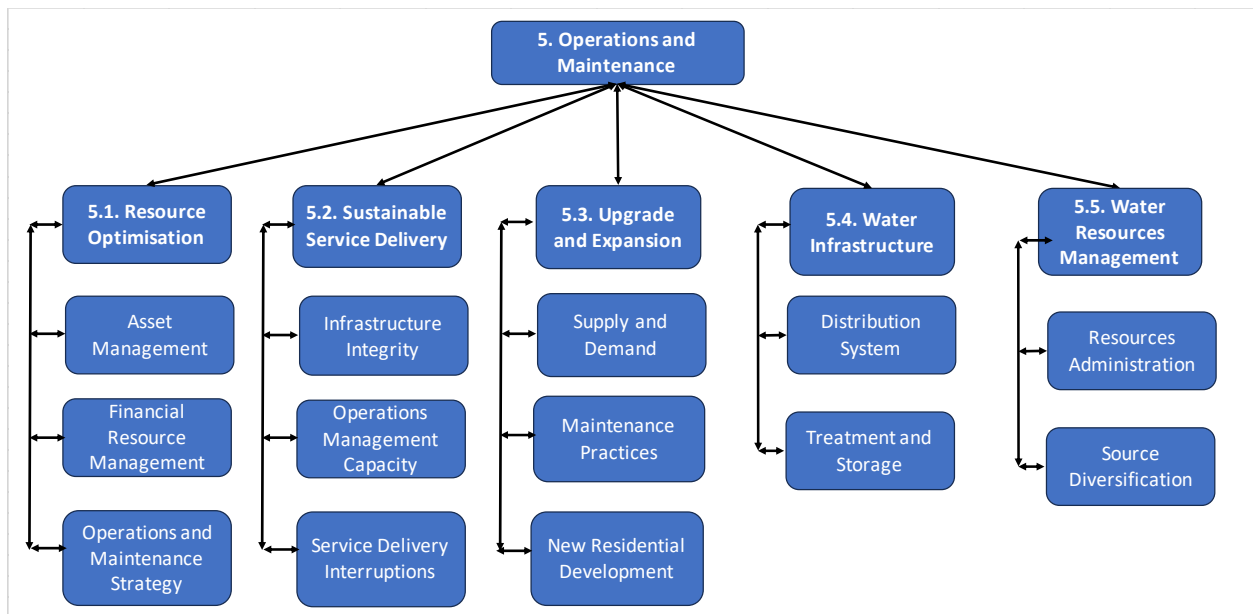
- *"Challenges are also because of outsourcing activities, which is your core mandate like water and sanitation to contractors and not work capacity in house. Now the problem is people come with their knowledge and they mess up the design. Now the design is always working on contingency plans which also affect the core business case of the design."*
(Participant NLM1)

This quote underscores the risks and challenges inherent in outsourcing, particularly the impact on service quality and the difficulty in maintaining control over essential services.

4.3.5 Theme 5: Operations and Maintenance

Streamlined operations, when combined with consistent and effective maintenance, greatly improve municipalities' capacity to fulfil their service delivery obligations (Nkomo & Mearns, 2017). This assertion highlights the critical importance of robust operations and maintenance (O&M) within the framework of local government. Far from being merely a logistical requirement, effective O&M is a strategic necessity. It ensures that municipalities can sustain and adapt to the increasing demands of their communities, thereby playing a crucial role in enhancing the quality of life and contributing to socio-economic advancement. Figure 4.8 illustrates the analysis of the theme Operations and Maintenance, together with its sub-themes Resource Optimisation, Sustainable Service Delivery, Upgrade and Expansion, Water Infrastructure and Water Resource Management informed by participant quotations from the provided document. These insights provide a comprehensive view of the operational and maintenance strategies employed by municipal governments in the context of water service delivery.

Figure 4.8: Theme 5 - Operations and maintenance



4.3.5.1 Sub-theme 5.1: Resource optimisation

Resource optimisation is a key factor in municipal operations, aiming to maximise efficiency and minimise waste. Participant LTLM1's mention of the district's role in infrastructure projects indicates a strategic approach to resource allocation:

- *"The district is responsible for undertaking infrastructure projects and the operation and maintenance of the bulk infrastructure within the local municipality." (Participant LTLM1)*

This highlights the importance of coordinating resources at various levels of government to ensure optimal service delivery. Optimising staff deployment and capabilities, municipalities can significantly improve the quality and efficiency of their services, which in turn positively impacts overall municipal performance (Cloete, 2018). This underscores the fact that resource optimisation extends beyond simple asset management; it is a strategic imperative. Through effective optimisation of resources, municipalities can markedly enhance their capacity to deliver services. This not only meets the needs of their communities more efficiently but also contributes to the broader goal of sustainable urban development.

4.3.5.1.1. Asset management

Asset management focuses on the long-term management of physical resources. The construction of reservoirs and water plants, as part of the Rural Bulk Supply Project mentioned by Participant LTLM2, exemplifies a proactive asset management strategy. This initiative

represents a significant investment in the infrastructure necessary for water service delivery, highlighting a commitment to enhancing capacity and resilience:

- *"It's about a R800 million which has been set aside for the construction of reservoirs, construction of water plants which would serve..." (Participant LTLM2)*

This quote underscores the magnitude of planning and investment that goes into asset management, ensuring that the water infrastructure can meet current service demands and adapt to future changes.

4.3.5.1.2. Financial resource management

Effective financial resource management is pivotal for the acquisition, allocation, and utilisation of funds in a manner that maximises the return on investment and ensures the sustainability of water service operations. The financial planning involved in the allocation of R800 million for infrastructure projects reflects a strategic approach to managing financial resources with an eye toward long-term benefits:

- *"It's a roll-out plan throughout the district if I'm not mistaken it's about a R800 million which has been set aside..." (Participant LTLM2)*

This participant's observation reveals the financial considerations that underpin asset management and resource optimisation, highlighting the need for careful financial stewardship.

4.3.5.1.3. Operations and maintenance strategy

Operational and maintenance strategies are critical for maintaining the serviceability and efficiency of water systems. Participant LTLM2 discusses the importance of community engagement as a part of operational strategy, specifically the outreach program aimed at promoting water conservation and stewardship among the community:

- *"A community reach-out programme to advise the community to use water sparingly and encourage them to look after this resource." (Participant LTLM2)*

This initiative not only aims to optimise water use but also fosters a sense of shared responsibility for the resource, emphasising the vital role of the community in sustaining water availability.

4.3.5.2 Sub-theme 5.2: Sustainable service delivery

Sustainability in service delivery is a recurring theme, emphasising the need for long-term, reliable services. Participant 2's statement about the appointment of a water service provider underscores this commitment:

- *"Magalies water board is appointed by the district to do operations and maintenance in the entire district." (Participant LTLM2)*

This reflects an approach to sustainability that involves delegating responsibilities to specialised entities to ensure consistent and high-quality service delivery. Municipalities integrating sustainability principles into their service delivery strategies not only achieve improved efficiency and effectiveness but also attain higher levels of community satisfaction (Pillay, 2016). This emphasises that sustainable service delivery by municipalities goes beyond being a mere operational option; it represents a strategic imperative. By embracing sustainable practices, municipalities are positioned to deliver services that are not just efficient and effective in the immediate term, but also resilient and adaptable for future challenges. This approach is key to fostering overall community well-being and long-term development.

4.3.5.2.1. Infrastructure integrity

Infrastructure integrity is paramount for sustainable service delivery, as it ensures that the physical systems are in good condition and can meet the demands placed upon them. Participant LTLM2 notes the challenge of aging infrastructure as a significant impediment to effective service delivery:

- *"The main challenge being the ageing infrastructure is one of the main undoing for effective service delivery to our communities." (Participant LTLM2).*

This statement highlights the necessity of regular infrastructure upgrades and maintenance to prevent service disruptions.

4.3.5.2.2. Operations management capacity

The capacity to manage operations effectively is essential for sustainable service delivery. It includes having the necessary skills, experience, and processes to oversee the water service delivery operations effectively. Participants 7 and 8 discuss the importance of having a skilled team and the challenges posed by the lack of capacity within the district municipality to operate and maintain services, which has been outsourced to water boards:

- *"It is partially outsourced and we have an operation and maintenance team... As the district municipality we don't have the capacity to operate and maintain." (Participant GTLM1 and DRSM1).*

This outsourcing may address the capacity issue but also points to the need for adequate internal skills and management capabilities.

4.3.5.2.3. Service delivery interruptions

Continuity of service is a critical component of sustainability. It ensures that water services are not interrupted and that any issues are quickly addressed. Participant DRSMDM1 underscores the importance of reviewing water service development plans to ensure water security, while Participant GTLM1 describes the frequent interruptions in water supply:

- *"I am convinced and certain that if our current Mega projects can be implemented successfully... this thing of interrupted water supply would be a thing of the past." (Participant DRSMDM1).*

However, the current state, as depicted by Participant GTLM1's experience with frequent water interruptions, shows that there is room for improvement in ensuring continuity of service:

- *"Because now and then we are experiencing water interruption... we end up augmenting or maybe assisting the district with water tankers from local municipality." (Participant GTLMM1).*

Moreover, the issue of interference with the water supply infrastructure, as mentioned in relation to Huhudi's water supply, further complicates service delivery continuity:

- *"This low rating can be attributed to several issues including pipeline problems interference and the business of water tankers... The response time [for repairs] can be as long as 3 to 5 days leading to wasted purified water." (Participant NLM2).*

Therefore, sustainable service delivery in water services is multi-dimensional, requiring sound infrastructure, capable operations management, and assured service continuity. The quotations from the participants reveal the complexity of these challenges and the efforts being made to address them, although it's clear that more work is necessary to achieve truly sustainable service delivery.

4.3.5.3 Sub-theme 5.3: Upgrade and expansion

The necessity for upgrades and expansion in municipal infrastructure is a response to growing and changing community needs. Participant 5's comments about new housing developments demonstrate the dynamic nature of municipal planning:

- *"New development... can be integrated into the final master plan... we are building now 8500 houses..." (Participant NLM1)*

This points to the need for municipal services to be adaptable and scalable, responding proactively to demographic changes. By focusing on sustainability in urban planning, municipalities can manage their resources more effectively and address the needs of their diverse populations in a more comprehensive manner (Dube & Chirisa, 2018). This underscores the importance of sustainable service delivery within the context of local government. By making sustainability a priority, municipalities are not only equipped to tackle current service delivery challenges but also to establish a foundation for future resilience and prosperity. Such an approach ensures that service delivery is not only efficient in the present but also sustainable in the long term, benefiting both current and future generations.

4.3.5.3.1. Supply and demand

The balance of supply and demand is a critical component of water services, especially in the face of expansion. Participant DRSMDM1 reflects on the district's reliance on both surface and underground water and the recent implementation of significant water infrastructure projects aimed at tapping into the Taung dam to meet the supply demands of surrounding villages:

- *"In the recent past the district has implemented massive water infrastructure projects... to supply all those villages around downtown." (Participant DRSMDM1).*

This indicates an awareness of the need to increase supply to meet the growing water demands.

4.3.5.3.2. Maintenance practice

Effective maintenance practices are the bedrock of any upgrade and expansion efforts, ensuring that existing infrastructure is kept in optimal condition while new developments are being planned and executed. Participant GTLM1 discusses the master plan for Greater Taung Local Municipality, which includes upgrading the bulk water pipeline and storage to accommodate new developments and improving Oxidation ponds:

- *"Greater Taung Local Municipality has a master plan that intends to address the water provision in the Reivillo area... to upgrade the bulk water pipeline and storage to be able to accommodate new developments..." (Participant GTLM1).*

This illustrates a proactive approach to maintenance that not only addresses current needs but also prepares for future requirements.

4.3.5.3.3. New residential development

New residential developments can significantly strain existing water service systems. Participant GTLM1's reference to the integration of new households into the water network and the master

plan's periodic review to accommodate area development demonstrates an understanding of the need for strategic planning in response to residential expansion:

- *"The Master plan is reviewed every 5th year... it depends on the demand of the area development..." (Participant GTLM1).*

Moreover, Participant LTLM1's comment about operating beyond the designed capacity of a plant in Christiana highlights the challenges of meeting water demands in rapidly growing areas:

- *"We are supplying about 12 megalitres per day... operating way beyond the designed capacity of the plant." (Participant LTLM1).*

This indicates a critical need for upgrades and expansion to meet the increasing water demands of new residential developments.

4.3.5.4 Sub-theme 5.4: Water infrastructure

Effective management of the water infrastructure system is a cornerstone of municipal operations. Participant LTLM1's reference to a WhatsApp group for coordination reveals an innovative approach to communication and collaboration:

- *"There's a WhatsApp group where we interact with the third party and we interact with the district." (Participant LTLM1)*

This example illustrates how technology is being leveraged to enhance coordination and information flow among different stakeholders. Van Dijk & van der Molen (2018) assert that enhancing water infrastructure not only improves service reliability and accessibility but also plays a pivotal role in contributing to community well-being. This elucidates the fact that water infrastructure within municipalities transcends mere utility management; it is fundamental to sustainable development. By focusing on effective investment and management of water infrastructure, municipalities can significantly elevate their service delivery standards. This, in turn, ensures that they are equipped to meet both the immediate and long-term needs of their communities, underlining the critical role of water infrastructure in fostering community development and resilience.

4.3.5.4.1. Treatment and storage system

The treatment and storage of water are fundamental to ensuring the availability of safe drinking water and the efficient delivery of water services. Participant LTLM1's response indicates that the district is responsible for both the construction of infrastructure projects and their operation and maintenance:

- *"In terms of the bulk water... the district is... responsible for undertaking infrastructure projects and the operation and maintenance of the bulk infrastructure within the local municipality... cedes that responsibility to a third party which is Magalies water." (Participant LTLM1).*

This quote reveals the district's approach to managing the complexities of water treatment and storage, including delegating responsibilities to ensure effective operations.

4.3.5.3.2. Distribution system

The distribution system is the network through which water is supplied to the end-users. Participant NLM2's comments highlight the challenges faced due to aging infrastructure and the impact this has on the reliability of the water distribution system:

- *"The water supply to Huhudi... is rated at a mere 5 out of 10. This low rating can be attributed to several issues including pipeline problems... The interference aims to trigger the demand for water tankering services..." (Participant NLM2).*

The disparities in the infrastructure's condition and service delivery underscore the importance of regular maintenance and the updating of the distribution system to meet community expectations. Additionally, Participant LTLM1 discusses the funding mechanisms for water infrastructure, which are vital for the maintenance and operation of water plants:

- *"We have the municipal infrastructure grant... These are our main source of capital for infrastructure projects. We are entirely dependent on this grant for maintenance and operations of our water plants." (Participant LTLM1).*

Moreover, there are efforts to augment water supply through infrastructure projects that tap into additional water sources, as Participant 1 mentions:

- *"We also have massive water infrastructure projects... to supply all those areas around [Baga-Mothibi]." (Participant GTLM1).*

This indicates ongoing initiatives to enhance the capacity of the water system to ensure adequate supply in the face of growing demand.

4.3.5.5 Sub-theme 5.5: Water resources management

The management of water resources is a critical concern, given its importance for community health and economic development. Participant LTLM2 highlights the delegated responsibility for this:

- *"It's the responsibility of Magalies water board... for operations and maintenance in our local municipalities." (Participant LTLM2)*

This indicates a focus on specialised management practices to ensure the sustainable use and preservation of water resources. Municipalities employing integrated water resource management (IWRM) approaches realise advancements in water service delivery, notably through enhanced resource allocation and conservation practices (Nhamo *et al.*, 2016). This underscores the fact that effective water resource management within municipalities goes beyond being a technical issue; it is a strategic necessity that has a direct impact on the quality and reliability of water services. By giving priority to and innovating in water resource management, municipalities can substantially upgrade their service delivery, ensuring sustainable water access for their communities and contributing to the broader goals of environmental sustainability and resource conservation.

4.3.5.5.1. Resources administration

Effective resource management is about making the best use of available water resources while also planning for future needs. Participant LTLM2 emphasises the significance of community engagement in conservation efforts, which is a key aspect of managing the demand side of water resources:

- *"A community reach-out programme to advise the community to use water sparingly and encourage them to look after this resource." (Participant LTLM2).*

In addition to conservation, Participant LTLM1 discusses the proactive measures being taken to enhance the capacity of water treatment facilities, which is a clear example of managing the supply side:

- *"It's a 10 mega litre water purification plant which is being augmented currently to 24 megalitres per day... That project is at an advanced stage... part of the reason why that project is undertaken is because there's a pipeline that is being constructed to Mamusa local municipality." (Participant LTLM1).*

This reveals the district's initiative to not only increase the water supply but also improve the distribution infrastructure to accommodate growth and demand in different localities.

4.3.5.5.2. Source diversification

The strategic approach to source diversification involves expanding and securing a variety of water sources to provide a buffer against potential shortages or failures in the supply chain.

Participant DRSMDM1's description of the district's water supply strategy illustrates a multifaceted approach, utilising both surface and underground water sources to meet the needs of various municipalities:

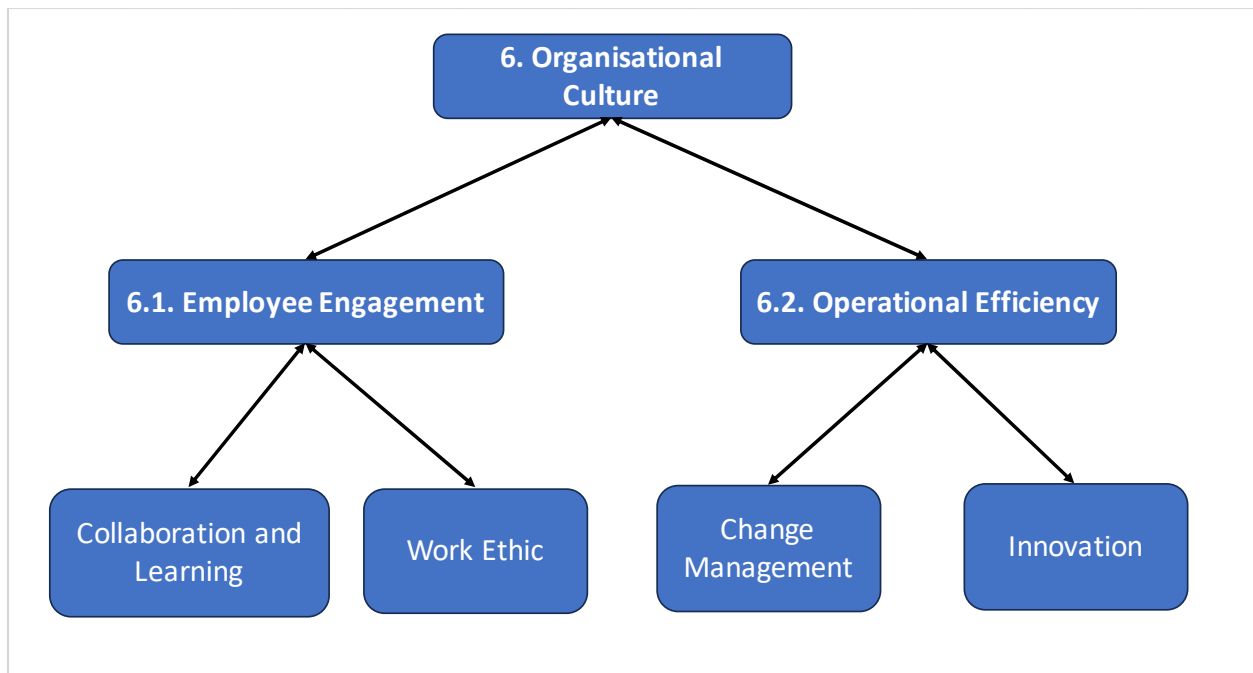
- *"Our district is vast... municipalities like Greater-Taung Naledi and Kagisano-Molopo are heavily reliant on underground water from boreholes... Taung is partly supplied through surface sources that would be Taung dam and Vaalhearts water scheme." (Participant DRSMDM1).*

This indicates an understanding of the importance of not relying on a single source of water, which can be vulnerable to climatic variations, contamination, or overuse. By incorporating both boreholes and larger bodies of water like dams and rivers, the district is ensuring a more stable and reliable water supply.

4.3.6 Theme 6: Organisational Culture

Organisational culture fostering innovation, continuous learning, and ethical behaviour significantly contributes to enhanced service delivery outcomes (Mkhize, 2018). These insights highlight that organisational culture in local governments is far more than a passive backdrop; it is an active and influential force. It moulds the attitudes and behaviours of municipal employees, steering them towards higher standards in public service delivery. Therefore, the development and nurturing of a positive organisational culture are crucial for municipalities committed to not only meeting but surpassing the expectations of their communities. This emphasis on culture underscores its vital role in driving service efficiency, employee motivation, and overall public satisfaction. Figure 4.9 illustrates the analysis of the theme "Organisational Culture" along with its sub-themes "Operational Efficiency" and "Employee Engagement" and is grounded in participant quotations from the provided document. These insights offer a glimpse into the internal dynamics of municipal operations, emphasising the significance of workplace culture, operational practices, and employee motivation.

Figure 4.9: Theme 6 - Organisational culture



4.3.6.1 Sub-theme 6.1: Employee engagement

Employee engagement is another critical aspect of organisational culture. The importance of recognising and motivating employees is underscored by Participant LTLM2:

- *"There's nothing as good as being acknowledged as an employee. Acknowledged for work done. Acknowledged for good performance. Small, initiatives that motivate would always go a long way." (Participant LTLM2)*

This highlights the positive impact of recognition and motivation on employee engagement, suggesting that acknowledging employees' contributions can significantly enhance their performance and commitment. Furthermore, Participant 8 discusses the approach to employee development and promotion:

- *"Over the past year and the preceding two years, we promoted many of our employees to higher positions based on their achievements and the certificates they obtained from the relevant SETAs." (Participant MLM1)*

This approach to employee development and promotion reflects an organisational commitment to recognising and rewarding performance and skills development, which can foster a culture of engagement and continuous improvement. Engaged employees tend to be more committed to their work and proactive in addressing issues, which significantly contributes to improved service outcomes (Kanyane, 2017). These findings emphasise the critical role of employee engagement

in the context of local government. Employee engagement is vital for creating a workforce that is motivated, competent, and dedicated, which is a key ingredient for delivering high-quality services to the community. Consequently, cultivating an environment that fosters engagement within municipalities is essential for elevating service delivery standards and enhancing overall community welfare. This approach to human resource management highlights the value of investing in employees' well-being and job satisfaction as a means of achieving broader organisational goals.

4.3.6.1.1. Collaboration and learning

Collaboration and organisational learning are pivotal for employee engagement, fostering a culture of teamwork and continuous improvement. Participant MLM1 provides insight into the collaborative nature of their work:

- *"For instance, when a service provider is appointed, they usually start by coming to our municipality to get introduced. We work closely with them in preparing for the master plan. The majority of the relevant information is with us rather than other entities like the district or Magalies. So, most of the work is done in collaboration with us." (Participant MLM1)*

This highlights the value placed on collaboration in project planning and execution, illustrating how employee engagement is enhanced through active participation and knowledge sharing. Similarly, Participant NLM1 emphasises the importance of keeping plans up to date through collaborative efforts:

- *"As for the water master plan, I don't have specific information on its workings, but I can certainly provide details about how the roads master plan is managed and updated. In the future, as the water master plan takes shape, we'll ensure it is kept up to date in collaboration with the district." (Participant NLM1)*

This reflects an understanding of the importance of collaboration for organisational learning and the continuous updating and improvement of plans and strategies.

4.3.6.1.2. Work ethic

Work ethic plays a vital role in employee engagement, influencing the productivity and effectiveness of municipal operations. Participant MLM1's commentary on the current state of affairs highlights challenges in this area:

- *"The current situation is quite poor. On a scale of 1 to 10, I would rate it at two. The core issue is the lack of effective communication and collaboration." (Participant MLM1)*

This statement points to the impact of work ethic on collaboration and communication within the municipality, suggesting a need for improvement to enhance overall operational effectiveness.

4.3.6.2 Sub-theme 6.2: Operational efficiency

Operational efficiency in municipal governance is closely tied to the organisational culture. Participant GTLM1 reflects on the challenges of operational efficiency, attributing them partly to institutional culture:

- *"The skill is there and I can give that a nine (9). It's just that the challenge with our people it's the attitude and what is called institutional culture. The people that assist and are supposed to be doing all these things sometimes, they just drag their feet. Nothing is agent to them." (Participant GTLM1)*

This statement highlights the impact of employee attitudes and organisational culture on the effectiveness and efficiency of operations, suggesting that skill levels are high but are undermined by cultural factors. Van der Merwe (2018) asserts that efficient resource use not only bolsters service delivery but also plays a key role in ensuring fiscal sustainability, which is essential for the long-term provision of services. This emphasises the fact that operational efficiency within municipalities extends beyond being a mere managerial objective; it is a strategic imperative. Efficient operations enable municipalities to effectively meet service delivery demands, improve public satisfaction, and sustain financial health. These aspects are critical for fostering the growth and development of local communities. Thus, prioritising operational efficiency is essential for municipalities to maintain a balance between immediate service needs and long-term fiscal and developmental goals.

4.3.6.2.1. Change management

The ability to manage change effectively is a critical component of operational efficiency. Participant KMLM1 discusses the challenges and potential strategies in the context of water conservation:

- *"The municipality has always been in financial constraint and part of this water conservation strategy has never been properly commercialised through a process... those are things we will have to look at more especially when you look at issues like, some of the water can be re-used for other activities." (Participant KMLM1)*

This statement underscores the need for change management in response to financial constraints and environmental considerations. It suggests a proactive approach to re-evaluating and modifying existing strategies to enhance operational efficiency.

4.3.6.2.2. Innovation

Innovation is also pivotal for operational efficiency. Participant NLM1 speaks about the need for innovative solutions in water management, especially in an agricultural setting:

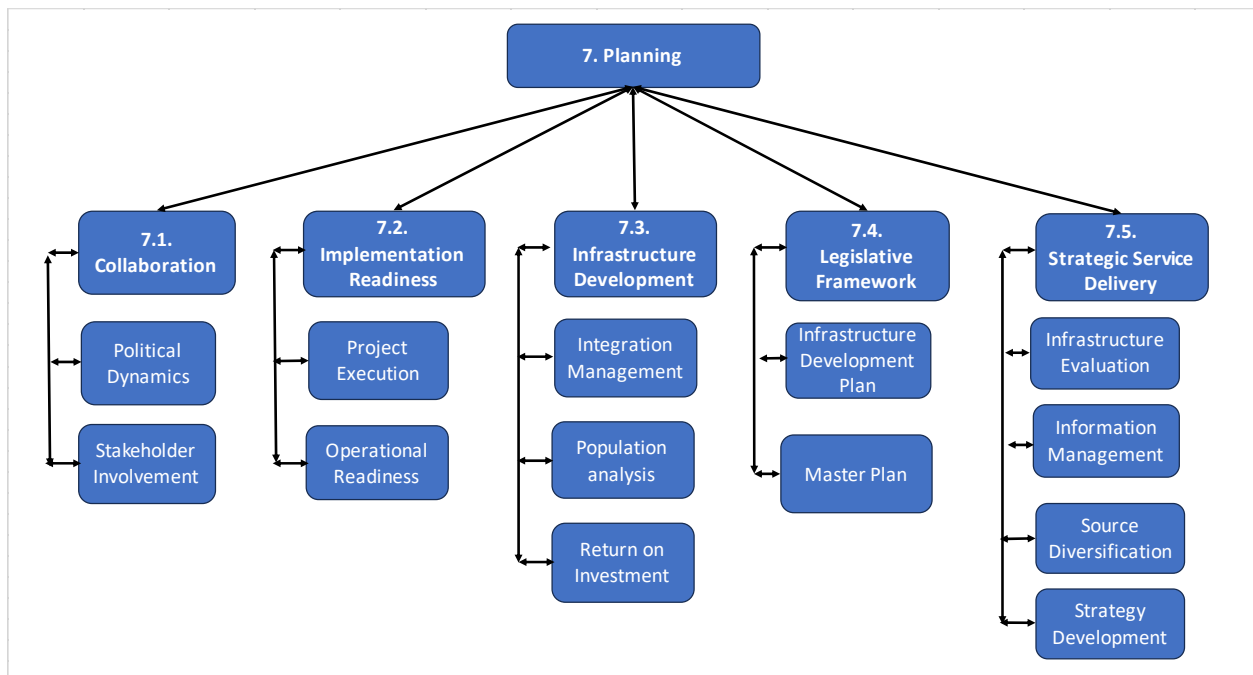
- *"The issue here which we are sitting in an agricultural area, we are sharing the same water with animals now that already tells you that research and innovation has to keep up to look at methodology of utilising the processes whereby maybe the farming process also takes a lot of water and look at the hydrant products which when you use water for this, then it feel your agriculture for agro-processing processes and your feet let it be a dehydrated feet so that it goes the animal with all the essential vitamins without using a lot of water." (Participant NLM1)*

This quote illustrates the innovative thinking required to manage water resources efficiently in a shared agricultural environment. It points to the need for inventive approaches to resource utilisation that consider both environmental sustainability and operational demands.

4.3.7 Theme 7: Planning

Comprehensive planning, which includes economic, social, and environmental considerations, is key to achieving more effective and sustainable service outcomes (Twala, 2016). This argument emphasises the fact that planning in the context of local government is much more than a routine bureaucratic task. It is an indispensable tool for crafting and achieving a future that adequately addresses the multifaceted needs of communities. Strategic, inclusive, and integrated planning is therefore fundamental for effective service delivery. It serves as a critical pillar in guiding municipal development and enhancing the well-being of communities. This approach to planning highlights the need for a holistic view in policy development and implementation, ensuring that diverse community needs, and sustainability goals are effectively met. Figure 4.10 illustrates the analysis of the theme Planning, alongside its sub-themes Collaboration, Strategic Service Delivery, Infrastructure Development, Implementation Readiness and Legislative. These insights offer perspectives on the complexities and approaches to planning within municipal governance.

Figure 4.10: Theme 7 - Planning



4.3.7.1 Sub-theme 7.1: Collaboration

Collaboration is foundational in municipal planning, ensuring inclusivity and comprehensiveness. Participant KMLM1 delves into the process of integrating community needs into the Integrated Development Plan (IDP):

- *"During the process of compiling the IDP there is what do you call community-based planning where it will get the needs the of the communities and we do analysis." (Participant KMLM1)*

Additionally, Participant MLM1 emphasises collaboration with the district in maintaining infrastructure plans:

- *"As for the water master plan, I don't have specific information on its workings, but I can certainly provide details about how the roads master plan is managed and updated... we'll ensure it is kept up to date in collaboration with the district." (Participant MLM1)*

These statements underscore the necessity of cross-functional and community collaboration in municipal planning processes. Van der Waladt (2016) argues that collaborative efforts among different departments lead to a more cohesive and integrated approach to service delivery. This integration significantly enhances both the efficiency and effectiveness of services. These highlight the crucial role of collaboration in the context of municipalities. Collaboration is not merely advantageous; it is imperative. It enables a comprehensive approach to tackling service

delivery challenges, drawing on the strengths and resources of various stakeholders. As such, cultivating a culture of collaboration within municipalities is critical for improving service delivery. This approach ensures that services are not only delivered more effectively but also align with the broader goals of sustainable development and community well-being.

4.3.7.1.1. Political dynamics

Political dynamics can significantly influence the collaboration process. Participant NLM2 comments on the challenges posed by political considerations in planning and budgeting:

- *"The current situation is quite poor. On a scale of 1 to 10, I would rate it at 2. The core issue is the lack of effective communication and collaboration... Although legally, they are required to consult with local municipalities before finalising their IDPs, in practice, they often work with incremental budgeting, increasing expenses by a standard 5% from the previous year without in-depth analysis." (Participant NLM2)*

This participant's perspective points to the difficulties in achieving effective collaboration amidst political complexities and highlights the need for more thorough and inclusive planning approaches.

4.3.7.1.2. Stakeholder involvement

Stakeholder involvement is a critical component of effective collaboration. Participant MLM1 illustrates this aspect in the context of working with service providers:

- *"For instance, when a service provider is appointed, they usually start by coming to our municipality to get introduced. We work closely with them in preparing for the master plan. The majority of the relevant information is with us rather than other entities like the district or Magalies. So, most of the work is done in collaboration with us." (Participant MLM1)*

This statement highlights the municipality's central role in collaborating with external stakeholders, emphasising the significance of information sharing and joint planning for successful project outcomes.

4.3.7.2 Sub-theme 7.2: Implementation readiness

The readiness for implementation is a critical factor in the success of municipal planning. Participant GTLM1 speaks to the importance of keeping plans relevant and updated:

- *"In the future, as the water master plan takes shape, we'll ensure it is kept up to date in collaboration with the district." (Participant GTLM1)*

This forward-looking approach highlights the necessity of adaptive and responsive planning, ensuring that municipalities are always prepared for implementation challenges. Municipalities with a high degree of implementation readiness marked by robust leadership, sufficient resources, and effective communication are more successful in delivering services efficiently and effectively (van der Heijden, 2016). This emphasises the fact that implementation readiness within municipalities is a comprehensive concept. It extends beyond the mere presence of plans and encompasses the capacity to execute these plans proficiently. By prioritising the enhancement of implementation readiness, municipalities can notably improve their service delivery. This improvement is crucial not just for the immediate success of specific projects but also for the broader development and well-being of communities. Therefore, a focus on cultivating strong leadership, ensuring resource availability, and fostering open communication is essential for municipalities aiming to effectively respond to the needs and expectations of their residents.

4.3.7.2.1. Project execution

Project execution in the context of municipal infrastructure is a complex undertaking. Participant LTLM1, from the project management unit, discusses their role in overseeing infrastructure projects:

- *"I have been with Lekwa-Teemane local municipality for a period of 6 years now. I'm appointed as the project management unit the PMU. So essentially we are responsible for the infrastructure projects that have been undertaken within the municipality." (Participant LTLM1)*

This highlights the significant responsibility of the PMU in managing and executing infrastructure projects, indicating the importance of robust project management practices for successful outcomes.

4.3.7.2.2. Operational readiness

Operational readiness is crucial for the successful implementation of projects. Participant GTLM1, sheds light on their multifaceted role, which includes overseeing the operational aspects of infrastructure projects:

- *"In this role, I manage various aspects, including water, sewer, roads, and all infrastructure projects within the Directorate of Technical Services, including house plans." (Participant GTLM1)*

This statement emphasises the breadth of responsibilities involved in ensuring operational readiness, from managing diverse infrastructure projects to dealing with detailed aspects such as house plans.

4.3.7.3 Sub-theme 7.3: Infrastructure development

Infrastructure development is a central aspect of municipal planning. Participant DRSMDM1 describes the initiation of a master plan for vital services:

- *"We recently just appointed a service provider to do master planning... for both water and sanitation." (Participant DRSMDM1)*

This demonstrates a proactive and structured approach to infrastructure development, essential for sustainable municipal service delivery. Smith and Van der Walt (2017) argue that substantial investments in essential infrastructure, such as transportation networks, water supply, and sanitation systems, are directly linked to improved service delivery, economic growth, and social equity. This study highlights that infrastructure development within municipalities transcends mere physical construction; it is a strategic endeavour encompassing thorough planning, sustainable investment, and a vision for long-term impact. Effective and strategic infrastructure development is essential for municipalities to address the changing needs of their communities adequately. Such development is not only instrumental in improving current service delivery but also in driving broader socio-economic development. By prioritising infrastructure, municipalities lay the groundwork for a more prosperous and equitable future, ensuring that they can meet both the immediate and future needs of their residents.

4.3.7.3.1. Integration management

Integration management is crucial for aligning various aspects of infrastructure development. Participant NLM2 discusses the role of grants in financing water infrastructure and the integration of responsibilities between different entities:

- *"The Municipal Infrastructure Grant (MIG) plays a significant role in financing infrastructure development for water... DRSM is responsible for implementing these projects, and once completed, the assets are maintained by them. The maintenance is often carried out by Naledi Local Municipality on behalf of DRSM through a service level agreement." (Participant NLM2)*

This highlights the complexity of integrating financial resources, project implementation, and maintenance responsibilities among various stakeholders in the infrastructure development process.

4.3.7.3.2. Population analysis

Understanding the demographic needs is essential for tailoring infrastructure development. Participant LTLM1, focusing on community services, mentions the need for population analysis in planning:

- *“There's no adequate water to provide for all the households and what exacerbates that situation is that we keep expanding about three years back. We added about 2700 households to the water network. So, we keep expanding in terms of service and we keep expanding in terms of the number of households, but this is a problem that's been with us for the past four years.” (Participant LTLM1)*

4.3.7.3.2. Return on investment

The concept of Return on Investment (ROI) is vital in assessing the effectiveness of infrastructure projects. Participant NLM1, involved in the financial management of the municipality, reflects on the financial aspects of infrastructure projects:

- *“We have a master plan and the only challenge for now is only the implementation of is costly, is around above R148million. It dropped from around R400million because the district municipality not having the financial muscle to can implement it and your financial support from national. The inputs for now we implemented only partially part of the master plan, which was to reconnect some of our boreholes, comparing them with the profile of their capacity, some positive changes made for the past few months to connect those boreholes per day is already giving us around 2million litres of water, but it's not enough because even the water that comes from Pudumong is not enough to sustain the surrounding area” (Participant NLM1)*

4.3.7.4 Sub-theme 7.4: Legislative framework

Adherence to legislative frameworks is a guiding principle in municipal planning. Participant NLM1 addresses the alignment of local needs with statutory requirements:

- *“The municipality IDP and so forth... should be informed by our needs.” (Participant NLM1)*

This statement reflects the importance of ensuring that municipal plans are not only responsive to community needs but also comply with legislative frameworks. A robust and well-structured legislative framework is key to enhancing administrative efficiency, which in turn positively affects service delivery (Mkhize, 2019). These emphasises the critical importance of the legislative framework in South African municipalities. It extends beyond being a mere collection of rules and

regulations; it serves as a fundamental structure that guides the operational and service delivery mechanisms of municipalities. An effective legislative framework not only ensures statutory compliance but also strategically empowers municipalities to address the changing and diverse needs of their communities. By aligning administrative processes with a strong legislative backbone, municipalities can enhance their efficiency and effectiveness, thereby playing a significant role in promoting community development and enhancing the well-being of their residents. This approach highlights the need for continuous evaluation and adaptation of legislative frameworks to meet contemporary challenges and opportunities in municipal governance.

4.3.7.4.1. Infrastructure development plan

The Infrastructure Development Plan is a crucial tool within the legislative framework that guides infrastructure projects. Participant KMLM1 highlights the lack of a formalised water service delivery master plan, noting the implications of this gap:

- *"With our interactions with the Water service authority there has never been a master plan or water master plan in place. The local municipalities sign a 5-year SLA with the district and it is reviewed annually." (Participant KMLM1)*

This statement underscores the challenges faced by local municipalities in the absence of a comprehensive master plan, impacting the strategic planning and implementation of water services.

4.3.7.4.2. Master plan

The Master Plan is a foundational element of the legislative framework for infrastructure development. Participant NLM2 discusses the role of the district municipality in developing and reviewing the master plan:

- *"Well, the district municipality, DRSM as the water service authority have a master plan which is reviewed when a new municipality council comes into office." (Participant NLM2)*

This comment reflects the dynamic nature of master planning, emphasising the need for continual review and adaptation in response to changing administrative structures and community needs.

4.3.7.5 Sub-theme 7.5: Strategic service delivery

Strategic service delivery is crucial in ensuring that municipal planning aligns with local needs and priorities. Participant 1 details how local needs inform district planning:

- *"We do communicate our needs and priorities to the district... our IDP and so forth. Those meetings in terms of strategic planning and identifying and reporting the needs to the district those meetings used to be regular." (Participant LTLM1)*

This insight highlights the interconnectedness of strategic planning at various levels of municipal governance and the importance of regular communication and meetings to align services with community needs. Sibanda & Hanyane (2019) assert that the application of strategic management practices, such as defining clear goals, engaging stakeholders effectively, and monitoring performance, leads to significant improvements in the quality and efficiency of municipal services. This involves the development of a clear vision, the alignment of resources and actions with that vision, and the ability to adapt to evolving circumstances. Such a strategic approach is vital for municipalities to effectively cater to the diverse needs of their communities and promote overall socio-economic growth. This emphasises the importance of not just operational excellence but also of strategic foresight and adaptability in municipal governance, ensuring that services are not only delivered efficiently but also remain responsive to the changing needs and aspirations of the community.

4.3.7.5.1. Infrastructure evaluation

The evaluation of infrastructure is key to strategic planning. Participant GTLM1, who manages roads and stormwater, emphasises their expansive role:

- *"My role in Greater Taung local municipality is to manage roads and stormwater. Currently I'm the acting technical director focusing on all municipality infrastructure." (Participant GTLM1)*

The participant's experience reflects the importance of ongoing infrastructure assessment in ensuring effective service delivery.

4.3.7.5.2. Information management

Efficient information management is crucial for strategic service delivery. Participant LTLM1, from the project management unit, underscores their role in overseeing infrastructure projects:

- *"I have been with Lekwa-Teemane local municipality for a period of 6 years now. I'm appointed as the project management unit the PMU. So essentially we are responsible for the infrastructure projects that have been undertaken within the municipality." (Participant LTLM1)*

This statement highlights the significance of managing information and coordinating various aspects of infrastructure projects for effective service delivery.

4.3.7.5.3. Strategy development

Developing a coherent strategy is vital for municipalities. Participant GTLM1, describes their diverse management responsibilities:

- *"In this role, I manage various aspects, including water, sewer, roads, and all infrastructure projects within the Directorate of Technical Services." (Participant GTLM1)*

This broad scope of responsibilities implies a need for a well-developed strategy to effectively manage and deliver services.

4.3.7.5.4. Source diversification

Diversifying sources, particularly in water supply, is an essential aspect of strategic service delivery. Participant NLM2, describes the various sources at their disposal to supply bulk water within the municipality:

- *"The water supply in our municipal area is divided into two main sources. Approximately 40% of the water comes from boreholes. We have around 18 boreholes located throughout the municipal area. These boreholes supply water to areas like Vryburg town, Newtown, Colridge, and Kismet Park. The Pudumong plant receives raw water from the Vaal River, which is delivered by a company known as Vaalhart. This raw water is transported from the Vaal River to the treatment plant, traveling through Jan Kemp dorp, Hartswater, and the surrounding channels and villages in Taung, finally reaching Pudumong." (Participant NLM2)*

4.4 CONCLUSION

The Results and Discussion chapter of the research carefully analysed a complex range of results obtained from qualitative analysis. The chapter, structured with a clear focus on the objectives and methodologies of the study, followed with care through an extensive range of themes, subthemes and categories that emerged from the transcripts of the interviews. This careful examination compared the results to the existing body of literature, thus not only enriching the academic value of the study, but also revealing new perspectives. It emphasized in particular that challenges in operations and maintenance were highlighted as key obstacles to sustainable delivery of water services in bulk, closely followed by issues in planning and governance. The chapter went beyond simply emphasising the depth of empirical data; it showed its vital relevance and substantial contribution to the broader theoretical dialogue. This was particularly evident in

the conclusions that highlighted critical concerns such as the pressure on bulk water infrastructure due to population growth and the delay in adaptive planning and governance to adapt to these demographic changes.

CHAPTER 5 CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter aims to synthesise the insights gleaned from both the empirical research and the literature review. It presents a cohesive summary of the key themes that emerged in the findings and discussion sections. Additionally, this chapter juxtaposes the study's outcomes with the existing body of research covered in the literature review.

Subsequently, the chapter provides strategic recommendations for municipality officials to address bulk water service delivery challenges and leverage potential opportunities. It also revisits and critically evaluates the extent to which the primary and secondary objectives of the study were met. Finally, the chapter culminates by proposing directions for future research in this area.

5.2 SUMMARY OF KEY FINDINGS

5.2.1 Theme 1: Capacity Building

5.2.1.1 Employee Development and Promotion

Focusing on the growth and advancement of employees is a crucial component of building organisational capacity. Acknowledging and incentivising both achievements and the enhancement of skills, the municipality shows its dedication to cultivating an environment of ongoing growth and active involvement. Such a strategy not only drives employee motivation but also guarantees the presence of a competent workforce equipped to tackle intricate issues in municipal administration.

5.2.1.2 Collaboration and Learning

Collaboration both within and among different departments is crucial for the exchange of knowledge and shared learning. The study highlights this through examples of working with both external service providers and internal stakeholders in the development of master plans, showcasing the essence of collaborative work. Such teamwork broadens the capabilities of municipal employees, providing them exposure to a variety of viewpoints and specialised knowledge.

5.2.1.3 Work Ethic and Communication

Work ethic, shaped by efficient communication and teamwork, plays a vital role in the development of organisational capacity. The research identifies existing obstacles in these aspects, underscoring the necessity for enhanced communication methods and teamwork

approaches. Tackling these issues can result in a workforce that is both more effective and efficient, consequently augmenting the municipality's ability to provide services.

5.2.1.4 Organisational Culture and Operational Efficiency

Organisational culture profoundly influences operational effectiveness. According to the observations in the document, the mindset of employees and the existing institutional culture can often hinder efficiency. This situation underscores the importance of a cultural transformation toward a more proactive and responsive workplace. In such an environment, employees should be motivated to take the initiative and actively contribute to the efficiency of municipal operations.

5.2.2 Theme 2: Communication

5.2.2.1 Role in Work Ethic and Employee Engagement

Communication is deeply intertwined with work ethic and employee engagement. The research points out a noticeable shortfall in effective communication practices within the municipality, directly affecting employee morale and productivity. There is a clear need for enhanced communication strategies to cultivate a workforce that is more engaged and efficient.

5.2.2.2 Impact on Collaboration

The success of collaboration both within various municipal departments and with external parties significantly depends on communication. The research emphasises the importance of maintaining clear and open channels of communication to support cooperative endeavours in planning and implementing municipal projects. This aspect is particularly vital in critical areas such as the development of master plans and the execution of infrastructure projects.

5.2.2.3 Challenges in Current Communication Practices

The municipality's present communication condition is characterised as suboptimal, marked by a significant absence of effective collaboration. This indicates a shortfall in both the distribution of information and the manner in which communication is managed among employees and across departments. It's essential to tackle these communication difficulties to enhance collaboration and boost operational efficiency.

5.2.2.4 Strategies for Improvement

For improving communication within the municipality, a holistic strategy is necessary. This should include training in communication skills, creating stronger channels of communication, and promoting a culture that prioritises open dialogue. Encouraging regular meetings, feedback

sessions, and employing collaborative tools are key measures that can help establish more effective communication practices.

5.2.2.5 Role in Strategic Planning and Implementation

Communication is crucial in the strategic planning and execution of municipal projects. Consistent and efficient communication guarantees that all stakeholders are in sync with the municipality's objectives and strategies. This aspect is especially important for maintaining the relevance and currency of plans, as well as for the successful completion of projects.

5.2.3 Theme 3: Funding

5.2.3.1 Financial Constraints and Project Implementation

The study underscores the municipality's substantial financial limitations, especially in executing large-scale infrastructure initiatives. An example is the implementation of a master plan, which initially faced high-cost estimates that were subsequently reduced due to budget constraints. This situation highlights the critical need for proficient financial management and strategic planning to navigate and overcome these funding challenges.

5.2.3.2 Role of Grants and External Funding

Grants are a key element in funding infrastructure development. The Municipal Infrastructure Grant (MIG), as referenced in the research, is particularly vital in backing water infrastructure development initiatives. This emphasises the significance of external funding sources and underscores the necessity for the municipality to efficiently handle and incorporate these funds into their projects.

5.2.3.3 Balancing Financial Support and Local Needs

Striking a balance between the financial backing from national authorities and the distinct requirements of the local municipality presents a significant challenge. The research points to the necessity for congruence between the available financial resources and the real needs of the municipality. This entails not only obtaining sufficient funding but also guaranteeing that it is distributed in a way that effectively addresses local necessities.

5.2.3.4 Strategies for Sustainable Funding

Confronting funding challenges requires the municipality to seek out various sources of funding and implement sustainable financial tactics. This might involve establishing public-private partnerships, making use of community resources, and investigating novel financing models.

Moreover, enhancing the financial planning and management skills within the municipality could result in a more effective utilisation of the funds at hand.

5.2.4 Theme 4: Governance

5.2.4.1 Influence of Organisational Culture

Governance is intimately linked to organisational culture. The research reveals that despite high skill levels within the municipality, the efficiency and effectiveness of governance are occasionally compromised by cultural elements. This encompasses the attitudes of employees and the dominant institutional culture, which may hinder operational efficiency. It is crucial to address these cultural factors to improve the governance process.

5.2.4.2 Operational Efficiency

Effective governance plays a pivotal role in attaining operational efficiency. The research identifies challenges in this realm, partly attributing them to problems within the organisational culture. Enhancing governance requires more than just skill development; it necessitates nurturing a culture that promotes proactive and efficient operations.

5.2.4.3 Strategies for Improved Governance

Enhancing governance requires a comprehensive strategy. This involves fortifying the organisational culture to bolster efficiency and effectiveness, improving communication and collaboration at different levels within the municipality, and establishing strong change management procedures. Additionally, cultivating transparency and accountability within governance practices is crucial for establishing trust and credibility.

5.2.4.4 Governance and Strategic Planning

Governance is fundamental in strategic planning, especially in the realms of infrastructure development and service delivery. The research highlights the importance of governance frameworks that facilitate effective planning, execution, and assessment of municipal projects and services.

5.2.5 Theme 5: Operations and Maintenance

5.2.5.1 Integration Management

The successful integration of different operational and managerial aspects is crucial for alignment and efficiency. The research addresses the complexity involved in synchronising financial resources, project execution, and maintenance duties among various stakeholders. This

underscores the importance of concerted efforts and smooth collaboration among different entities to ensure efficient and effective operations and management of municipal infrastructure.

5.2.5.2 Complexity in Infrastructure Maintenance

Maintaining infrastructure, especially bulk water facilities, encompasses complex procedures and responsibilities. The study highlights that grants such as the Municipal Infrastructure Grant (MIG) are utilised to fund these aspects, along with the challenges faced in sustaining the infrastructure after completion. This emphasises the necessity for the municipality to devise robust maintenance strategies that are both sustainable and financially viable, ensuring long-term operational integrity within its fiscal capabilities.

5.2.5.3 Strategies for Effective Operations and Maintenance

For improved operations and maintenance, municipalities must concentrate on both immediate and long-term planning. This encompasses the regular assessment of infrastructure, effective distribution of resources for upkeep, and the adoption of innovative approaches to tackle new challenges. Furthermore, creating an all-encompassing operations and maintenance plan that is in harmony with the municipality's overarching strategic objectives is essential.

5.2.5.4 Impact of Organisational Culture on Operations and Maintenance

The research emphasises the influence of organisational culture on operations and maintenance. The attitudes of employees and the prevailing institutional culture can considerably impact the efficiency of operational and management processes. Fostering a culture that prioritises promptness, accountability, and a proactive stance can substantially enhance the overall effectiveness of operations and management activities.

5.2.5.5 Challenges in Project Execution

Project execution, a crucial component of operations and management, is intricate and carries substantial responsibilities. The study delves into the function of project management units in supervising infrastructure projects, pointing out the significance of strong project management practices for successful results. Efficiently carrying out projects is essential to ensure that the developed infrastructure fulfils its intended purpose effectively.

5.2.6 Theme 6: Organisational Culture

5.2.6.1 Influence on Employee Engagement and Development

Organisational culture plays a pivotal role in enhancing employee engagement and facilitating growth. Studies emphasise the value of a workplace culture that promotes teamwork, continuous

learning, and cooperative efforts, which are essential for maintaining high employee engagement levels. In such settings, employees are encouraged to be proactive, contribute meaningfully to the organisation's goals, and seek both personal and professional advancement.

5.2.6.2 Impact on Operational Efficiency

The operational efficiency within a municipal framework is deeply impacted by the prevailing organisational culture. Research points out situations in which the attitudes of employees and the overall institutional culture can impede efficiency. Even when employees possess high levels of skill, these may not be optimally utilised due to cultural constraints, highlighting the need for a shift in culture that places a higher emphasis on efficiency.

5.2.6.3 Challenges in Work Ethic and Collaboration

The work ethic, an integral part of the organisational culture, significantly affects teamwork and communication within a municipal context. The research points out current deficiencies in these areas, underscoring the need for a culture conducive to efficient communication and cooperative work practices.

5.2.6.4 Need for Change Management and Innovation

The role of organisational culture in a municipality's ability to adapt to change and drive innovation is significant, as the study reveals. It particularly focuses on the challenges of adapting to financial constraints and environmental issues, highlighting the importance of a culture that supports change management and fosters innovative thinking. This is critical in areas like water management.

5.2.6.5 Strategies for Cultivating a Positive Culture

To improve organisational culture, strategic actions are necessary to cultivate a positive, proactive, and collaborative environment. This includes enhancing internal communication, fostering teamwork, recognising and rewarding good performance, and establishing a culture of accountability and transparency.

5.2.6.6 Influence on Stakeholder Relations and Community Engagement

Organisational culture extends its influence beyond just internal functions, affecting how the municipality engages with external stakeholders and the community. A culture that values inclusivity, responsiveness, and open communication strengthens the municipality's ability to interact effectively with stakeholders and meet community needs.

5.2.7 Theme 7: Planning

5.2.7.1 Collaboration as a Foundation of Planning

Collaboration emerges as a key element in municipal planning, emphasising inclusivity and thoroughness. The study showcases instances where integrating community needs into the Integrated Development Plan (IDP) demands cooperative efforts. This method is crucial for ensuring that municipal services align with community needs, making planning processes inclusive, participatory, and reflective of diverse stakeholder views.

5.2.7.2 Political Dynamics in Planning

Political dynamics significantly impact municipal planning. The research sheds light on the challenges posed by political factors in planning and budgeting, underlining the complexity of navigating these dynamics for effective collaboration. These insights are essential for understanding the role of political considerations in the efficacy of municipal planning and budgeting processes.

5.2.7.3 Stakeholder Involvement in Collaborative Planning

Effective planning requires active stakeholder involvement. The study underscores the municipality's role in engaging with external stakeholders, highlighting the importance of collaborative planning and information sharing for successful project outcomes. This is particularly crucial for municipal officials, as it stresses the importance of stakeholder management in strategic planning.

5.2.7.4 Implementation Readiness

Implementation readiness is pivotal for the triumph of municipal planning initiatives. The study highlights the necessity of adaptable and responsive planning strategies, which are crucial for municipalities to effectively tackle implementation challenges. Understanding this aspect is key to grasping the operational facets of planning in ever-changing environments.

5.2.7.5 Complexities in Project Execution

The study delves into the complexities of executing projects, particularly in municipal infrastructure. It brings attention to the critical role played by project management units in overseeing infrastructure projects. Emphasising the need for strong project management practices is vital for ensuring successful outcomes in these ventures.

5.2.7.6 Infrastructure Development

Infrastructure development is a cornerstone of municipal planning. The research stresses the initiation of comprehensive master plans for vital services and underscores the significance of integration management in coordinating different aspects of infrastructure development. This underlines the strategic considerations necessary in planning, especially in terms of resource allocation and effective coordination.

5.2.7.7 Legislative Frameworks and Master Planning

The adherence to legislative frameworks stands as a critical principle in municipal planning. The research investigates how local needs can be aligned with statutory requirements, and it identifies challenges faced by local municipalities in the absence of a comprehensive master plan. For local government officials, comprehending the interplay between legislative mandates and strategic planning is crucial. This understanding is key to ensuring that municipal planning not only meets local needs but also complies with legal requirements, thereby fostering effective and lawful governance.

5.3 ACHIEVEMENT OF THE STUDY OBJECTIVES

5.3.1 Research objectives

The research effectively meets its objective of exploring bulk water service delivery challenges within the DRSM district municipality and formulating recommendations for optimisation. It emphasises the crucial role of collaboration, organisational learning, and change management in enhancing service delivery. Key findings include the need for improved operational efficiency, culture change, strategic planning with a focus on developing and updating master plans, and robust project management practices. The document also highlights the importance of stakeholder involvement, efficient information management, ongoing infrastructure evaluation, and diversification of water sources. These insights align with the objective of learning from past performances to improve future strategies, offering valuable guidance for sustainable service delivery improvements in local municipalities within the district. The research successfully achieves its objective of exploring the challenges in bulk water service delivery in the DRSM district municipality and proposes strategic recommendations for improvement. It underscores the importance of collaboration, organisational learning, and change management as pivotal factors in enhancing service delivery. Key findings highlight the necessity for enhanced operational efficiency and a shift in organisational culture. Emphasis is placed on strategic planning, particularly in developing and routinely updating master plans, and on the implementation of robust project management practices.

Additionally, the study underlines the significance of stakeholder involvement, efficient management of information, continuous evaluation of infrastructure, and the diversification of water sources. These insights are aligned with the objective of leveraging lessons from past experiences to refine future strategies. This provides valuable guidance for achieving sustainable improvements in service delivery across local municipalities within the district. This comprehensive approach addresses both current challenges and future needs, ensuring a more resilient and efficient water service infrastructure.

5.3.2 Primary objective

The primary objective of exploring the challenges in bulk water service delivery within the DRSM district municipality, as mandated by Section 83 of the Municipal Structures Act of 1998, has been effectively met in Chapter 4 of the study. The research meticulously addresses several critical areas, including the establishment of a master plan for bulk water services, the importance of integration management for aligning financial and operational aspects of projects, and the role of the Municipal Infrastructure Grant (MIG) in funding infrastructure developments.

The study also sheds light on the necessity of conducting detailed population analyses to comprehend demographic needs and the financial implications of infrastructure projects. Moreover, it highlights the crucial need for aligning municipal plans with both legislative frameworks and the specific needs of the community. It notes the current lack of a formalised master plan for water service delivery and emphasises the dynamic nature of master planning, which necessitates constant review and adaptation to remain effective and relevant.

This thorough and comprehensive analysis aligns precisely with the study's objective, providing essential insights into the intricacies of service delivery within the legislative context. It serves as a valuable guide for understanding and addressing the complex challenges faced in the effective delivery of bulk water services in the DRSM district municipality.

5.3.3 Secondary Objectives

5.3.3.1 Research Objective 1

Exploring the application of the legislative and policy framework regulating district municipalities by means of a literature review.

The secondary objective of the study, which involves exploring the application of the legislative and policy framework regulating district municipalities, is adeptly achieved through a comprehensive literature review. This review thoroughly covers a range of aspects concerning the legislative and policy framework that influences bulk water service delivery. Key components

of this review include an in-depth analysis of the South African legislative and policy framework governing the provision of bulk water services, an exploration of historical challenges faced by district municipalities, and an assessment of capacity and skills shortages, as well as legislation-related issues. The review also focuses on the current status of the DRSM district municipality's bulk water services and critically examines the South African National Water Act, a pivotal piece of legislation for managing water resources. Additionally, the Municipal Structures Act of 1998 is discussed in detail, with a particular emphasis on its implications for both district and local municipalities. This exploration in the literature review aligns effectively with the secondary objective by providing a comprehensive examination of the legislative and policy frameworks. It especially emphasises how these frameworks impact the delivery of bulk water services, offering insightful perspectives on the regulatory environment of district municipalities.

5.3.3.2 Research Objective 2

Exploring the operations and project management practices for bulk water services delivery within the DRSM district municipality

The data gathered and analysis conducted in the study proficiently accomplish the secondary objective of investigating operations and project management practices for bulk water service delivery within the DRSM district municipality. The study brings to the fore the pivotal role of the Project Management Unit (PMU) in managing complex infrastructure projects, underscoring the critical need for robust project management and operational readiness to ensure successful project outcomes. Additionally, the study delves deep into the concept of integration management. It explores the intricate process of aligning financial resources with the implementation and maintenance responsibilities of various stakeholders. In this context, the considerable roles of the Municipal Infrastructure Grant (MIG) and the Regional Bulk Infrastructure Grant (RBIG) in financing infrastructure projects are highlighted. A particularly crucial aspect the research addresses is the challenges arising from the absence of a formalised water service delivery master plan. This gap emphasises the imperative need for compliance with legislative frameworks and the creation of comprehensive master plans. Such plans are essential for strategic and effective water service delivery. This comprehensive analysis of operations and project management practices contributes significantly to understanding and improving the delivery of bulk water services within the DRSM district municipality.

5.3.3.3 Research Objective 3

Performing an analysis of bulk water service delivery infrastructure at local municipalities within the district municipality.

The secondary objective of analysing the state of bulk water service delivery infrastructure at local municipalities within the DRSM district municipality is achieved in the study. The research offers a detailed analysis of the complexities and challenges inherent in the development of water service infrastructure. A key highlight is the emphasis on understanding demographic needs to effectively tailor infrastructure development. This is particularly relevant in light of the expanding service demands and the prevalent issue of inadequate water supply to households. Additionally, the study underscores the importance of Return on Investment (ROI) in appraising the efficacy of infrastructure projects. This aspect is especially pertinent considering the financial constraints faced by the district municipality. The research also addresses the necessity for adherence to legislative frameworks in municipal planning. It brings attention to the challenges that local municipalities encounter due to the lack of a comprehensive master plan. The analysis underlines the critical importance of master planning within the legislative context. It acknowledges the dynamic nature of master planning and the essential need for its continual review and adaptation. This is to ensure it remains relevant and responsive to evolving administrative structures and community needs. Overall, the study provides an insightful exploration into the current state of bulk water service delivery infrastructure. It aligns closely with the secondary objective of the research, offering valuable insights into the challenges and requirements for effective water service delivery in local municipalities within the DRSM district municipality.

5.3.3.4 Research Objective 4

Exploring opportunities for infrastructure planning and improvement in bulk water service delivery to local municipalities within the district

The accomplishment of the secondary objective, focusing on identifying opportunities for infrastructure planning and improvement in bulk water service delivery to local municipalities within the district, is effectively presented in Chapter 4 of the study. The analysis showcases a forward-thinking approach to infrastructure development, underscored by the recent initiation of a master plan for critical water and sanitation services. This strategic planning is pivotal for ensuring sustainable municipal service delivery and aligns with the overarching goal of strategic improvements.

The study also delves into the importance of integration management, which plays a key role in coordinating various facets of infrastructure development. This includes the notable contribution of the Municipal Infrastructure Grant (MIG) in financing water infrastructure projects. Additionally, the research emphasises the necessity of understanding demographic needs and accordingly tailoring infrastructure development to address the expanding service requirements amidst growing household numbers.

Moreover, the study highlights the significance of adhering to legislative frameworks in municipal planning. It points out the challenges that emerge due to the absence of a formalised water service delivery master plan, emphasising the need for comprehensive and strategic planning that resonates with both local needs and statutory requirements. This comprehensive analysis in Chapter 4 aptly addresses the opportunities for enhancing infrastructure planning and improvement, providing a well-rounded perspective on the advancement of bulk water service delivery within the district.

5.4 RECOMMENDATIONS

5.4.1 Primary Question Recommendations

What are the challenges DRSM district municipality is experiencing during the operation and distribution of bulk water services delivery to municipalities within the district?

5.4.1.1 Enhance Collaboration and Communication

To enhance collaboration and communication, it's vital to strengthen the ties between district and local municipalities. Regular meetings and joint planning sessions should be prioritised to tackle communication challenges, boost employee engagement, and improve operational efficiency.

5.4.1.2 Positive Organisational Culture

For a positive organisational culture, introducing training programs aimed at transforming the existing culture into a more proactive and efficiency-driven one is crucial. These programs should address issues concerning employee attitudes and the broader institutional culture.

5.4.1.3 Integration Management for Infrastructure

In terms of integration management for infrastructure, aligning the financial, implementation, and maintenance aspects of bulk water infrastructure projects is essential. Effective coordination among various stakeholders is needed, including optimising the use of grants and enhancing revenue collection, to ensure successful infrastructure development.

5.4.1.4 Population Analysis for Service Expansion

Conducting a thorough analysis of population growth is critical to guide the expansion of water services. This analysis will ensure that water provision is adequately planned and implemented to meet the needs of an increasing number of households.

5.4.1.5 Comprehensive and Dynamic Master Plan

The establishment and regular updating of a comprehensive and dynamic master plan for water service delivery is essential. This master plan should align with both the community's evolving needs and the district municipality's capacity to meet these needs.

5.4.1.6 Regular Review of Master Plan

It is also crucial to continuously review and adapt the master plan. This process should involve collaborative efforts between the district and local municipalities, ensuring that the plan remains relevant and effective in addressing current and future challenges.

Implementing these recommendations will significantly enhance the operation and distribution of bulk water services. By improving communication, fostering a positive organisational culture, effectively managing infrastructure and change, ensuring strategic planning, and maintaining an updated master plan, these strategies aim to create a more efficient, responsive, and sustainable water service system.

5.4.2 Secondary Questions Recommendations

5.4.2.1 Research Question 1

What is the role of the legislative and policy framework regulating district municipalities?

5.3.2.1.1. Responsiveness to Community Needs

To effectively respond to community needs, municipal plans, including the Integrated Development Plan (IDP), must be in harmony with local community requirements while adhering to legislative frameworks. This approach ensures that plans are not only legally robust but also precisely cater to the unique needs of the community.

5.3.2.1.2. Development of Comprehensive Master Plans

The development and frequent updating of comprehensive master plans, particularly for water service delivery, are crucial. These master plans should form a core part of the legislative framework, providing direction for infrastructure projects and ensuring efficient service implementation.

5.3.2.1.3. Integration of Legislative Requirements

Integrating legislative mandates into the strategic planning and execution of municipal projects is essential for legal compliance and operational efficiency. This integration ensures that the legislative requirements are deeply embedded in the fabric of municipal governance.

5.3.2.1.4. Collaboration Between Government Levels

Encouraging collaboration between district and local municipalities in the development and review of plans is vital. This collaboration fosters a cohesive strategy that aligns with both local and district-level legislative requirements.

5.3.2.1.5. Balancing Legal Compliance and Practicality

Balancing legal compliance with the practicalities of municipal governance is key. It's important to ensure that legislative frameworks are not merely theoretical constructs but are realistically implementable at the local level.

These recommendations are geared towards enhancing the influence of legislative and policy frameworks in guiding and regulating district municipalities. The focus is on community responsiveness, comprehensive planning, collaboration, and the practical implementation of legislative requirements.

5.4.2.2 Research Question 2

What are the current operations and project management practices for bulk water services delivery within the DRSM district municipality?

5.3.2.2.1. Robust Project Management Practices

The emphasis on robust project management practices is critical, especially given the significant responsibilities of the Project Management Unit (PMU) in overseeing and executing infrastructure projects. Effective project execution and diligent oversight are paramount for the successful outcome of these developments.

5.3.2.2.2. Operational Readiness

Operational readiness is also a key focus for the successful implementation of projects. This entails ensuring that all operational facets of infrastructure projects are thoroughly managed and overseen, considering the complex roles involved in such initiatives.

5.3.2.2.3. Integration Management in Infrastructure Development

Integration management in infrastructure development is another priority. This involves aligning various components of infrastructure development, such as financing, implementation, and maintenance responsibilities among different stakeholders. The role of grants, like the Municipal Infrastructure Grant (MIG) and Regional Bulk Infrastructure Grant (RBIG), is vital in funding water

infrastructure development. Proper management of these resources is essential for effective project execution.

These recommendations underscore the necessity for strong project management, operational readiness, and integration management, alongside the development of a comprehensive master plan. These elements are crucial for improving the efficiency of operations and project management practices in the delivery of bulk water services within the DRSM district municipality.

5.4.2.3 Research Question 3

What is the state of the bulk water service delivery infrastructure at local municipalities within the district municipality?

5.3.2.3.1. Challenges with Expanding Services

The challenges faced by local municipalities in providing adequate water to all households are significant, particularly given the increasing number of households and rising service demands. This long-standing issue highlights the necessity for more robust and scalable infrastructure solutions.

5.3.2.3.2. Financial Constraints in Implementing Master Plans

Financial constraints present a major hurdle in the implementation of bulk water infrastructure projects. The costs associated with enacting the master plan are considerable, and the district municipality's limited financial resources have led to only partial implementation of the plan. Initiatives such as reconnecting boreholes offer some relief, yet they are insufficient to meet the overall demand for water services.

5.3.2.3.3. Absence of a Formalised Master Plan

Furthermore, the absence of a formalised master plan for water service delivery is a critical issue. Without a comprehensive or specific water master plan, local municipalities have had to rely on annual service level agreements with the district, which impedes long-term strategic planning and effective implementation of water services.

These findings indicate that the local municipalities within the district are struggling with expanding service demands, financial limitations, and a lack of formalised, long-term planning for water infrastructure. While recent efforts to develop a master plan are encouraging, there remains an urgent need for strategies that are strategic, financially sustainable, and scalable. Such strategies are essential for enhancing the infrastructure and delivery of bulk water services.

5.4.2.4 Research Question 4

What can be done differently to enhance bulk water infrastructure planning and implementation for improved service delivery to local municipalities within the district municipality?

5.3.2.4.1. Conducting Comprehensive Population Analysis

Undertaking thorough population analyses is crucial to accurately understand demographic requirements and accordingly tailor infrastructure development. This will help bridge the current gap in providing adequate water services to all households, particularly in light of the growing number of households and escalating service demands.

5.3.2.4.2. Financial Planning and Resource Allocation

Improving financial planning and resource allocation for infrastructure projects is essential. This approach addresses the challenge of high implementation costs which currently restrict the full execution of master plans. Seeking additional financial support and exploring cost-effective solutions, such as reconnecting boreholes, are vital for augmenting the water supply.

5.3.2.4.3. Developing and Implementing Master Plans

The development and regular revision of comprehensive master plans for water service delivery is a critical focus area. The current absence of a formalised master plan is a major impediment to strategic planning and the effective implementation of water services.

These recommendations are designed to tackle the primary challenges and fill the gaps in bulk water infrastructure planning and implementation within the district municipality. Emphasising detailed population analysis, robust financial planning, and the creation of comprehensive master plans, along with a proactive approach to planning, are key steps in enhancing service delivery to the local municipalities.

5.5 CONTRIBUTION OF THE STUDY

This study makes several significant contributions to the field of municipal bulk water service delivery, particularly in the context of the DRSM district municipality. The insights and findings of this research have both practical and theoretical implications, offering a comprehensive understanding of the complexities involved in optimising bulk water service delivery. The key contributions of this study are as follows:

5.5.1 Operational efficiency and management practices

The study provides detailed insights into the operational aspects of water service delivery. It highlights the importance of enhancing operational efficiency and implementing robust project management practices. These insights are crucial for municipalities aiming to improve their service delivery standards and operational readiness.

5.5.2 Policy and legislative analysis

A significant contribution is the comprehensive analysis of the legislative and policy framework governing district municipalities in South Africa. The study critically examines how these frameworks impact bulk water service delivery, providing valuable insights for policymakers and municipal authorities to ensure compliance and effective governance.

5.5.3 Stakeholder involvement and organisational learning

The research underscores the importance of stakeholder involvement and organisational learning in the process of service delivery optimisation. It brings to light the need for collaborative efforts, both within the municipality and with external stakeholders, to ensure a holistic approach to service improvement.

5.5.4 Infrastructure development and financing

This study contributes to the understanding of the complexities involved in infrastructure development and financing. It assesses the role of grants like the MIG in funding infrastructure projects and highlights the need for financial planning and resource alignment in infrastructure development.

Guidance for Future Research and Practice: The findings provide a foundation for future research in the field of municipal service delivery. It offers a template for other municipalities facing similar challenges, helping them to navigate the intricacies of water service delivery improvement.

5.5.5 Community needs and demographic analysis

The study contributes to a better understanding of demographic needs and their implications for infrastructure planning. This aspect is crucial for municipalities looking to tailor their services effectively to their communities.

5.5.6 Resilience and sustainability in service delivery

Finally, the study contributes to the discourse on building resilient and sustainable municipal services. It addresses both the current and future needs of the DRSM district municipality, providing a model for sustainable service delivery improvements.

Overall, this research fills a critical gap in the literature on municipal water service delivery and offers practical recommendations that can be applied in similar contexts, thereby making a significant contribution to the field.

5.6 RECOMMENDATIONS FOR FUTURE RESEARCH

The findings from Chapter 4 of the study on bulk water service delivery challenges within the DRSM district municipality offer several promising avenues for future research. Given the identified limitations in fully exploring opportunities for infrastructure planning, future studies could delve deeper into this aspect of the bulk water infrastructure value chain within the DRSM. Such research would require a comprehensive analysis encompassing a variety of stakeholders involved in bulk water service provision, including entities across all three spheres of government and their relevant departments.

Another potential area for future research is the investigation of innovative approaches to water resource management, particularly in relation to the agricultural sector. Given the sector's significant contribution to the DRSM district municipality's gross domestic product and job creation, understanding and optimising water resource management in this context could have far-reaching implications.

Additionally, exploring the impact of organisational culture on operational efficiency presents an intriguing research opportunity. This includes examining the role of change management in adapting to financial constraints and environmental changes, which are critical aspects of municipal operations.

Lastly, data gathering in Chapter 3 and analysis of the results in Chapter 4 emphasised the availability of funding for continued operations and maintenance as one potential area for future research. The key focus area is to look at mechanisms for improved revenue collection between local municipalities and the district municipality, followed by local municipalities revenue collection from their communities.

Overall, these suggested areas for future research highlight the multifaceted nature of bulk water service delivery and the need for ongoing, in-depth study to address the complex challenges faced by the DRSM district municipality.

5.7 LIMITATIONS OF THE STUDY

The limitations of this study are primarily geographical in nature because the focus was on the DRSM district municipality within the North-West province may not accurately reflect the broader challenges of bulk water service delivery across other district municipalities within the North-West province or in South Africa as a whole. The other limitation was that the focus was on the daily challenges experienced by communities due to frequent water interruptions within the DRSM district municipality. Lastly, the other limitation was that the study did not focus on the level of the quality of drinkable water within the district municipality.

5.8 SUMMARY

The research study focuses on addressing bulk water service delivery challenges within the DRSM district municipality. It successfully achieves its primary objective of exploring these challenges as mandated by the Municipal Structures Act of 1998. The study is extensive and covers several critical areas, including the development of a master plan for water services, the integration of financial and operational project aspects, and the utilisation of grants like the Municipal Infrastructure Grant for infrastructure development.

Key findings of the research emphasise the importance of collaboration, organisational learning, and change management in enhancing service delivery. It highlights the need for improved operational efficiency, culture change, and strategic planning, particularly in developing and updating master plans. Robust project management practices and stakeholder involvement are also underscored. The importance of efficient information management, ongoing infrastructure evaluation, and diversification of water sources are noted as vital for learning from past performances to improve future strategies.

The secondary objectives of the study are also met effectively. These include exploring the application of the legislative and policy framework regulating district municipalities, examining operations and project management practices, analysing the state of bulk water service delivery infrastructure, and identifying opportunities for infrastructure planning and improvement. The study addresses these through a comprehensive literature review and detailed analyses, highlighting the critical need for a formalised water service delivery master plan and the alignment of municipal plans with legislative frameworks and community needs.

Overall, the study provides a comprehensive approach to addressing both current challenges and future needs in bulk water service delivery, ensuring a more resilient and efficient water service infrastructure in the DRSM district municipality.

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CHAPTER 6 ANNEXURE A: ETHICS CLEARANCE



Private Bag X1290, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Fax: 018 299-4910
Web: <http://www.nwu.ac.za>

Senate Committee for Research Ethics
Tel: 018 299-484
Feziwe.Mseleni@nwu.ac.za

31 March 2023

ETHICS APPROVAL LETTER OF STUDY

Based on approval by the **Economic and Management Sciences Research Ethics Committee (EMS-REC)** on 31/03/2023, the Economic and Management Sciences Research Ethics Committee hereby **approves** your study as indicated below. This implies that the North-West University Senate Committee for Research Ethics (NWU-REC) grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: Exploring bulk services delivery challenges in the Dr. Ruth Segomotsi Mompati district municipality in the North-West province

Study Leader/Supervisor (Principal Investigator)/Researcher): : Prof Nelda Mouton-MBA

Student: Motshabi PT(11828951)

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Institution Study Number Year Status
Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation

Application Type:

Commencement date: 1/4/2023

Expiry date: 1/5/2024

Risk:

Low

Approval of the study is initially provided for a year, after which continuation of the study is dependent on receipt and review of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation.

Special in process conditions of the research for approval (if applicable):

•

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, the following general terms and conditions will apply:

- *The study leader/supervisor (principle investigator)/researcher must report in the prescribed format to the EMS-REC:*
 - *annually (or as otherwise requested) on the monitoring of the study, whereby a letter of continuation will be provided, and upon completion of the study; and*
 - *without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.*
- *The approval applies strictly to the proposal as stipulated in the application form. Should any amendments to the proposal be deemed necessary during the course of the study, the study*

leader/researcher must apply for approval of these amendments at the EMS-REC, prior to implementation. Should there be any deviations from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.

- Annually a number of studies may be randomly selected for an external audit.
 - The date of approval indicates the first date that the study may be started.
- n the interest of ethical responsibility, the NWU-SCRE and EMS-REC reserves the right to:
- request access to any information or data at any time during the course or after completion of the study;
 - to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process;
 - withdraw or postpone approval if:
 - any unethical principles or practices of the study are revealed or suspected;
 - it becomes apparent that any relevant information was withheld from the EMS-REC or that information has been false or misrepresented;
 - submission of the annual (or otherwise stipulated) monitoring report, the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and / or
 - new institutional rules, national legislation or international conventions deem it necessary.

The EMS-REC would like to remain at your service as scientist and researcher, and wishes you well with your study. Please do not hesitate to contact the EMS-REC or the NWU-SCRE for any further enquiries or requests for assistance.

Yours sincerely,

**Mark
Rathbone**

Digitally signed by Mark Rathbone
DN: cn=Mark Rathbone, o=North-
West University, ou=Business
management,
email=mark.rathbone@nwu.ac.za,
c=ZA
Date: 2023.04.27 12:44:13 +02'00'

Prof Mark Rathbone
Chairperson: NWU Economic and Management Sciences Research Ethics Committee

CHAPTER 7 ANNEXURE B: RESEARCH PERMISSION LETTER



P.O. Box 21, Vryburg, 8600, Physical Address: 50 Market
Street, Vryburg, 8601, Tel: (053) 928 4700
Fax: (053) 927 2401, Web: www.rsmompotidm.gov.za



Our Ref: 4/1/3/2

Your Ref:

Enq: J Shai

24 February 2023

Mr. Tshepo Motshabi
50 Lonehill Mews
Lake Close
2062

Sir,

RE: GOODWILL PERMISSION: A STUDY TO BE CONDUCTED AT: DR RUTH SEGOMOTSI MOMPATI DISTRICT MUNICIPALITY.

Your letter dated 15th instant refers.

It is with great pleasure that the Dr. Ruth Segomotsi Mompoti District Municipality herein agree and gives permission to participate in your research that will involve; exploring bulk water Services Delivery challenges within Dr. Ruth Segomotsi District Municipality.

As you will know, the District Municipality has been designated as a Water Service Provider and currently we are faced with a number of challenges in terms of providing our communities with uninterrupted water and one of the major cause of this is that we are a water scarce District.

We are confident that your research will go a long way in assisting the District Municipality to address this serious challenge of water provision to our communities, and the District Municipality will be very appreciative if, after completion of the research, we could be provided with the report to factor it in our constant plans to address this problem.

For any additional information feel free to contact the Acting Senior Manager; Engineering and Technical Services, Mr Evans Matope at 053 9286400.

Regards

IR Jonas

Duly signed
Municipal Manager



CHAPTER 8 ANNEXURE C: INFORMED CONSENT



NWU-Business-School
North-West-University
Private-Bag-x6001
Potchefstroom, -2520

<http://commerce.nwu.ac.za/business-school>

27-November-
2023

To-whom-it-may-concern

INFORMED-CONSENT-TO-PARTICIPATE-IN-AN-INTERVIEW

Date: _____

Participant-code: _____

Dear-Participant,

My name is Tshepo Motshabi, and I am a final-year MBA candidate at the North-West University (NWU) Business School. This study explores challenges of bulk water services delivery within the DRSM district municipality in the North-West province, South-Africa. It is intended to get insights on current challenges experienced by the DRSM district municipality during operation and distribution of bulk water services delivery to local municipalities within the district municipality.

The outcome of this study will be a mini-dissertation that will be submitted to the university as a partial requirement to obtain a degree of Masters in Business Administration. The NWU is a reputable and internationally accredited institution with high ethical standards expectations throughout conducting a research study.

Please take note that your participation is voluntary, and you have the right to discontinue if you wish so. Participants are also allowed not to answer questions they are not comfortable answering. There will be no compensation paid for participation.



The interview duration will be approximately 1 hour. The interview will be voice-recorded. However, your name will not be recorded. The recording will be available to you upon request.¶

¶

The interviewer will take notes. This is done for data analysis. The interviewer will transcribe the recording and kept confidential on a password-protected computer. The transcripts and recordings will be destroyed after three years. ¶

¶

Furthermore, all individual identification will be removed from the hard copy of the transcript, and participant identity and confidentiality will be concealed using coding procedures. Please note that excerpts from the interview may be included in the final dissertation report or other later publications. However, under no circumstances will your name or identifying characteristics appear in these writings. Also, the interviewer may ask for limited demographic information for profiling interview participants, and no further statistical analysis will be performed. ¶

¶

This study is approved by the General Management Scientific Committee of the NWU Business School. Prof Christoff Botha is the Research Manager. His contact number is 018-299-1672, and his email address is christoff.botha@nwu.ac.za.¶

¶

The Faculty of Economic and Management Sciences Ethics Committee (EMS-REC) has given this study an ethical clearance. The ethical clearance number is [Insert number here]. Mark Rathbone is the chair of the Ethical Committee. His contact number is 018-299-1356, and his email address is mark.rathbone@nwu.ac.za.¶

¶

My supervisor for this MBA research study is Professor Nelda Mouton. Her contact details are as follows: Tell: 018-299-1414; Email: nelda.mouton@nwu.ac.za.¶

¶

Please feel free to contact him regarding my credentials and concerns about the study. ¶

¶

Thank you once more for your participation. Your honest contribution to this study is highly valued.¶¶

¶

Kind regards¶

¶

Tshepo Motshabi¶

MBA-Candidate-(North-West-University)¶

Email: tshepomotshabi01@gmail.com¶

Cell-no: 0836298888¶

¶

Prof Nelda Mouton¶

Supervisor¶

Email: Nelda.mouton@nwu.ac.za¶

¶

CHAPTER 9 ANNEXURE D: RESEARCH QUESTIONNAIRE

	NWU-Business-School North-West-University Private-Bag-x6001 Potchefstroom, -2520 http://commerce.nwu.ac.za/business-school
• • • To whom it may concern	27-November- 2023
Topic: <u>Exploring bulk services delivery challenges in the Dr. Ruth Segomotsi Mompati district municipality in the North-West province</u>	
Questionnaire:	
1. → What is the role of the legislative and policy framework regulating district municipalities service delivery? 2. → What is the state of the bulk water service delivery infrastructure at the district municipality? 3. → Does the municipality have the water service delivery master plan? 4. → How often is the plan reviewed and updated? 5. → What are the current operations management practices for bulk water services delivery within the district municipality? 6. → Does the municipality have adequate financial resources to deliver bulk water services? 7. → Does the municipality have the required personnel to deliver bulk water services? 8. → Does the personnel have the required minimum skills and experience? 9. → How does the district municipality interface with the local municipality on bulk water service delivery aspects? 10. → What is the frequency of the engagement with local municipality officials? 11. → What influences bulk water services infrastructure planning process? 12. → Does the municipality have a project management processes for bulk water infrastructure projects? 13. → Is the municipality able to collect revenue for water services rendered?	
  	
Potchefstroom Campus: (+27) 18 299 1406 →  Casselburg: (+27) 18 389 2066 →  Campus: (+27) 16 910 3011	

- ¶
14. → Does the municipality have infrastructure maintenance plans?¶
15. → Does the municipality have bulk water service delivery contingency plans during outages?¶
16. → Does the current loadshedding affect the bulk water service delivery?¶
17. → Does the municipality have water conservation strategy?¶

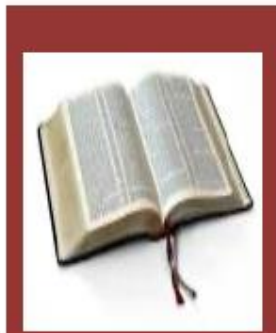
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CHAPTER 10 ANNEXURE E: LANGUAGE EDITING CERTIFICATE



ABC LANGUAGE EDITORS
PRETORIA ESPERANTO
HEIGHTS
187 SKINNER STREET
PRETORIA 0002,
SOUTH AFRICA,
PHONE: +277837975691
E-MAIL
abceditors@gmail.com
Company Reg:
k2016131410

25 November 2023

TO WHOM IT MAY CONCERN

CERTIFICATE OF EDITING

I **Medicine Magocha**, confirm and certify that I have read and edited the entire Dissertation **Exploring bulk water services delivery challenges in the Dr. Ruth Segomotsi Mompati district municipality in the North West Province** submitted for the fulfillment of the **Master of Business Administration (MBA) DEGREE** with the **North-West University**.

The student **PT Motshabi Student no.11828951** was supervised by **Prof Nelda Mouton** from **North-West University**.

I hold a bachelor's degree in languages and postgraduate degrees in business with a lot of research components and am qualified to edit such kind of academic work, aligning it to the requirements of scholarship. However, the views expressed in the study remain the onus of the researcher (s).

Yours Sincerely

Magocha M

CHAPTER 11 ANNEXURE F: TURNITIN RECEIPT



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