# PUBLIC RESOURCES FOR PUBLIC SANITATION: THE CASES OF MERAFONG AND JB MARKS LOCAL MUNICIPALITIES

by

**RAMOKHOJOANE PAUL MOTSOENENG**

submitted in accordance with the requirements for the degree of

**DOCTOR OF PHILOSOPHY**

in the subject

**PUBLIC ADMINISTRATION**

at the

**UNIVERSITY OF SOUTH AFRICA**

**PROMOTER**
PROF EJ NEALER

**CO-PROMOTER**
PROF JC PAUW

FEBRUARY 2022

# DECLARATION

**Name:** Ramokhojoane Paul Motsoeneng
**Student number:** 3298574
**Degree:** Doctor of Philosophy (PhD)

***PUBLIC RESOURCES FOR PUBLIC SANITATION: THE CASES OF MERAFONG AND JB MARKS LOCAL MUNICIPALITIES***

I declare that the above thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the thesis to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.

_____

**Ramokhojoane Paul Motsoeneng** **Date: 20 February 2022**

# ACKNOWLEDGMENTS


- My sincere appreciation and gratitude go to my promoter, Prof Eric Nealer. Thanks for your unwavering support and guidance through this difficult yet life-altering journey.
- My gratitude to my co-promoter, Prof JC Pauw. Your dedication and words of encouragement inspired me to complete this thesis.
- To my friends and colleagues; your words of encouragement and support have not gone unnoticed. I am sincerely grateful.
- To municipal officials and communities of Merafong and JB Marks local municipalities: thanks for allowing me the opportunity to undertake this research endeavour and sharing your experiences with me.
- To Dr Marika Van der Waldt, the guru on water and sanitation matters, your feedback on issues relating to sanitation has truly inspired this thesis. Our intellectual engagements on matters pertaining to sanitation has allowed me to internalise and deeply reflect on my thesis.
- Thanks to Mr Andries Masenge for your statistical knowledge and guidance through statistical analysis.
- To the Language editor, Ms Laetitia Romero. Thanks for your professionalism and assistance in getting this thesis ready.
- To the Motsoeneng family. Thanks for the support and love you have shown me over the years. Your endurance and patience throughout my study period are commendable. My deepest gratitude goes to my wife, Ida Motsoeneng. Thank you for being so supportive and patient with me for so many years. You are truly amazing.
- This thesis is dedicated to the memory of my late father Mr SP Motsoeneng and brother Mr KS Motsoeneng.
- To my children, Mamello and Katleho; I love you guys.
- To God Almighty, thank you for giving me the strength to endure this painful yet fulfilling journey. All praise be to God the creator of Heaven and earth.

# ABSTRACT

South Africa, like many developing countries, faces a significant challenge in providing a sustainable water supply and sanitation service to its citizens as it has a vast water supply and sanitation infrastructure backlog. The Merafong and JB Marks local municipalities (LMs) are not immune to these challenges, as proven by the results of this study. Various aspects of access to sanitation services revealed a complex and challenging reality faced by the residents of the Merafong and JB Marks LMs. This study is a multiple case study investigation that wanted to determine shortcomings in the delivery of sanitation services in the Merafong and JB Marks LMs.

Empirical findings were sought through the administration of questionnaires and by conducting interviews with municipal officials. Data collection instruments were selected in line with concurrent convergence mixed-method research, which dictates that qualitative and quantitative data should be collected at more or less the same time. The use of official documents, including Integrated Development Plans (IDPs) and municipal annual reports, proved to be invaluable sources of information for this study. These documents assisted the researcher in arriving at accurate conclusions since the responses provided by municipal officials could not be verified and appeared to be untrustworthy to the researcher.

This research revealed that the sanitation infrastructure in both cases is in a state of disrepair due to neglect over several years. Poor maintenance has resulted in a water and sanitation backlog, which these municipalities are struggling to address. The challenges facing municipalities in both cases range from administrative incapacity, poor planning, poor financial management and lack of public participation in the affairs of the municipalities. Staff shortages, a lack of technical skills, staff turnover and the municipalities' inability to initiate mentoring and staff retainment programmes pose a risk to the stability and functioning of these municipalities. Moreover, the municipalities' inability to spend allocated funds to improve sanitation infrastructure is one of the impediments to their development. Vandalism and the theft of equipment, along with the formation of sinkholes, present unique challenges for the Merafong LM. The study has

shown that a multi-pronged approach is required to address water and sanitation shortcomings in both cases.

**Keywords**: sanitation, service delivery, sanitation facilities, wastewater treatment works, water services authorities, water services development plan.

## KGUTSUFATSO

Afrika Borwa, jwalo ka dinaha tse ngata tse ntseng di tswela pele, e tobane le phephetso e kgolo ya ho fana ka phepelo e tsitsitseng ya metsi le phano ya metsi a hlwekileng le tsamaiso ya dikgwerekgwere ho baahi ba yona kaha e na le tshalelomorao e kgolo ya meralo ya motheo ya phepelo ya metsi a hlekileng le tsamaiso ya dikgwerekgwere. Bomasepala ba selehae ba Merafong le JB Marks (LMs) le bona ba hlahelwa ke diphephetso tsena, jwalokaha ho pakilwe ke diphetho tsa thuto ena. Dikarolo tse fapaneng tsa phihlello ho phano ya metsi a hlwekileng le tsamaiso ya dikgwerekgwere di senotse nnete e thata le e phephetsang eo baahi ba Merafong le JB Marks LM ba tobaneng le yona. Thuto ena ke dipatlisiso tsa mehlala e mengata e neng e batla ho fumana dikgaello phanong ya metsi a hlwekileng le tsamaiso ya dikgwerekgwere Merafong le JB Marks LMs.

Diphuputso tse matla di ile tsa batlwa ka tsamaiso ya dipotso le ka ho etsa dipuisano le basebeletsi ba mmasepala. Disebediswa tsa pokello ya dintlha di kgethilwe ho latela dipatlisiso tsa mekgwa e tswakilweng ya ho ya kopanong ya ho tshwana, e bolelang hore dintlha tsa boleng le bongata di lokela ho bokellwa bonyane ka nako e le nngwe.Tshebediso ya ditokomane tsa semmuso, ho kenyeletswa Meralo e Kopanetsweng ya Ntshetsopele (IDPs) le ditlaleho tsa selemo tsa masepala, tse bonahetseng e le mehlodi ya bohlokwa ya tlhahisoleseding bakeng sa thuto ena. Ditokomane tsena di thusitse mofuputsi hore a fihlele diqeto tse nepahetseng kaha dikarabo tse fanweng ke diofisiri tsa masepala di ne di ke ke tsa netefatswa mme di bonahala di sa tshepahale ho mofuputsi.

Diphuphutso tsena di senotse hore meralo ya phano ya metsi a hlwekileng le tsamaiso ya dikgwerekgwere di maemong a mabe ka bobedi ka lebaka la bohlaswa ka dilemo tse mmalwa. Tlhokomelo e fokolang e bakile tshiyamorao ya phano ya metsi a hlwekieng le tsamaiso ya dikgwerekgwere, eo bomasepala bana ba sokolang ho e rarolla. Diphephetso tse tobaneng le bomasepala maemong ana ka bobedi di fapana ho tloha ho tlhokeho ya tsamaiso, moralo o mobe, taolo e mpe ya ditjhelete le kgaello ya seabo sa setjhaba ditabeng tsa bomasepala. Kgaello ya basebetsi, kgaello ya ditsebo tsa setegeniki, phallo ya basebetsi le ho se kgonehe ha bomasepala ho qala mananeo a tlhabollo mme le mananeo a ho boloka basebetsi a beha bomasepala ka

mosing botsitsong le tshebetsong ya bo masepala bana. Ho feta moo, ho se kgone ho sebedisa tjhelete ya bomasepala ho ntlafatsa ditshebeletso tsa phano ya metsi a hlwekileng le tsamaiso ya dikgwerekgwere ke e nngwe ya ditshitiso ntlafatsong ya bona. Ho senngwa ha thepa le bosholu ba disebediswa, hammoho le ho thehwa ha dikoti, di hlahisa mathata a ikgethang bakeng sa LM ya Merafong. Thuto e bontshitse hore ho hlokahala mokgwa o nang le mekgwa e mengata ho rarolla mefokolo ya metsi le phano ya metsi a hlwekileng le tsamaiso ya dikgwerekgwere maemong ao ka bobedi.

**Mantswe a bohlokwa**: phano ya metsi a hlwekileng le tsamaiso ya dikgwerekgwere, phano ya ditshebeletso, disebediswa tsa bohlweki, mesebetsi ya ho hlwekisa metsi a ditshila, balaodi ba ditshebeletso tsa metsi, morero wa ntlafatso ya ditshebeletso tsa metsi

## ISIFINQO

INingizimu Afrika, njengamazwe amaningi asathuthuka, ibhekene nenselelo enkulu yokuhlinzeka ngamanzi nokuthuthwa kwendle esimeme ezakhamuzini zayo njengoba inokusilela emuva kwengqalasizinda yamanzi nokuthuthwa kwendle. Omasipala bendawo baseMerafong kanye ne-JB Marks (LMs) nabo baya bandakanyeka kulezi zinselele, njengoba kufakazelwa yimiphumela yalolu cwaningo. Izingxenye ezehlukene zokufinyelela ezinsizeni zokuthuthwa kwendle ziveze iqiniso elinzima neliyinselelo kubahlali baseMerafong kanye ne-JB Marks LMs. Lolu cwaningo luwucwaningo lwezimo eziningi olwalufuna ukunquma amaphutha ekulethweni kwezinsizakalo zokuthuthwa kwendle eMerafong kanye ne-JB Marks LMs.

Okutholwe okunobufakazi uuthi kwafunwa ngokuphathwa kwemibuzo nangokuxoxisana nezikhulu zikamasipala. Amathuluzi okuqoqwa kwedatha akhethwe ngokuhambisana nocwaningo lwendlela exubile yokuhlangana, olubeka ukuthi idatha yekhwalithi neyobuningi kufanele iqoqwe cishe noma ngaphansi ngesikhathi esifanayo. Ukusetshenziswa kwemibhalo esemthethweni, okuhlanganisa Izinhlelo Zokuthuthukisa Ezididiyelwe (IZE) kanye nemibiko yonyaka kamasipala, kubonakale kuyimithombo ebalulekile yolwazi yalolu cwaningo. Le mibhalo isize umcwaningi ukuthi afinyelele eziphethweni ezinembile njengoba izimpendulo ezinikezwe izikhulu zikamasipala zingakwazanga ukuqinisekiswa futhi zibonakala zingathembekile kumcwaningi.

Lolu cwaningo luveze ukuthi ingqalasizinda yezokuthuthwa kwendle kuzo zombili lezi zimo isesimweni esibi ngenxa yokunganakwa iminyaka eminingi. Ukungalungiswa kahle wayo kuholele ekutheni kube nokusilela emuva kwamanzi nokuthuthwa kwendle, labo masipala abakuthola kunzima ukukulungisa. Izinselelo ezibhekene nomasipala kuzo zombili lezi zimo zisukela ekungakwazini ukuphatha, ukuhlela kahle, ukuphathwa kabi kwezimali kanye nokuntuleka kokuhlanganyela komphakathi ezindabeni zomasipala. Ukushoda kwabasebenzi, ukuntuleka kwamakhono ezobuchwepheshe, ukushintshwa kwabasebenzi kanye nokungakwazi komasipala ukuqalisa izinhlelo zokuqeqesha kanye nokugcina abasebenzi kuyingozi ekuzinzeni nasekusebenzeni kwalabo masipala. Ngaphezu kwalokho, ukungakwazi komasipala ukusebenzisa imali eyabelwe ukuthuthukisa ingqalasizinda yokuthuthwa kwendle kungenye yezithiyo ekuthuthukisweni kwabo. Ukucekelwa phansi kwempahla kanye nokwebiwa kwemishini,

kanye nokwakhiwa kwezitamkoko , kuletha izinselele eziyingqayizivele ku-LM Merafong. Ucwaningo selukhombisile ukuthi kudingeka indlela ehlanganisa izinto eziningi ukuze kubhekwane nokusilela kwamanzi nokuthuthwa kwendle kuzo zombili lezi zimo.

**Amagama abalulekile**: ukuthuthwa kwendle, ukulethwa kwezinsiza, izindawo zokuthuthwa kwendle, izindawo zokuhlanza amanzi angcolile, iziphathimandla zezinsizakalo zamanzi, uhlelo lokuthuthukisa izinsiza zamanzi

# TABLE OF CONTENTS



## CHAPTER ONE: GENERAL INTRODUCTION

**CHAPTER TWO: THEORETICAL PERSPECTIVES ON SANITATION**

## CHAPTER THREE: THE NATURE AND EXTENT OF SANITATION IN SOUTH AFRICA

**CHAPTER FOUR: LEGISLATIVE AND POLICY FRAMEWORKS FOR SANITATION SERVICES IN SOUTH AFRICA**



**CHAPTER FIVE: RESEARCH DESIGN AND METHODOLOGY**

**CHAPTER SIX: DATA ANALYSIS AND INTERPRETATION**

## CHAPTER SEVEN: FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

## LIST OF TABLES

## LIST OF FIGURES

## LIST OF ANNEXURES

# ACRONYMS AND ABBREVIATIONS

| ACRONYM / ABBREVIATION | DESCRIPTION / DEFINITION |
|---|---|
| CoGTA | Cooperative Governance and Traditional Affairs |
| DoRA | Division of Revenue Act |
| ENERGYS | Engineers Ensuring Rollout by Growing Young Skills |
| FFC | Financial and fiscal Commission |
| IDP | Integrated Development Plan |
| IMF | International Monetary Fund |
| KZN | KwaZulu-Natal |
| LM | Local Municipality |
| MIG | Municipal Infrastructure Grant |
| MISA | Municipal Infrastructure Support Agency |
| MuSSA | Municipal Strategic Self-Assessment |
| NEMA | National Environmental Management Act |
| NWA | National Water Act |
| NWSMP | National Water and Sanitation Master Plan |
| RBIG | Regional Bulk Infrastructure Grant |
| RHIG | Rural Household Infrastructure Grant |
| SAICE | South African Institution of Civil Engineering |
| SALGA | South African Local Government Association |
| SOE | State-Owned Enterprise |
| StatsSA | Statistics South Africa |
| USDG | Urban Settlements Development Grant |
| VIP | Ventilated Improved Pit Latrine |
| WIG | Water Infrastructure Grant |
| WSA | Water Services Authorities |
| WSDP | Water Services Development Plan |
| WSP’s | Water Services Providers |
| WWTWs | Wastewater Treatment Works |

# CHAPTER ONE
# GENERAL INTRODUCTION

## 1.1 INTRODUCTION

Service delivery protests that ensued during the period leading to and after the 2011 local government elections signified the emergence of sanitation as a critical service delivery issue in the mainstream political discourse. These events stimulated national debate about the poor state of service delivery and highlighted challenges in managing sanitation services in municipalities across South Africa. Although efforts were made to improve access to sanitation services since the dawn of democracy, many South Africans still lack access to adequate sanitation facilities, defined hereafter (as in the *Water Services Act 108 of 1997*) as a ventilated improved pit latrine, a flush toilet connected to a sewer network, or a septic tank and urine diversion toilet facility. The condition of sanitation facilities has come under scrutiny as one of the serious concerns in the management and provision of adequate sanitation services in South Africa. Therefore, there is a need to evaluate the quality, functionality and accessibility of sanitation facilities in the country.

The Constitution of the Republic of South Africa, 1996 (hereafter referred to as the Constitution) places a duty on local government to provide sanitation services that include, *inter alia,* domestic wastewater and sewage disposal (see Section 4.2 of this research). To give life to the Constitution's stipulations, various pieces of legislation were drafted to regulate the provision of basic services such as sanitation. However, such efforts were hampered by, among other factors, the lack of monitoring, evaluation and implementation of sanitation policies and a lack of coordinated strategies between the three spheres of government – national, provincial and local government (National Treasury 2018:8). In addition, municipalities struggle to cope with growing demands for services, as witnessed by the wave of service delivery protests engulfing South Africa since 2004.

Based on this discussion, the researcher intended to use multiple case studies to examine the management of sanitation services in Merafong and JB Marks local municipalities (LMs) amid reports of poor service delivery and lack of resources.

This chapter provides the background and rationale for the study. The problem statement, research questions, research objectives, and the study's conceptualisation are also provided, along with a demarcation of the study. A synopsis of the research design, methodology and analysis is presented, and a description of the research chapters concludes this chapter.

## 1.2 BACKGROUND AND RATIONALE FOR THE STUDY

The researcher's long-standing involvement in sanitation matters through participation in community engagement forums and research at community level in Merafong and JB Marks LMs emphasised the challenges facing the two municipalities in the delivery and management of water and sanitation services. During that time, the researcher learned the poor management of sanitation services in Merafong LM had a serious effect on the neighbouring JB Marks LM. This sparked interest and prompted the researcher to undertake a formal scientific inquiry into the two municipalities' situation. Prior to undertaking this research project, the researcher published two articles in accredited journals; one article as the sole author and the other was co-authored. Both articles investigated the nature and state of wastewater treatment plants in South African municipalities and painted a bleak picture regarding their infrastructure.

Globally, access to water and sanitation services has improved since 2010. However, in 2015, 2.3 billion people were still without access to basic sanitation services, defined as ventilated improved latrines. It was also reported that 600 million people share toilet facilities, while 892 million people still defecate in the open (Sinharoy, Pittluck & Clasen 2019: online). Exposure to these unhygienic conditions has caused the deaths of millions of people from diseases associated with poor water quality and lack of basic sanitation. To highlight the plight of those who suffer from a lack of access to basic sanitation, the United Nations declared sanitation a human rights issue. This has provided a much-needed political impetus towards the sustainable development goal of providing universal access to water and sanitation (World Health Organisation 2017:4).

In South Africa, the number of households with access to sanitation facilities has increased from 20% in 2002 to 83% in 2017. These figures show considerable progress, but they do not give any indication about the facilities' functionality and that of the rest of the sanitation infrastructure (Toxopeus 2019a: online).

The UNICEF Water, Sanitation and Hygiene Report (2019:3) revealed that, in Somalia, 46% of the population queue for the use of one public toilet facility (UNICEF 2019:3). In South Africa, such conditions are also illustrated by the use of shared toilet facilities in Makhaza and Philippi informal settlements in the City of Cape Town, where many households share one toilet facility. Queuing for shared toilets can also be witnessed in the West Rand district municipal area and Alexandra township just outside the City of Johannesburg (SABC NEWS 2019: online). Shared sanitation facilities provide access for those who do not have individual access in their homes. However, they present several problems for users, including exposure to health hazards and safety concerns. Sinharoy, Pittluck and Clasen (2019: online) concur that service provision – particularly sanitation services – is a growing problem in sub-Saharan Africa that may lead to health risks among users. This problem is further aggravated by the increase in population migrating to urban centres. Rapid urbanisation places a greater burden on already constrained sanitation systems in urban centres. Likewise, in rural areas, growing and changing human settlement types overburden small and limited sanitation systems. Therefore, the need to expand municipal infrastructure to accommodate population growth remains a serious challenge for many municipalities across South Africa, resulting in more serious backlogs in other service delivery areas (Wall & Amod 2017: online). Future sanitation systems thus need to prioritise appropriate human settlements wherein the availability of resources is considered. For example, dry sanitation systems should be used in areas where there is a scarcity of water (Pillay & Atkinsete 2019: online).

The South African Institution of Civil Engineering Report Card (Amod & Wall 2017: online) has pointed out that infrastructure is acceptable in metropolitan areas but under strain due to growing demand. In other cases, infrastructure is on the verge of collapse (Amod & Wall 2017: online). In essence, the infrastructure necessary to provide adequate sanitation services is under stress; communities are exposed to health hazards and ultimately suffer from poor sanitation-related illnesses. Recent illnesses

that occurred due to poor sanitation maintenance have been reported in Vryburg in the North West Province and in Alexandra Township in the Gauteng Province, where residents contracted tuberculosis and other related diseases as a result of exposure to sewage stench (SABC news 2019: online).

Maharaj (2012:8) highlights poor maintenance of water and sanitation infrastructure as a major issue in dealing with and improving access to sanitation services. For instance, there are challenges with dilapidated infrastructure, weak institutional responses to operation and maintenance, limited resources, poor and uncoordinated spatial planning, and ineffective sludge management that pose a threat to the environment and shared toilet facilities. In addition to poor maintenance and the state of sanitation infrastructure previously mentioned, inadequate and poor municipal planning has also been cited in the National Treasury Budget Review Report (2019a:71) as one of the critical challenges in municipal governance. The report indicates that planning is limited to short-term activities, and long-term planning is compromised by the pressure of meeting mid-year spending targets (National Treasury 2019a:71). This is the case despite clear deadlines in the *Division of Revenue Act*. Additionally, over-reliance on private consultants to design and do planning for municipalities has resulted in a loss of internal capacity. The Auditor-General's (AGs) report on municipal outcomes has similarly emphasised municipalities' inability to draft water services development plans (WSDP) due to a lack of technical expertise; a challenge that should be addressed urgently (Auditor-General 2019: online).

Musa (2014:16) investigated informal settlement residents in Emfuleni LM's perceptions about water supply and sanitation services. The study found that a lack of infrastructure is a common problem in many informal settlements across South Africa. In addition, the study reported that the current infrastructure is in a state of disrepair and requires urgent improvement (Musa 2014:88). For example, residents still use pit latrines without ventilation, which is regarded as below the standard set by the *Water Services Act of 1997*. Similarly, Chauke (2017:5) undertook a comparative study on the state of sanitation services in the City of Johannesburg and Tshwane metropolitan municipalities. The findings of that study reflected the general neglect of informal settlements in terms of basic services and infrastructure. Furthermore, both municipalities experienced shortcomings in relation to institutional capacity, including a

lack of requisite technical skills, poor financial management, and non-payment of services by residents.

According to Phaswana-Mafunya and Shukla (2005:21), besides a lack of infrastructure maintenance, there is also a lack of advocacy on hygiene-related issues, lack of funding, staff shortages, and a lack of community involvement in decision-making. The authors contend that solutions to sanitation challenges go beyond building a toilet facility and installing sewer and water networks but should include strong advocacy and communities taking ownership of sanitation programmes from conceptualisation to implementation. Pan, Armitage and Van Ryneveld (2018: online) agree that the inclusion of multiple stakeholders in the provision and design of sanitation programmes is critical in improving sanitation services. Stakeholders, such as community-based and non-governmental organisations, are becoming more common in developing countries. As a result, governments are increasingly delegating the responsibility of managing the systems to the community due to limited resources.

In addition to the challenges with constrained infrastructure alluded to above, the lack of institutional capacity within municipalities in South Africa presents another challenge. Amod and Wall (2017: online) highlighted the chronic shortage of technical capacity within the water and sanitation directorates in municipalities, where infrastructure is operated and maintained. Insufficient accountability for infrastructure and insufficient data to schedule maintenance has been cited as a common occurrence in local government (Amod & Wall 2017: online). For Peters and Nieuwenhuyzen (2012:276), the problems go beyond just capacity challenges to include tensions in intergovernmental roles and responsibilities. Mafunisa, Ramabulana, Hlaele and Nekwakwani (2017: online) share the same sentiments that the political-administrative interface, high vacancy rates and instabilities in administrative leadership, skills deficits, poor organisational design, inappropriate staffing and low staff morale are to blame for the poor state of affairs in municipalities.

Mulaudzi (2020:156) suggests that a developmental state agenda should be adopted to overcome some of the challenges referred to above, wherein the focus is on strengthening relationships between different social institutions and managing conflicts within and between these institutions through national consensus and social pacts. At

the centre of an effective developmental state agenda is the independence of public officials. The author argues public officials' independence is an important determining factor in ensuring that the state plays a key role in pursuing national interest over narrow political interest. In addition, the state should pursue recruitment based on merit. Such methods have been found to minimise the exploitation of state resources by those who are politically connected. Therefore, an aspiring developmental state should place emphasis on a well-coordinated, efficient and skilled workforce. Mulaudzi (2020:159) argues that such states have the administrative, technical and political capacity to set national agenda. At the local government level, the provision of adequate services requires a municipality to have the capacity to deliver on its developmental mandate, which includes the ability to give priority to the basic needs of the community and promote its social and economic development (Mulaudzi 2020:159).

According to Taing (2015:6), municipalities' failure to provide adequate sanitation services cannot only be attributed to poor municipal governance; a multiplicity of factors should be considered. Among such factors are the contradictions and gaps in legislation, particularly as it relates to illegally occupied settlements, and technological challenges of retrofitting infrastructure in densely populated areas. The infighting between political parties contesting for the control of municipal areas was also mentioned. All these factors contribute to the poor state of service delivery in municipalities (Taing 2015:7).

### 1.2.1 Study Areas: Merafong and JB Marks local municipalities

Having provided preliminary background on the challenges public institutions face in the delivery of sanitation services, the next section presents a brief discussion on the study area and highlights the challenges Merafong and JB Marks LMs experience.

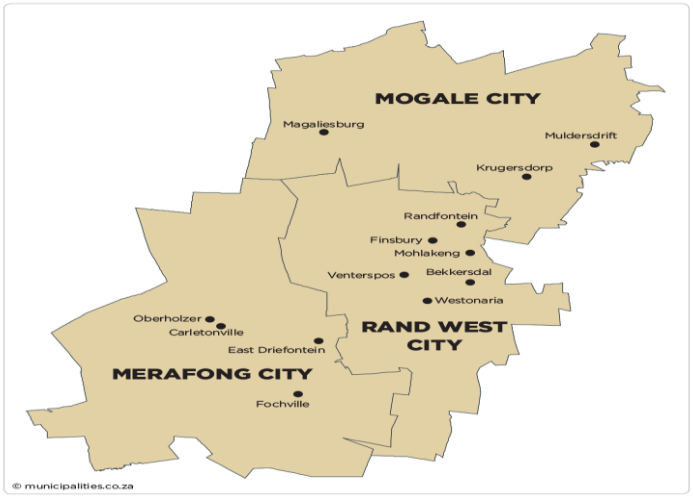



**Figure 1.1: Merafong local municipality map**

*Source: Municipalities.co.za,2021*

The Merafong LM is located in the far west rand of the Gauteng Province and falls under the West Rand district municipality. The West Rand district municipality is constituted by Merafong, Rand West City and Mogale City LMs, as shown in Figure 1.1.

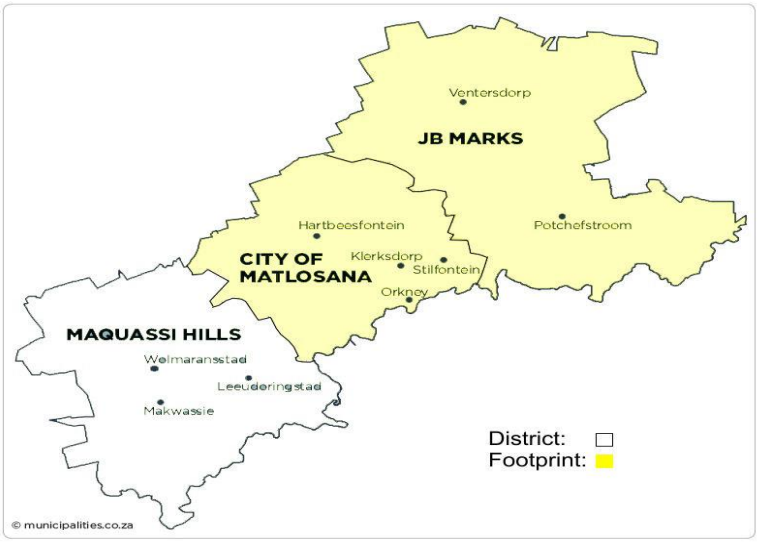



**Figure 1.2: JB Marks local municipality map**

*Source: Municipalities.co.za,2021*

The JB Marks LM was formed as a result of the amalgamation of erstwhile Tlokwe LM in Potchefstroom and Ventersdorp LM. The JB Marks LM falls under the Kenneth Kaunda district municipality, constituted by Maquassi Hills, City of Matlosana and JB Marks LMs, as shown in Figures 1.2 above.

## 1.3 PRELIMINARY LITERATURE REVIEW ON MERAFONG AND JB MARKS LOCAL MUNICIPALITIES

As indicated previously, Merafong LM is situated in the Gauteng Province. It is a LM that falls within the West Rand district municipality, with its seat in Randfontein. This municipality borders the JB Marks LM in the North West Province. The JB Marks LM (previously known as Tlokwe LM) falls within the Kenneth Kaunda district municipality, with its seat in Orkney in the North West Province. In 2016, the erstwhile Tlokwe and Ventersdorp LMs merged to form one LM called JB Marks LM.

In their article titled "*Amalgamations of rural municipalities",* Ncube and Monnakgotla (2016:92) argue that the merger between the former Ventersdorp LM and Tlokwe LM was carried through despite objections from different quarters of civil society, including political parties in the North West Province. According to the authors, the merger presented several challenges to the amalgamated municipality. For instance, the JB Marks LM has to carry and service the debt of the former Ventersdorp LM (Ncube & Monnakgotla 2016:92). This has several service delivery implications for the JB Marks LM, and a number of services are affected in terms of the municipal budget allocation. The amalgamated municipality adopted a dysfunctional one with poor water and sanitation infrastructure, a very low tax base and non-rate-paying residents (Ncube & Monnakgotla 2016:92). The authors argue the government's initiative of making rural municipalities (such as the erstwhile Ventersdorp LM) self-sufficient through amalgamations has not resulted in viable municipalities; it has worsened the situation of some of the amalgamated areas. In addition, the authors claim the dependency ratio of rural municipalities is very high and cannot be reversed through amalgamations (Ncube & Monnakgotla 2016:92).

The JB Marks LM experienced poor maintenance of infrastructure, which resulted in sewer spillages in Ikageng Township outside Potchefstroom. This municipality also has a serious challenge of sinkholes in the geologically dolomite underlain areas, which negatively affects municipal infrastructure and service delivery. For example, a leakage in the sewer or water pipes triggers the formation of sinkholes due to dolomitic underlain areas; the pipes get destroyed when sinkholes are formed.

The primary responsibility for providing water and sanitation services lies with local government, namely municipalities, in terms of part B of schedule 4 of the Constitution. *The Water Services Act, 108 of 1997*, and the *Local Government: Municipal Systems Act, 32 of 2000*, clearly outline this obligation, while the *Local Government: Municipal Structures Act, 117 of 1998*, and the Strategic Framework for Water Services (2003) reflect the institutional relationships at local sphere of government in more detail. This legislative framework stipulates, among other things, what municipalities should do to provide water services. A WSDP is one of the key guiding documents municipalities should develop to provide quality water services (Tissington 2013). However, according to the Municipal Strategic Self-Assessment Report (2018: online), more than 50% of municipalities in South Africa do not comply with legislative prescripts regarding the provision of water services. Merafong LM is one of the municipalities lagging in this regard.

The aforementioned report identified several challenges in the Merafong LM (Department of Water and Sanitation 2018a: online). One of the critical challenges is the shortage of staff with the requisite qualifications, experience and skills in various areas within the municipality's sanitation and infrastructure unit. This situation has put significant pressure on the current staff despite the organisational organogram being approved by the Merafong LM's council (Merafong LM IDP 2019:22, 24).

Over and above the challenges alluded to, the wastewater treatment works (WWTWs) are in a state of disrepair due to poor maintenance over a long period. In addition, staff turnover continues to rise, and the Merafong LM does not have staff retention and mentoring programmes that will assist in keeping the available talent and ensuring the transfer of skills to new employees (Merafong LM IDP 2019:22).

## 1.4 PROBLEM STATEMENT

In view of the background provided in the previous section, municipalities in South Africa experience significant challenges that relate particularly to how local government authorities manage sanitation resources. The JB Marks and Merafong LM are not immune to these realities, as proven by literature.

The preliminary literature review identified a number of scholarly contributions on water and sanitation services, as indicated in the background (see Section 1.2); the closest studies to this topic focused on the management of sanitation resources (Phaswana-Mafunya & Shukla 2005; Maharaj 2012; Taing 2015; Musa 2014; Chauke 2017; Amod & Wall 2017: online). However, the aforementioned studies have not provided comprehensive insight into the shortcomings with sanitation service delivery at local government level.

The primary focus of these studies was sanitation service delivery in informal settlements, the sustainability of private sector participation in water and sanitation matters, and the impact of policy choices for sanitation service delivery, policymaking and implementation for South Africa's informal settlements, and informal settlement residents' perception of sanitation technologies. Studies also focused on informal settlement residents' perceptions of a lack and poor maintenance of sanitation infrastructure. However, this study provides an in-depth investigation of the shortcomings in the delivery of sanitation services through a multiple case study approach.

The main research question of this study sought to address a real problem (determine shortcomings in the delivery of sanitation services in two selected municipalities), in what Mouton (1996:64) refers to as World 1 (W1). W1 is the world of everyday life in which we live; it concerns lay knowledge. Furthermore, W1 includes knowledge that people obtain through their lived experiences. World 2 (W2) is the world of science where scientists use phenomena from W1 as the objects of research. In this regard, scientists attempt to make scientific inquiries about phenomena with a view to examine and make truthful judgements about them (Babbie & Mouton 2001:10-11).

The researcher, as an academic at Unisa, is part of W1 and W2, employs both types of knowledge and uses both in practising scientific research. World 3 (W3) is the world of meta-science and the development of academic disciplines such as Public Administration. These disciplines take W2 (world of science) as the object of investigation and reflect thereon (Mouton 1996:8-9). In other words, all empirical scientific inquiry begins with a move from W1 to W2 (Mouton 1996:64). The researcher thought and reflected on W1 and W2 as he engaged in this scientific inquiry.

## 1.5 PURPOSE OF THE STUDY

Against the background of the research problem in the preceding section, the general purpose of this study can be stated as follows: to determine the challenges (if any) facing Merafong and JB Marks LMs regarding the delivery of sanitation services.

## 1.6 RESEARCH QUESTIONS

To address the main research problem in line with the research purpose, the study attempted to answer the following research questions:

- What core theoretical foundations and classifications can be used to analyse the history and development of sanitation?
- How are sanitation resources managed in JB Marks LM and Merafong LM?
- What legislation governs sanitation services in a municipality?
- What is the nature of the current infrastructure in the JB Marks LM and Merafong LM?
- What are the challenges and constraints in the management of adequate sanitation services in the JB Marks LM and Merafong LM?
- What research design and methodology are applicable in determining the shortcomings of the JB Marks LM and Merafong LM to deliver sanitation services?

## 1.7 RESEARCH OBJECTIVES

Flowing from the above research questions, the following objectives can be established:

- To provide core theoretical foundations and classifications that can be used to analyse the history and development of sanitation.
- To establish how sanitation resources are managed in JB Marks LM and Merafong LM.
- To review legislation governing sanitation services in a municipality.
- To determine the nature of infrastructure in the JB Marks LM and Merafong LM.

- To determine challenges and constraints in the management of adequate sanitation services in the JB Marks LM and Merafong LM.
- To describe and explain the research design and methodology applied in determining the shortcomings of the JB Marks LM and Merafong LM to deliver sanitation services.

## 1.8 CONCEPTUALISATION

According to Robson (2006:62), Public Administration as a discipline can be regarded as a conceptual science. Robson (2006:62) suggests Public Administration is linked to concepts such as a “policy”, “planning”, “management”, “organisation”, “control”, “process”, “service delivery”, and “sanitation”. Concepts are the primary building blocks of scientific knowledge and may be defined as the most basic symbolic constructions by which people view or classify reality (Mouton 1996:181).

According to Pauw (1999:11-12), in scientific discourse, it is important to distinguish between three verbal tools, namely “words”, “concepts” and “terms”. Concepts are “thinking tools” and constitute a single meaning that can be expressed in different words (Pauw 1999:11-12). A “word” is a language tool and may have different meanings. A “term” constitutes one or more words with a fixed meaning, usually technical discourse. It can be noted from the above that Mouton and Pauw agree on the function of concepts in scientific discourse and that it symbolises a meaning.

Generally, in scientific engagements, concepts are necessary and represented by means of words or terms such as “policy”, “sanitation”, and “planning”. Concepts also typically have connotative and denotative meanings. For instance, the term “policy” can be defined connotatively by listing its common attributes (Robinson 2006:62). Denotatively, “policy” refers to specific policies that have those attributes, for example, sanitation policy, language policy, and so on.

Having outlined the important analysis of what “concepts”, “terms” and “words” are, and in line with the approach followed in this study, attention is now directed towards the process of conceptualisation. According to Mouton (1996:66), the conceptualisation process consists of two activities:

- clarifying key concepts in the problem statement; and
- relating the problem to a broader conceptual framework or context.

To avoid vagueness, misinterpretation and confusion in the use of concepts in this research, it is imperative that key concepts are clearly defined. These concepts are used throughout this thesis.

## 1.9 CLARIFICATION OF KEY CONCEPTS

The following key concepts are critical in constructing the main argument of the study and are clarified and defined below.

### 1.9.1 Resources

Resources, in this study, refer to human resources – employees who work within sanitation departments or units in municipalities. In addition, the word “resources” refers to physical resources such as sewerage pipes and wastewater treatment plants. Finally, resources mean the financial resources used to deliver sanitation services.

### 1.9.2 Sanitation 1

Scholars and authors have offered explanations and definitions of what the term “sanitation” entails. It is the researcher’s view that sanitation should be defined at two levels: administrative and operational levels. To provide a clear distinction of these two levels, the researcher saw it befitting that sanitation, as it refers to administrative matters, should be referred to as sanitation 1, and as it relates to operational or technical activities, it should be referred to as sanitation 2. At the administrative level, the term “sanitation” refers to practices or behaviour regarding the promotion of health and hygiene education in households and communities (Department of Water Affairs 2012:201). The word “sanitation” also refers to the maintenance of hygienic conditions through services such as wastewater disposal (WHO 2017).

### 1.9.3 Sanitation 2

Sanitation, at the operational level, refers to infrastructure to safely remove human waste, provide ongoing services, emptying of ventilated improved pit latrines, and supplying water for flushing waterborne toilets (Department of Water Affairs 2012a:9). Also, Kasala, Burra and Mwakenja (2016:24) mention a range of elements that encompass sanitation 2 to include the following: safe collection, treatment and disposal of human excreta (faeces and urine); management of solid waste; drainage and disposal of wastewater; and drainage of stormwater, among others. From the above definitions, authors agree that sanitation comprises the safe removal, treatment and disposal of human excreta in a manner that promotes hygiene practices and behaviour.

### 1.9.4 Sanitation service

Sanitation service means the provision of a facility accessible to households, firms and collectives, the sustainable operation of the facility, including the safe removal of human waste and wastewater from the premises where this is appropriate and necessary, and the communication of good sanitation, hygiene and related practices (Department of Water Affairs and Forestry 2003:14). It is a system for disposing of human excreta and household waste, which is acceptable and affordable to the users, safe, hygienic and easily accessible, and which does not have an unacceptable impact on the environment (Department of Water Affairs and Forestry 2001:14).

### 1.9.5 Wastewater

Wastewater is water whose physical, chemical or biological properties have been altered as a result of the introduction of certain substances that render it unsafe for some purposes, such as drinking (Amoatey & Bani 2011: online). Wastewater can be generated from different sources, for instance, domestic and industrial use.

### 1.9.6 Sewage

Sewage is the sub-set of wastewater that is contaminated with human faeces or urine; however, it is a term often used incorrectly to refer to any wastewater (Tissington

2011:9). It is often used to describe all types of wastewater generated from domestic dwellings. According to Tissington (2011:9), there are two types of sewage: blackwater, or wastewater from toilets, and greywater, which is wastewater from all domestic sources except toilets. Blackwater and greywater have different characteristics, but both contain pollutants and disease-causing agents that require treatment. Wastewater from non-residential sources generally requires additional treatment steps than what is needed for sewage. For example, stormwater should be collected separately to prevent the flooding of treatment plants during bad weather. Screens often remove rubbish and other large solids from storm sewers. In addition, many industries produce wastewater high in chemical and biological pollutants that can burden treatment systems; acid mine water is a good example of this. To combat any issues, these wastewater sources tend to provide their own treatment or preliminary treatment to protect the main wastewater treatment system.

### 1.9.7 Sewerage

Sewerage refers to the physical infrastructure or system of sewers (pipes, pumps, manholes, and chambers) that conveys sewage from its origin to the point of eventual treatment or disposal into the environment; for instance, at a wastewater treatment plant and natural bodies (Tissington 2011:9).

### 1.9.8 Service delivery

“Service delivery is concerned with the provision of a product or service, by a government or government body to a community or which is expected by that community” (Crous 2002). In the context of this study, service delivery refers to the provision of basic services, such as water, sanitation, electricity, and waste management by municipalities. This is in line with section 152 of the Constitution. According to Fox and Meyer (1995:119), service delivery refers to the provision of public activities, benefits or satisfaction. Craythorne (2003:158-178) also offers a local government view of what service delivery means. The author directs attention to constitutional provisions and demands that local government comply with in discharging their mandate of service provision.

### 1.9.9 Local government

Local government is defined by certain characteristics, for instance, powers to perform certain functions, legal persona, citizen participation and limited autonomy. Nkuna (2011:624) refers to local government as comprising local government and administration. Local government can also be described as a public institution authorised by the Constitution to govern the affairs of communities that fall within its area of jurisdiction. Roux and Nyamukachi (2005:64) note that “local government” is an all-encompassing term for a collective of municipalities, not an individual municipality. It includes the political and bureaucratic structures and processes that regulate and promote community activities. Conversely, “local government” is regarded as the context of everyday lives and the only sphere of government that has a constant impact on the physical and human social environment within which humans live (Roux & Nyamukachi 2005:64).

This view is supported by Thornhill (2008:492), who argues that local government is the first point of contact between the community and government in its area of jurisdiction. In essence, the manner in which people go about their daily lives is within the local government context. Van der Waldt (2006:142) similarly states that local government is at the coalface of public service delivery. According to Koma (2010:113), because of its proximity to the people, local government is expected to be at the core of service delivery, which is a constitutional obligation derived from the Constitution of 1996.

### 1.9.10 Developmental local government

Developmental local government generally refers to a governance model pursued by the “Asian tigers” in their quest to improve their economies (Gumede 2019:2). The East Asian developmental state model is one where the state sets development goals, provides resources and mobilises civil society to achieve such goals. In the South African context, developmental local government refers to a local government committed to working with its citizens and groups in the community to find sustainable ways to meet their social, economic and material needs and improve the quality of their lives (Republic of South Africa 1998).

The concept of “developmental local government” came to the attention of scholars in the field of politics when they studied characteristics of successful developing countries (Nzwei & Kuye 2007:198). In his analysis of the state of local government in South Africa, Koma (2010:112-113) identified the following as important characteristics that define a developmental state:

- A state excels in public administration and intervenes in the economy to promote social development. The local sphere of government constitutes an integral part of public administration that also excels in providing public services.
- A strong state capacity is critical as a distinctive feature of a developmental state. The success of a developmental state depends on the creation of efficient and effective public officials who can find innovative solutions to societal problems.
- A developmental state is concerned with integrating a dual economy to address the economic challenges of the state, particularly the poor and marginalised. This means integrating both the formal and informal economies.
- A developmental state builds its legitimacy on its capacity as a democratic state. It fosters economic growth for the country.

Section 152 of the Constitution states it is local government’s developmental duty to promote the economic and social development of communities in its jurisdiction.

### 1.9.11 Sanitation policy

The White Paper on Basic Household Sanitation 2001 provides broad guidelines on how a public service institution should address sanitation. It mentions an approach that is environmentally sound in the provision of sanitation services. Schedule 4 Part B of the Constitution claims the provision of sanitation is a function of local government to the extent set out in section 155.

Having defined the concepts associated with the main theme of the study, attention is now directed at the study’s demarcation.

## 1.10 DEMARCATION OF THE STUDY

The primary research focus of this endeavour is to determine the shortcomings, if any, in the delivery of sanitation services through case studies of Merafong and JB Marks LMs. The findings of this study cannot be generalised to other municipalities in South Africa.

## 1.11 ORIGINAL CONTRIBUTION TO THE FIELD OF PUBLIC ADMINISTRATION

According to Petre and Rugg (2010), making a significant contribution means adding to knowledge or contributing to discourse. This study contributes to the sanitation discourse within the field of Public Administration by providing insights into the management of sanitation within municipalities; no in-depth study has previously been undertaken in the field of Public Administration that sought to determine shortcomings in the delivery of water and sanitation services in Merafong and JB Marks LMs. Consequently, this study fills that gap.

The contribution is two-fold, scholarly and methodologically. Methodologically, the contribution is made by demonstrating – through scientific research processes – the significance of triangulating empirical data with verified official records in order to draw accurate conclusions that reflect the true state of affairs. Scholarly, the contribution is made by extending the discourse on sanitation within the field of Public Administration and proposing how sanitation resources should be managed, representing the need for multiple stakeholder involvement in sanitation services. Moreover, it entails identifying the need for more regulations to ensure legislation is implementable. The value of this study lies in its recommendations that will address shortcomings regarding the provision of basic sanitation services that proved to be a serious challenge in both case studies.

## 1.12 RESEARCH DESIGN AND METHODOLOGY

This study was primarily intended to be an in-depth investigation that seeks to determine shortcomings in the delivery of sanitation services in the JB Marks LM and Merafong LM. Furthermore, this study intended to make proposals to address the identified shortcomings. As shown in Section 5.3, this study adopted the convergent parallel mixed

method because it allowed the researcher to collect both quantitative and quantitative data from Merafong LM and JB Marks LM at more or less the same time. The researcher merged quantitative and qualitative data to provide an in-depth analysis of the research problem and then integrated the information into the interpretation and analysis of the results. Various pieces of legislation that guide the provision and implementation of sanitation and official reports were analysed to assist the researcher in answering the research questions of this study. Questionnaires, structured interviews, and document analyses were employed to attain empirical findings.

Two types of sampling methods were applicable to this research, namely purposeful sampling, for the selection of officials who met the study's informational needs and were knowledgeable in sanitation matters, and systematic random sampling, for the selection of household representatives. Structured interviews were conducted with senior municipal officials in the JB Marks LM and Merafong LM to verify, interpret and clarify data. In addition, a community survey was undertaken to corroborate data provided by municipal officials. A comprehensive justification of the research design and methodology, data collection and data analysis is undertaken in Chapter Five of the study.

## 1.13 DATA ANALYSIS AND INTERPRETATION

After data collection was completed, an in-depth analysis of the data was conducted through data filtering, mind mapping (which can also be used during the process of data collection with a view to eliminating irrelevant data), and the integration of the views of different authors and official documents. The results of the returned questionnaires and interviews were captured in Microsoft Excel and then exported to statistical packages for social science (SPSS) for analysis and interpretation. Tables and charts were drawn from this analysis and used to interpret the results. In addition, official reports that had a bearing on sanitation matters were analysed. A more detailed discussion of data analysis and interpretation is undertaken in Chapter Six of this study.

## 1.14 EXPOSITION OF CHAPTERS

**Chapter One** provides a general introduction to the entire study. It includes the background and rationale for the study, the purpose of the study, the problem statement for the study, and, by implication, the research questions for the study. It also covers the study's objectives, original contribution, conceptualisation, clarification of key concepts, and demarcation of the study. The research design and methodology of the study, data analysis, as well as the exposition of chapters are also presented.

**Chapter Two** provides a brief historical account of the development of sanitation. It further interrogates the available body of literature with regards to sanitation matters. The chapter explores broad social and philosophical perspectives on the provision of sanitation services. It then highlights theoretical underpinnings to explain the management of sanitation. It concludes by exploring political perspectives on sanitation debates in South Africa.

**Chapter Three** provides a critical reflection on the state of access to sanitation services in South Africa. This is followed by a discussion on funding mechanisms for sanitation services (current utilisation of grant funding) and human resource capacity challenges. Infrastructure investment for water services is also interrogated in this chapter. In addition, this chapter explores the following issues: the maintenance and operation of sanitation infrastructure, municipal planning, sanitation technologies, and the performance of wastewater treatment works. Capacity-building initiatives are also discussed in this chapter. The chapter concludes with a discussion of institutional arrangements for sanitation services in South Africa.

In **Chapter Four**, the legislative and policy frameworks that guide the provision and implementation of sanitation services in South Africa are reviewed. These frameworks include legislation and policies that have a bearing on sanitation services, including the Constitution.

In **Chapter Five**, broad philosophical perspectives on which this research is based set the tone for this chapter. The chapter discusses the research design, population and sampling; the data collection instruments employed in this research are also discussed

in detail. Given the use of the mixed method in a multiple case study, it was incumbent upon the researcher to explain both quantitative and qualitative data analysis in this research and describe both cases. Validity and reliability, trustworthiness limitations and ethical considerations are also fully explained in this chapter.

**Chapter Six** presents and discusses the empirical findings of this research. The presentation of findings follows the order of research questions rather closely. This chapter constitutes an empirical part of this study and provides details regarding respondents' views and perceptions of the study's objectives. The research findings are then subjected to interrogation in light of the existing knowledge on water and sanitation matters in local government.

In **Chapter Seven**, a synthesis of the study is undertaken. Conclusions are also drawn based on the findings of the study, and recommendations are made for possible future research arising from this study.

## 1.15 CONCLUSION

This chapter served to introduce the entire study. It also demarcated the field of study, noting the study's originality. In addition, it surveyed the structures of the thesis and provided a concise indication of the content of each of the remaining chapters of the thesis. The next chapter provides theoretical perspectives on sanitation services.

# CHAPTER TWO
# THEORETICAL PERSPECTIVES ON SANITATION

## 2.1 INTRODUCTION

The previous chapter set the scene for the entire study. It highlighted the objectives and the importance of undertaking these case studies. This chapter seeks to provide a review of literature on sanitation within the field of Public Administration and Management. Given the multi-disciplinary nature of studies on sanitation, it is necessary to explore the available body of literature in the other fields like Environmental Sciences, Geology, Geo-hydrology and Engineering Sciences.

This chapter proceeds by providing a brief historical overview of the development of sanitation. This is followed by a discussion of available literature in Public Administration, Environmental Studies, Geology, Hydrogeology and Engineering Sciences. The next section explores broad social and philosophical perspectives on the provision of sanitation services. The chapter highlights privatisation and direct state provision of services as the two opposing ideological views on the provision of public services. The systems approach is also highlighted as a theory that can explain the management of sanitation. The chapter concludes by exploring political perspectives on the sanitation debate in South Africa.

## 2.2 SOME SNAPSHOTS OF THE HISTORY AND DEVELOPMENT OF SANITATION

The history of sanitation can be traced back to 800 and 735 BCE Rome, where the first sewer was constructed. According to Schladweiler (undated), the Romans were the first to put latrines in public baths and rooms; these latrines were called “rooms of easement”. As illustrated in Figure 2.1, these latrines were typically elongated rectangular platforms with several adjacent seats, apportioned or divided for privacy (Hutchison *in* Stewart 2014:15). These sewer systems were positioned in such a way that the water that ran through from the public baths, or “brush water” (ancient Roman use of urine for brushing teeth), flowed continuously beneath the latrine seats to the sewers under the city, and

ultimately into the nearby river. Several ancient societies developed basic sewage removal systems, but ultimately, they all just flushed human waste into natural water sources. As cities grew larger, problems developed with the stench and unsightliness of sewage, as well as contamination of drinking water. Most cities obtained drinking water from the sources they were polluting with their human waste, or from wells next to their human waste dumps (Hutchinson, undated *in* Stewart 2014:15).

**Figure 2.1: The ruins of a public latrine from the Roman era (1st Century)**

*Source: Schladweiler (undated)*

According to Stewart (2014:16), it was common for nations or countries to develop and design their sewer systems in such a way that it was aligned to the socio-cultural setting of that particular country or nation. For example, during the period 2000 - 500 BCE, Palestine had many religious activities that included bathing, and complex water structures were thus built. In Egypt, the rich had toilets that used beds of sand to absorb and contain the waste. It was servants' responsibility to clean the sand regularly (Stewart 2014:16). Another example is the 4000 - 2500 BCE Eshnunna/Babylonia-Mesopotamian Empire (present-day Iraq). That era saw the introduction of stormwater drain systems in the streets, and in some of the larger Babylonian homes, people squatted over an

opening in the floor of a small interior room. The waste fell through the opening into a perforated cesspool located under the house. Figure 2.2 illustrates a cesspool with a large bath in the foreground.

**Figure 2.2: Cesspool**

*Source: Qayyum (Undated)*

The sewerage systems established during these ancient Roman and Babylonian civilisations collapsed once they reached their life span. Other remnants of sewerage systems from 3200 BCE were found in the Orkney Islands of Scotland, where excavations showed traces of early stormwater drainage systems. During this period (3200 BCE), the first lavatory-like plumbing systems were fitted into recesses in the walls of homes (Stewart 2014:16).

Hutchinson (undated in Stewart 2014:16) indicates that after 2,000 years (500 to 1400-1500 CE), all the mechanisms and equipment used for controlling sewage had collapsed, and authorities ran out of space to safely dispose of human faeces. It was

during this middle-age period that cities became polluted. Health and environmental pollution increased as many individuals resorted to disposing of faeces in their yards and the streets. In South Africa, waste drained into the sea through viagrachts (canals) built by the Dutch settlers during the 17th and 18th centuries. Locals at the time considered the canals inadequate and a threat to labourers' health. At the insistence of English merchants, the antiquated canals were subsequently replaced with modern sewers similar to those built in England. The next section discusses and highlights the multi-disciplinary nature of the sanitation discourse and the important lessons that can be learned from research undertaken outside the field of Public Administration.

## 2.3 COLLABORATIVE MULTI-DISCIPLINARY APPROACHES TO SANITATION

Due to the multi-disciplinary (defined as involving or combining several fields or academic interests) nature of the discourse on sanitation, the researcher (working in Public Administration) believes solutions to sanitation problems should be found through collaborative multiple disciplinary approaches. Hence, it was important to explore literature from other fields of study. In a survey conducted by the researcher of the recent Nexus Database list of current and completed studies, evidence suggests there is a lack of literature in the field of sanitation management as an area of scientific inquiry in Public Administration. However, on further perusal of the database, it was noted that a plethora of literature could be found from other fields such as Environmental Sciences, Geology, Geo-hydrology and Engineering Sciences, discussed later in this chapter. Although the two case studies focused on in this research are not exhaustive of all facets of sanitation, the aspects addressed in this chapter demonstrate how factors outside Public Administration can affect the delivery and sustainability of sanitation services. It is important that such literature from other fields be perused because new knowledge can be created, and new ways of managing sanitation can thus be found.

### 2.3.1 Public Administration and sanitation

The closest area of Public Administration that attempts to address the issue of sanitation is local government, albeit in more general terms as a service delivery area without paying particular attention to the nature and extent of sanitation as a sub-field. The researcher has established – by perusing literature in the field of Public Administration

on the topic of sanitation – publications are limited to debates on sanitation facilities, such as the delivery of toilet facilities without providing a comprehensive analysis of public resources for the effective delivery of basic sanitation. Therefore, the researcher intended to explore such areas of the discourse on sanitation from a Public Administration perspective.

In the past decade, a number of events in South Africa brought the issue of sanitation into focus in the local, national and international media, calling into question underlying assumptions about how sanitation systems are managed in the country (Argent 2018:5). Between 2010 and 2011, the so-called “poo protest” brought attention to the state of communal toilets in Makhaza and Khayelitsha in the Democratic Alliance-led Western Cape Province (Argent 2018:5). Residents of these informal settlements were protesting unenclosed toilets leaving users exposed (Argent 2018:5). These protests later escalated to complaints about a lack of maintenance of these facilities. The image of these toilets soon became a symbol of what Tempelhoff (2011:85) refers to as “two worlds in one city”, illustrating the poor conditions the residents of Makhaza experienced versus living conditions of the elite in the northern suburbs of Cape Town. Soon thereafter, the local media also exposed unenclosed toilets in an ANC-led Rammolutsi LM in the Free State Province. Jackson and Robins (2018:70) characterised the two cases as symbols of political affiliation and social class struggles. According to Argent (2018:6), these protests signified how social activism and mass media could stimulate debates on service delivery issues and bring sanitation to the mainstream political agenda. The fundamental question that remained in the consciousness of Makhaza and Rammolutsi township residents is whether partisan politics is to blame or whether it was purely a matter of structural-systems failure to deliver quality sanitation services at the local government sphere.

Researchers like Robins (2014:70), Penner (2010), and Hanyane, Nkgabe and Lekonyane (2012:5) have already drawn attention to these issues. These scholars raised pertinent questions around the state of sanitation facilities, inadequate facilities, and the appropriateness of segregating sanitary facilities by sex in a society that is beginning to recognise the limits of gender. Furthermore, the open toilet saga, water crises and other recent cases of people using pit latrines and deteriorating sanitation facilities across municipalities in South Africa – as reported in the AG Report (2018/19)

– highlighted the stark disparities that remain in South Africa in terms of access to resources and basic services (Argent 2018:7). In addition, these events also raised wider questions about the management of sanitation services that many take for granted. Other research conducted on the municipal management of sanitation services, seen through the “glasses” of Public Administration, was by Manona and Cloete (2007:72). These authors investigated the impact of socio-economic services, such as water and sanitation, in improving the quality of life of poor communities in South Africa. The authors found that rural communities and residents of informal settlements continue to suffer ill health due to a lack of basic infrastructure in terms of sanitation services, poor sanitation practices, and subsequent unhygienic conditions. These authors contend that the above factors represented a major challenge with sanitation in rural areas and informal settlements in urban areas. The authors singled out a lack of education on best practices as a contributing factor exacerbating poor hygiene and sanitation practices.

Interventions to promote hygiene education has since been introduced, albeit as a once-off intervention. According to the Water Commission Report (2010), this intervention appears to be falling between the cracks of the environmental health and water services departments of uMgungundlovu LM, with both assuming the other was responsible for this component of basic sanitation services. In addition, the authors note that the hygiene awareness programmes do not include ongoing health hygiene education as a component of sanitation (Water Research Commission 2010).

The AG Report (2018: online) indicates that municipalities are failing to spend allocated budgets due to internal capacity challenges. For example, in Fetakgomo LM in Limpopo Province, only 1% of the municipal revenue was allocated to repairing and maintaining infrastructure, with the majority of the funds being allocated to covering debts and personnel costs (Auditor-General Report 2018: online). This view is shared by research undertaken by the Socio-Economic Rights Institute (2018: online), which revealed that a failure at the local government sphere could, among others, be attributed to a lack of political will, incapacity of municipal officials, weak leadership and management, lack of technical skills, and financial deterioration due to poor revenue collection mechanisms. Hanyane and Nkgabe (2012:731) concur that sanitation services throughout South Africa have suffered at the hands of poor management and poor planning at the local

government sphere. This pattern of service delivery failures has been emphasised by service delivery protests from 2004 to date.

According to Taing (2015:6), service delivery failures cannot be wholly blamed on inadequate municipal governance, as suggested by other authors. The author argues that such a conclusion will be ignorant of a multiplicity of factors that affects the design and provision of sanitation services. For example, poor municipalities' inability to raise their own revenue, and the technological challenges of installing sanitation infrastructure in densely populated areas that are unsuitable or illegally occupied, land contradictions or gaps between pro-poor policies and development policies, and unwillingness in communities that occupied private land to relocate (Taing 2015:6).

The work of Marais, Matebesi, Mthombeni, Botes and Van Rooyen (2008:51) has highlighted the nature of service delivery protests that has characterised relations between communities and local authorities. For example, more than 45 LMs in the Free State Province were identified as service delivery "hotspots", according to Hanyane and Nkgabe (2012:731). Atkinson (2007:53 in Marais *et al.,* 2008:55) postulates that about eight of the 20 LMs in the Free State Province experienced some form of social protest, beginning in the Maloti-a-Phofung LM and later spreading to the Phumelela LM in the north of the province. Following the 2011 local government elections, service delivery protests subsided, but reignited in Maloti-a-Phofung LM in May 2021, with water shortages and electricity as the main issues driving these protests (Times live 2021).

Hanyane and Nkgabe (2012:731) note that in the case of the Moqhaka LM, social unrest became prevalent during 2009 – 2011, when so-called "open toilets" were built for the residents of the Rammolutsi Township in Viljoenskroon. Residents' discontent with the Moqhaka LM also came in the form of a legal case against the said local authority. The loss of court cases painted a negative image of service delivery in the Moqhaka LM (Hanyane & Nkgabe 2012:731). The municipality experienced the same problems as others, ravaged by structural, systems-based and governance-related problems like corruption and nepotism. Generally, corruption and mismanagement thus continue to characterise the management of LMs in the Free State Province (Marais *et al.,* 2008:65).

Despite the challenges alluded to above, South Africa has improved access to sanitation services. However, the conditions of such facilities have come under scrutiny in recent times. For instance, the poor maintenance of facilities has led to the spillage of wastewater into the Vaal River system. In their article titled "*Water is life': developing community participation for clean water in rural South Africa",* Hove, Ambruoso, Mabetha, Van der Merwe, Byass, Kahn, Khosa, Witter and Twine (2019:11) recognise that the causes of service delivery failures are multifaceted. The authors also draw attention to the importance of public participation as a necessary component for improved service delivery. They argue that service delivery solutions cannot be achieved without participation from affected communities. This is in line with the views expressed by Phaswana-Mafunya and Shukla (2005:21), who stated that solutions to sanitation challenges go beyond building and maintaining toilet facilities and installing sewer and water networks. It includes strong advocacy and communities taking ownership of sanitation programmes from conceptualisation to implementation. It is the researcher's view that if any success is to be achieved, community participation and ownership should be the driving force of the initiative.

Moreover, Mpehle (2012:218) agrees that communities should not only be seen as recipients of public services but as active participants and an integral part of public decision-making processes. Hove *et al*. (2019:8) similarly propose that communities should be involved in public decision-making about matters that affect their daily lives. They caution, however, that community involvement and participation should not be limited to forums, but communities should be directly involved in the day-to-day operation and maintenance of sanitation infrastructure, or what they call "local knowledge" (Hove et al.,2019:9). For instance, community-based caretakers could be brought in to deal with minor water and sewage leaks and repairs. Insufficient and inconsistent reporting of faults were also identified as some of the tasks that can be taken on by local operators. Such initiatives could create opportunities for dialogue between a municipality and communities, potentially developing into partnerships based on meaningful participation (Hove *et al*., 2019:9).

One of the basic principles of a democracy is the need to involve citizens in matters of government. This principle is in line with the prescripts of section 152(e) of the Constitution, which provides that one object of local government is to encourage

community involvement and community organisations in matters of local government. It is therefore imperative that communities are informed and allowed to participate in decision-making processes that affect their well-being. Hove *et al*. (2019:10) further accentuate the importance of public participation when they state that current community structures could be strengthened by creating more opportunities for communities to participate in local government affairs. This could empower communities, give people a sense of ownership, and minimise resistance. A pilot sanitation project in the Vhembe District is a good example of the success of community-driven projects in rural areas where members of the community were trained in all aspects of building and maintaining toilets (Moilwa & Wilkinson 2004:197-198). The community took over construction, building and maintenance through steering committees established by municipalities to run the project. The Vhembe LM acted as a monitoring agent.

The success of community-led total sanitation programmes (CLTS) in Kenya, Ethiopia, Zambia and Malawi could serve as an additional lesson on how public participation initiatives can promote the efficient delivery of basic services. Perhaps the introduction of CLTS in informal settlements such as Makhaza in the City of Cape Town can be a vehicle promoting community participation in affairs of local government as envisaged in section 152 of the Constitution. This view is shared by Robins (2013: online), who claims CLTS programmes stimulate debates in rural areas, thus challenging the silence and normalisation of appalling sanitary conditions in many parts of the developing world. CLTS is based on equipping communities to undertake assessments of their sanitation situation, draw conclusions, and take remedial actions. Such initiatives will also require municipalities with good capacity to assist communities.

The next section of this chapter focuses on contributions made to the discourse of sanitation by other fields of research, namely Environmental Studies, Geology and Engineering Sciences.

### 2.3.2 Environmental Science and sanitation

Eco-sanitation has emerged in the Environmental studies literature as an alternative approach to conventional sanitation. According to Dickin, Dagerskog, Jimenez, Andersson and Savadogo (2018: online), the idea behind eco-sanitation is to separate

urine and faeces and recycle them through a process known as composting. The ecosystem approach to sanitation attempts to reduce health risks, prevent the pollution of ground and surface water, and optimise the management of nutrients and water resources (Langergraber & Muellgger 2005 *in* Nawab, Nyborg Esser & Jensen 2006:237). Although this approach to sanitation has been hailed as an alternative to conventional sanitation, it has its shortcomings, particularly in areas of low sanitation awareness and cultural settings that might not be conversant with this approach (Esrey, Gough, Rapaport, Sawyer, Simpson-Herbert, Vargas & Winlad 1998: online). Nawab *et al*. (2006:237) suggest it is important that culturally sensitive strategies be devised to conscientize and motivate communities to accept environmentally safe sanitation options. For instance, communities dominated by men and cultural taboos on women seldom allow open debate within households or public spaces on daily issues like excreta. It should be noted that in such communities, the criteria for choosing certain sanitation technologies over others is still dominated by status, prestige and comfort (Nawab *et al.* 2006:238).

According to Mensah and Sabater (2019: online), sanitation management should move away from traditional methods of simply providing facilities such as toilets and stormwater drainage, which he calls “hardware solution”, to designing “software solutions” that incorporate three promotional dimensions. These include education, infrastructure and regulation as key priorities in environmental sanitation management, defined as “principles and practices of ensuring clean and healthy physical environment in human settlements”. In addition, resource allocation should prioritise the key dimensions referred to above (Gebremariam, Hagos & Abay 2018; UNICEF 2014 in Mensah & Sabater 2019: online).

In her seminal work, Penner (2010) makes an invaluable contribution to sanitation discourse by highlighting the underlying meaning that characterises the provision of sanitation services. In her article, *Flush with inequality,* the author argues that local government’s failure to provide basic services goes deeper than a lack of funding and poor technology. The author notes that in a highly divided society like South Africa, sanitation provision has a symbolic resonance that goes beyond the physical structure. Penner (2010) further notes that in the new political dispensation, toilets are arenas where social distinctions like class, race and gender are inscribed and contested, and

have become powerful symbols of human dignity and equal rights. Penner (2010) contends that sanitation policies do not sufficiently acknowledge underlying meanings and the cultural sensitivities that characterise sanitation service provision. Similarly, Nawab *et al*. (2006:25) agree that cultural norms and the perceptions and preferences of users have seldom been integral to decision-making. However, failure to successfully integrate all the variables into the planning of sanitation projects and selecting sanitation technologies provides the background to many failed attempts at sanitation delivery (Nawab *et al.,* 2006:25). For Seymour, Cloete, McCurdy, Olson and Hughes (2021:196), this failure to integrate cultural norms and users' preferences in sanitation technology is an indication of user exclusion or lack of participation in designing the technology. The authors argue success depends on the participation of users and the authorities where the technology is to be used.

In his work on environmental sustainability, Viviers (2006:21) also proposes an institutional framework guided by the Constitution. It places a duty on local government to ensure the right to an environment free from harm is enforced. The author argues that the enforcement of legislation that protects the environment from harmful activities remains a significant challenge. He also emphasises the importance of practising safe hygiene in the daily operation of sanitation facilities and deems the impact on the environment as critical.

Penner (2010), Nawab, (2006) and Seymour et al. (2021) highlighted the importance of cultural and political sensitivities that come with the implementation of sanitation facilities. In addition, they also emphasised the plight of women and people with disabilities in the quest for suitable sanitation facilities that cater for their needs. Sanitation choices thus go beyond simply installing affordable and sustainable eco-sanitation solutions but must conform and align to the cultural needs of the communities it intends to serve. For this reason, failure to consider such issues in the implementation of sanitation solutions was met with resistance in many countries, such as Kenya and Zambia, among others.

### 2.3.3 Geology and Geo-Hydrology and sanitation

Disciplines such as Geology and Geo-hydrology have long focused on the distribution and interaction between surface- and groundwater. Geologists like Mepaiyeda, Madi, Gwavava and Baiyegunhi (2020: online) have recently been occupied with issues on protecting groundwater and surface water from contamination. One area of concern in debates is groundwater contamination as a result of poor on-site sanitation practices. For instance, contamination is caused by open defecation, dumping waste on the ground surface, greywater being disposed of in latrines, and leaks from waterborne sanitation. To deal with the aforementioned challenges, the Department of Water and Sanitation has devised guidelines to be followed when providing on-site sanitation; it stipulates it is the primary responsibility of the local authority to ensure protocols and guidelines are observed (Department of Water Affairs and Forestry 2003a). An investigation into pollution from on-site sanitation systems undertaken by Lorentz, Wickham and Still (2015:77) points to several concerns regarding municipalities' capacity to undertake assessments; particularly in rural municipalities where there is a lack of technical expertise. The authors argue that it is not enough to have the guidelines without technical personnel who understand what should be done and how to follow the guidelines. Lorentz *et al.* (2015:77) further claim the guidelines developed by the Department of Water and Sanitation are useful in that they present the South African context and conditions. However, they lack content and detail. For example, the protocols do not provide details on the pros and cons of various on-site sanitation systems or diagrams of the system. For those reasons, Lorentz *et al*. (2015:65) suggest the Department of Water and Sanitation protocols be used together with World Health Organisation (WHO) protocols as Department of Water and Sanitation guidelines alone will not adequately address on-site sanitation requirements and potential water pollution.

These protocols stipulate that assessment should be undertaken to prevent the construction of sanitation projects in areas where the groundwater table is very shallow or fractured sedimentary rock are highly permeable (Department of Water Affairs 2003a). This point is emphasised by Akwensioge (2012:74), who argues that local hydrological conditions such as the groundwater table, the nature of unsaturated zones and hydraulic load from pit latrines should be important factors that determine the type of on-site sanitation that can be installed, particularly in rural areas. Research

undertaken by Lorentz *et al*. (2015:66), which investigated the impact of on-site sanitation on groundwater resources, revealed there is no sufficient evidence to either encourage or discourage the use of on-site sanitation systems due to fear of contaminating underground water resources. However, they caution that due consideration should be taken in terms of where on-site sanitation facilities are installed. For instance, geological assessments should be undertaken to establish the type of soil, the proximity of the water table from the surface and the effect of extended periods of rainfall on the surface where the unsewered sanitation facilities are placed (Lorentz *et al*. 2015:66). These findings by Lorentz *et al*. (2015:66) are in line with earlier research by Akwensioge (2012:76), which pointed out important factors that should be considered when installing on-site sanitation systems. Besides possible contamination of groundwater, these assessments are also performed to ensure the physical safety of individuals or communities exposed to danger where facilities are built in dolomitic areas and areas with unstable surface or porous soil (Department of Water Affairs 2003a). A case study undertaken by Van Ryneveld, Fourie and Palmer (2016: online) reiterates and supports previous research that suggests the impact of on-site sanitation is minimal and will only be a concern if protocols are not followed. However, findings by other geologists (Van Ryneveld *et al*., 2016: online) present contradicting views about the impact of on-site sanitation on underground water resources.

In their article, Dzwairo, Hoko, Love and Guzha (2006:782) note that the geological set-up, soil type and high groundwater table are some of the factors that have caused pit latrine failures. These failures include sinking, flooding and cracking of ventilated improved pit (VIP) latrines facilities, for example, in rural Zimbabwe. Such failures can result in groundwater contamination, health risks and exposure to high levels of nitrate. The authors further state that the depth of groundwater aquifers and direction of groundwater flow are critical parameters when assessing the risk of groundwater pollution and environmental impact for human habitation. Dzwairo *et al*. (2006:783) caution that ignoring necessary guidelines for constructing on-site sanitation could lead to homesteads tapping domestic water close to an abandoned pit latrine. The authors also suggest that pit latrines could be raised to minimise the risk of flow across the thin infiltration layer.

The construction of VIP latrines in areas where soil do not allow for good drainage can become a serious health challenge. A pit latrine should not be built near a water source. This is site-specific and should be determined for each water source based on local hydrological and hydro-geological conditions. A minimum distance of 30 meters has been suggested as a standard practice. It is also recommended that this figure be taken as a guide in the absence of a minimum safe distance in local information. Moreover, the latrine should be six meters from the house for easy access and to minimise odours (Dzwairo *et al*., 2006:784).

It is evident from the discussion above that the value and importance of Geological studies in sanitation cannot be overemphasised. Geology offers insights about conditions under which on-site sanitation facilities can be built. It is therefore important that researchers in the field of Public Administration and practitioners alike understand and factor these into their planning, policy and decision-making in the provision of sanitation services.

### 2.3.4 Engineering Sciences and sanitation

According to Van Ryneveld *et al*. (2016: online), Engineering studies' role in sanitation goes beyond just building and maintaining infrastructure. It includes engaging with other stakeholders on alternative methods of providing sustainable sanitation services. The author argues conventional sanitation is an unaffordable option for South Africa and proposes that cheaper alternatives in the form of on-site sanitation such as VIP latrines should be explored. According to Penner (2010), proposals for cheaper alternatives culminated in the introduction of the Urine Diversion (UD) toilets in the e-Thekwini metropolitan municipality. The eThekwini municipality gained international popularity and recognition due to its rollout of the UD dry sanitation system, hailed globally as a sustainable, efficient and cost-effective sanitation solution against a more expensive conventional waterborne sanitation system. Like other sanitation projects, the eThekwini UD toilets were merely a product of an engineering process, not a design process where aesthetics and user preferences are considered. Therefore, according to Penner (2010), the efficient and well-built UD toilets bear an unfortunate resemblance to the former settlement structures. Thus, although the eThekwini metropolitan municipality delivered on their mandate to provide water and sanitation services, these facilities were rejected

by the communities for whom they were intended. They were regarded as inferior and inadequate despite meeting the national norms and standards set by the government.

Evidently, South Africa is shaped by politics. Penner (2010) argues that the more sanitation is treated as a measure of equality, the greater the sensitivity to improve the standards. The “toilet wars of 2011” demonstrated the issue is no longer about the provision of service but about the standard of provision. For example, after the City of Cape Town municipality enclosed the much-publicised open toilets, the residents destroyed the corrugated iron sheets that covered the toilets, claiming the material used was of inferior quality. At the centre of these contestations lies pertinent and difficult questions about when provision is good enough, dignified, of good standard, and who should decide.

In his article titled “*The political economy of water management: Neoliberalism and social resistance in South Africa”,* Bond (2014:3) is critical of environmentally safe sanitation options. The author contends that building environmentally safe toilets such as UDs and the claim of financial feasibly is merely a sanitation strategy to deny the poor access to full waterborne sanitation. Bond (2014:3) argues that the same argument of environmental sustainability is not justified, as those who fall within the urban development line receive full waterborne sanitation services. Also, the introduction of UD toilets in the eThekwini metropolitan municipality came with its own challenges. For example, households in which the UD toilets were installed are expected to maintain the facility at their own costs. This is tantamount to shifting government responsibility to poor communities. Those with a full waterborne system are not expected to maintain pipes and are able to “*flush and forget”,* as Bond (2014:4) puts it. It was also a concern that the UD toilets might become a permanent feature since the government raised the issue of water scarcity, cost and topography as factors to consider when deciding on the type of sanitation system going forward (Bond 2014:8).

Notwithstanding the above challenges, the issue of a shortage of engineers in municipalities has also come into focus in recent times. Engineering studies undertaken by Lawless (2005:5) highlight the impact of a shortage of engineers in municipalities in South Africa. The author points out that before the 1980s, South Africa had an adequate number of engineers required to operate and maintain infrastructure, such as

wastewater treatment plants. According to Amod and Wall (2017: online), during the early 1980s, there were around 3,000 engineers in LMs in South Africa. The authors claim this number translated to 20 engineers per 100,000 population. There was a well-defined structure with a clear hierarchy during this time, namely an engineering department that dealt with all municipal infrastructure projects. Career pathing was also in place to train younger engineers and technicians. However, towards the late 1980s, this situation began to change as the then government began to adopt international trends of outsourcing functions. When this move to outsource functions like engineering took effect, engineering teams responsible for operations and maintenance began to crack as the private sector took over some functions, like planning and design. Investment in infrastructure and staff training also began to decline (Amod & Wall 2017: online).

The 1994 dawn of the new dispensation in South Africa meant restructuring in the local government, resulting in many senior and experienced engineers being offered packages at a time when they were most needed. Some technical posts were considered management posts and replaced with non-technical managers. Support services were moved into non-technical structures, further reducing the technical direction and input into processes and decisions. Reduced technical capacity in municipalities' planning and other important functions meant these were outsourced to the private sector. The situation has since not improved as backlogs in service delivery continue to increase, and capacity shortages are still a major challenge (Amod & Wall 2017: online).

Literature has raised important questions that the sanitation field needs to address in future. It highlighted tensions between technical engineering solutions to sanitation issues and their social acceptability. It also asked how the development of new technology can be supported to promote greater ownership among communities. Literature considered the role of community engagement in making services work and asked whether centralised sanitation management systems are the most appropriate. If the future of sanitation is 'dry', how can societal expectations be shifted so that flush systems (the 'flush and forget' model) are no longer automatically treated as preferable? Furthermore, it highlighted the urgent need to train more engineers in order to deal with the severe shortages of these professionals in sanitation departments across the

country. The next section explores philosophical debates on the provision of sanitation services.

## 2.4 BROAD SOCIAL AND PHILOSOPHICAL PERSPECTIVES ON SANITATION

For decades, debates on the provision of sanitation services have been subject to neoliberal analysis. Privatisation and the direct state provision of public services emerged from the literature as paradigms that inform discussions on the provision and management of sanitation services. It this therefore imperative that the aforementioned ideological approaches be interrogated to provide ideological context and locate this research. This is in line with the main theme of this study, as set out in Section 1.4, which seeks to determine shortcomings with regard to service delivery challenges in the two municipalities under investigation.

### 2.4.1 Neoliberalism

Neoliberalism is defined by Wilson (2018: online) as a set of social, economic and political forces that puts competition at the centre of social life. Harvey (2005:3) offers a more comprehensive definition of neoliberalism that brings the policies of Ronald Reagan and Margaret Thatcher together under one title and shows an analysis of the role of international institutions in promoting globalisation. The author defines “neoliberalism” as economic and political practices that propose liberating individual entrepreneurship and skills within an institutional framework, characterised by private property rights, free markets, and the minimal role of the state in markets. Neoliberalism can also be defined as a collection of economic policies supported by an ideological commitment arguing for the reduction of state intervention in the economy and the promotion of *laissez-faire* capitalism in order to promote human well-being, economic efficiency and personal freedom (Harvey 2005:2-7).

The definitions above emphasise individual liberty, freedom, and minimal state intervention in the markets. Monbiot (2016: online) states that a defining characteristic of neoliberalism is that it describes citizens as consumers of products, not as recipients of public services, and efficiency can only be achieved through market-driven solutions.

According to Castro (2008), rapid urban population growth around the world, ageing or non-existent infrastructure, and an array of governance challenges have been at the centre of deteriorating water and sanitation services. During the 1990s, there was growing emphasis on public sector reforms and transforming the state in line with neoliberal ideals of efficiency, sustainability of government infrastructure and government institutions. Neoliberalism was also a dominant orthodoxy in public policy circles in the 1970s. During this period, the debate on privatisation versus direct state provision became diverged between two opposing positions (Spronk 2010:3). Neoliberal thinking views government institutions as inherently inefficient, bureaucratic, bloated, and paying less than the actual cost for services (Magdahl 2012:9). According to Wikan (2015:2), neoliberalism is a counter-revolution that seeks to minimise the state's role to actively restructure relations between capital and labour. Maserumule (2017:104) claims that the move away from an inefficient bureaucratic model was motivated by the need for a transparent and accountable managerial model based on performance. In addition, the paradigm shift was a necessary intervention because public service inefficiencies and red tape resulted in challenges in expanding access to public services such as water and sanitation (Munzhedzi 2020:3).

The state's lack of investment in water and sanitation infrastructure has made matters worse. As Munzhedzi (2020:2) notes, due to global economic crises, pressure for urbanisation and industrialisation was mounting for South Africa to become more efficient in allocating public resources. This was a sign of the failure of the Keynesian welfare state and the beginning of the first wave of neoliberalism (privatisation) based on minimalist state intervention. The state's inability to fund services also presented major challenges within the welfare state, as it were. However, the private sector was seen as the efficient and panacea for public service delivery problems, and it became a dominant international strategy (Magdahl 2012:9). This period of neoliberalism emphasised the importance of cost recovery and not social benefits to the poor and marginalised.

As the neoliberal trajectory unfolded, the state's role changed with the advent of globalisation. According to proponents of neoliberalism, globalisation shifted the focus to the state's ability to strengthen its capacity in effectively managing a changing and complex situation. The role of the state thus changed from a direct provider of public

services to a mere facilitator and enabler of conducive environments for private participation. Castro (2008) argues that the state's economic role was limited to a regulator of financial institutions to ensure fair competition and maintain the safety and soundness of financial systems. The author contends that the successful development of programmes depends on efficiency, good governance and sound financial management. In addition, the growing demand for limited resources required interventions based on sound financial performance. Therefore, the process by which decisions were made and implemented has become increasingly more open and participative to individuals and private participants, both inside and outside of government. These proponents of neoliberalism argue that traditional mechanisms of state control are unsustainable. The bureaucratic top-down leadership gave way to a growing decentralised system where the interest of non-governmental organisations and not for profit organisations are considered and regarded as important role players.

According to Greenberg (2006:12), the move towards a neoliberal state can be explained at two levels. Globally, the political decline of the left alternatives promoted direct state control and determined national expenditure. The second level strengthened the view that the neo-liberal state is the only route to surviving globalisation. In addition, the World Bank and the International Monetary Fund (IMF) played a major role in driving the narrative and shaping the discourse in favour of the neoliberal agenda of minimal state intervention and private sector dominance in the economy.

As the new wave of neoliberalism spread throughout the world, South Africa was not spared. During the 1970s and 1980s, the apartheid government jumped on the neoliberal bandwagon as state assets were sold to the highest bidder. However, this model was extended by the ANC-led government, and it is still practised to this day. Neoliberalism manifested through various forms, namely privatisation and corporatisation of public service institutions, which include water and sanitation (ERWAT-Ekurhuleni water care company established to provide wastewater management services to municipalities in the East of Johannesburg) services, that were regarded as exclusive domains of the public sector (Greenberg 2006:22).

The next section explores this phenomenon in various forms. It reviews privatisation, corporatisation and others, and how it affected the delivery of public services in general,

and water and sanitation services in particular. The section starts with a brief overview of the evolution of privatisation in South Africa.

### 2.4.2 Historical context to privatisation of public services in South Africa

Bond (2014) claims the 1990s can be characterised as the period when privatisation of basic services started to develop as municipalities struggled to sustain service delivery and had to restructure or reform. According to Greenberg (2006:10), the incorporation of business principles underpinned public institutions' restructuring. At the centre of the restructuring was the alignment of public service provision with cost recovery and other market-driven processes; to the extent that water services were disconnected from those unable to pay for the service. During apartheid, the process of privatisation was overseen by the Department of Public Enterprises, specifically created to ensure the disposal of state assets. Public sector involvement was very limited during this time. For instance, in 1994, the Benoni Fire and Emergency (Pty) Ltd was created, and the Benoni municipality contracted it to provide fire and emergency services. Following the privatisation of the newly created municipal entity, ambulance services had to be paid for by the residents of Benoni (Greenberg 2006:22).

A municipal investment unit was created to provide financial support to municipalities entering public-private partnerships. The municipal support focused primarily on water, sanitation, and solid waste sectors. In 2000, a White Paper on Municipal Services Partnerships paved the way for more public-private agreements, and it detailed how they should be undertaken (Greenberg 2006:22). Soon, metropolitan municipalities outsourced and created utilities such as Joburg Water, and in 2000, the City of Cape Town followed suit with its own privatisation projects; it corporatised its water and sanitation services. Similarly, in the Ekurhuleni metropolitan municipality, water and wastewater treatment activities were corporatised with the establishment of Ekurhuleni Water Care Company ERWART (Greenberg 2006:22).

### 2.4.3 The concept of privatisation

In the narrow sense, the concept of privatisation is defined by Andre, Batifoulier and Jansen-Ferreira (2016:5) as "transfer of property including services from public to private

sector". For Kent (as cited *in* Layne 2000:20), "privatisation refers to the transfer of functions previously performed exclusively by the government at zero or below full cost price to the private sector at prices that clear the market and reflect the full cost of production". Donahue (*in* Layne 2000:21) conversely describes "privatisation as the practice of delegating public duties to private organisations". Donahue's definition of privatisation highlights the issue of government accountability with reference to the use of privatisation as a delivery instrument.

Broadly, there are several intermediate processes and forms of ownership and control between state and private ownership. For instance, corporatisation and commercialisation align state entities to the market and open it up for competition. According to Greenberg (2006:3), corporatisation is defined as a legal process through which a state entity is converted into a company, and commercialisation refers to a process of establishing private values and principles in a public sector organisation. However, in the case of commercialisation, there is no need for private sector involvement. Mercille and Murphy (2017:1047) thus suggest water services in South Africa have not undertaken privatisation in its pure form, but rather a form of governance whereby new techniques (marginal cost accounting in particular) are implemented that emulate the private sector. For instance, the establishment of Joburg Water that operates as a corporate entity.

According to Mercille and Murphy (2017:1047), corporatisation and commercialisation can be regarded as a steppingstone for privatisation and is a necessary component in the process of privatisation. Through privatisation, there is usually a means of increasing tariffs or user fees for service users. Residents to whom the municipality is accountable are turned into customers or clients, and accountability is severely weakened. Depending on the form of privatisation, key state responsibilities are delegated or transferred to private sector organisations. This shift in thinking results in more private sector participation through partnerships with the state, decentralised management, and an emphasis on demand-driven service provision (Mercille & Murphy 2017:1047).

Corporatisation can also take different forms; it is therefore important to distinguish between ownership and control. For instance, when ownership remains in the hands of the state while control is relinquished to private entities wholly or in part, such an

arrangement is referred to as a concession. Greenberg (2006:4) claims concessions are a common feature in South Africa. Concessions can involve the building of infrastructure by a private company; the state will then repay the company for the duration of the concession. For example, Queenstown LM signed a 25-year water supply concession with a French company called TNC, and Gold Coast LM also signed a 30-year water supply concession with the French company SAUR in 1999. Marobela (2008:427) refers to these concessions as nothing but “corporate take-over of the state”.

For Greenberg (2006:4), outsourcing is another form of privatisation that has taken root in South Africa. The author refers to outsourcing as segmenting functions into core and non-core functions and relinquishing certain “non-core functions” to a private entity. The intention is for the institution to focus on core functions (Mutarubukwa & Musomba 2018:59). For Badenhorst-Weiss and Ambe (2011:455), outsourcing can also refer to transferring all functions to a private entity. For example, the core function of Eskom is electricity generation and distribution, meaning non-core functions such as security and cleaning would then be outsourced. Other forms of privatisation include a combination of state and private sector involvement. These are referred to as public-private partnerships (PPPs), the most favoured forms of privatisation in South Africa (Chirwa 2004:185). PPPs, as they are commonly referred to, change the character of a public institution from a service-driven to a profit-oriented organisation (McDonald & Ruiters 2005). In addition, it changes the nature of the relationship between citizens and public institutions to that of client and company. The next section presents arguments for the privatisation of public services in South Africa.

### 2.4.4 Arguments for privatisation of public services

It is widely documented in the literature that multinational institutions like the World Bank and IMF have been at the forefront in promoting the narrative that the shift from public to private service provision will significantly improve the quality and efficiency of government activities. In addition, this narrative was motivated by the view that, through privatisation of public institutions and public services, governments will broaden the tax base of the country; this means more firms will pay taxes and contribute to national revenue, which can be used to provide basic services to underprivileged communities (Bakazi 2005:18). However, a reduction in taxes and the size of governments were seen

as necessary conditions for the success of privatisation efforts. Mercille and Murphy (2017:1047) and Bakazi (2005:18) observed that privatisation became a dominant feature and condition in agreements that the World Bank and the IMF entered into with developing countries. By privatising public institutions and services, governments believed the private sector would improve public service delivery.

McDonald (2016) argues other forms of privatisation, such as contracting out, could benefit the state. For instance, in cases where a municipality contracts out waste management services to a private company. The contracted company would provide the same services but use less labour than the government in such cases. According to McDonald (2016), this arrangement would directly benefit the government since they are not managing the facilities, thereby not draining government funds by subsidising these institutions. MacDonald (2016) contends that the services would be run more efficiently and make more profit than they would if they were managed by governments. In such circumstances, the government would save money that it spent on public service provision, so it is a win-win situation for all parties.

Gaes (2019:275) cites an example of American prisons managed by private companies. They claim the cost of managing private prisons is 3.5% - 17% less than if it were to be managed by the state. France and California are also cited as examples where PPPs have been very successful, primarily because the government retains an interest in the water system (Naegele 2004: online). Therefore, according to Naegele (2004: online), the success of privatisation largely depends on the political context in which they happen. For example, in a highly competitive environment, privatisation will lead to quality service at a reduced cost. On the contrary, privatisation will likely fail in a centralised system that lacks transparency. In such cases, you often find severely dilapidated infrastructure that no private company is willing to risk, or companies might pull out in the middle of the project citing costs (Naegele 2004:online).

Moreover, governments could generate a lot of money by selling state-owned enterprises (SOEs) such as South African Airways, Eskom, and others, particularly against the backdrop of poor performance, corruption, and a lack of accountability of these entities. In South Africa, the government spent billions in subsidies to keep these SOEs afloat; the government has paid R57 billion in bailouts to SAA since 1998. It would

therefore make sense to sell these SOEs and use the money to improve services in other sectors. However, this argument fails to recognise that privatising state assets could also mean wealth is concentrated in the hands of successful individuals or firms (Greenberg 2006).

Still, throughout the world, governments were turning over control of public institutions like electrical utilities, prisons and education to private companies. According to Goodman and Loveman (1991:22), governments sold off $25 billion worth of state assets to private companies. The largest sale occurred in Britain, where investors paid $10 billion for the sale of regional electricity companies. New Zealand joined the bandwagon by selling seven state-owned companies to private entities, including a telecommunication company owned by the state for over $3 billion (Goodman & Loveman 1991:22).

Developing countries in Asia and Africa soon joined the privatisation movement. The need to raise revenue and change the political and ideological stance has been put forward as one of the contributing factors that led to privatisation. Argentina, for example, launched a major privatisation drive that included the sale of its telephone monopoly, national airline, and petrochemical company for more than $2.1 billion. Mexico's aggressive efforts to reduce the size and operating cost of the public sector resulted in proceeds of $2.4 billion (Goodman & Loveman 1991:24). In the late 1970s and early 1980s, adopting a privatisation policy led to South Africa's gradual reduction of state control and partial privatisation of Sasol. A decade after the partial privatisation of Sasol, privatisation has become a government policy; ISCOR has since been privatised, and R22 billion was made through the sale of state assets (Greenberg 2006).

### 2.4.5 Arguments against privatisation of public services

Although privatisation was hailed as a "saviour" of failing state institutions, evidence from literature contradicts the notion that the private sector is the panacea of public service delivery problems (Hodge 2018: online). The author further argues that the lack of state capacity to deliver public services is merely a misconception prompted by international agencies such as the World Bank to encourage and promote the use of alternative forms of public service delivery like PPPs, regardless of its negative social impact. These

institutions primarily act as structures that promote the capital interest of the West. For example, the use of community-based organisations and non-governmental organisations to build toilets and charge the poor communities for their use. The charges are then used to cover the costs of building the facilities, cleaning and maintenance, the water bills and salaries (Bond 2014:13). Hence, Smith (2004:382) concludes that public service provision in post-apartheid South Africa is a symbol of sophisticated neoliberalism. It manifests in the way the state restructured in order to adhere to market demands despite inequalities in public service delivery.

Tsheola and Sebola (2012:237) caution that the success of neoliberal policies that promote private sector involvement as alternative service delivery mechanisms has not been associated with universal access to public services like water and sanitation. Greenberg (2006) agrees that it was indeed not true that all public institutions lack the capacity to deliver basic services and should therefore be restructured and handed over to private interest. Perhaps the most pertinent question is what role the public plays in dictating the direction public institutions take for development. The author accedes the public sector is by no means accountable and transparent; in fact, privatisation can erode the possibility of transparency and accountability. Telkom is cited by Greenberg (2006:21) as a good example of how, instead of addressing inefficiencies of the public sector organisation to make it more responsive and accountable to the public, a large part (61%) was sold off to the private sector. Consequently, a significant portion of it has been dissipated to millions of individuals who have no power to influence the direction the institution should take. Telkom is thus a good example of how public accountability, transparency, and the role of the state can be severely weakened and eroded (Greenberg 2006:21). The South African government is considering selling some of its Telkom (39%) stakes to private investors. This move will further erode the government's influence on Telkom policy direction and accountability (Businesstech 2017:online).

Critics of privatisation have proposed that governments take responsibility for managing water services because bringing market principles into the public service would likely make it more unaffordable for the poor. In addition, privatisation has not always proved to be an efficient system (Goodman & Loveman 1991:23). Privatisation creates an incentive framework that largely undermines the capacity and accountability of the state

in fulfilling its constitutional mandate of providing access to services (Bayliss & Kessler 2006:online).

McDonald and Pape (2002:20) question the claim that private companies may offer an alternative for extending access and improving public services. The authors observed that in cases where services are privatised, citizens have not always benefitted. For example, research undertaken to assess the viability of municipal service partnerships in the Eastern Cape Province towns of Queenstown, Fort Beaufort and Stutterheim reported substantial increases in electricity and water cut-offs (Naegele 2004:online). In Fort Beaufort, water tariffs have quadrupled in the first five years following municipal partnerships with the private sector. Rising tariffs and harsh cost recovery are trademarks of privatisation or municipalities guided by private sector principles. This is also emphasised by Bayliss and Kessler (2006: online), who argue that privatisation has neglected the poor through substantial increases in the cost of essential services or the loss of employment, which resulted in reduced affordability of and access to basic services.

In other parts of the country, municipalities signed water and sanitation concessions. For example, water and sanitation concession agreements were entered into between Mbombela LM and the British Bi-Water company in Nelspruit in the Mpumalanga Province. Mere months after the agreement, Bi-Water increased water prices dramatically by up to R500 per month in contrast to the R88 flat-rate before privatisation. Mbombela LM residents, who are mainly poor, were consequently disconnected (Narsiah 2002:29).

Community-led organisations thus led mass mobilisation efforts to cripple the privatisation effort and demonstrate to the authorities that people could simply not afford the tariffs (Naegele 2004: online). The contract was eventually cancelled, and the government had to pay off R125 million in public funds to cover the cost of the failed Bi-Water project. Lessons learned from the Mbombela LM water and sanitation concession are that service delivery protests can effectively undermine neoliberal projects at the local government sphere (Aborisade 2006: online). Greenberg (2006) holds a different view that the issue of affordability for services provided by the private sector cannot be

used as a determining factor for the provision of services because the public sector is likely to face the same challenge.

According to Castro (2008), neoliberal water and sanitation services have failed to achieve their stated goals of efficiently managing public services at a reduced cost to the state. In addition, the neoliberal models such as privatisation failed to recognise water services as essential human needs that constitute a human right, which must be provided to all despite their capacity to pay for the service (McDonald & Ruiters 2005:). McDonald and Pape (2002:18) note that cost-recovery principles have far-reaching implications, particularly for those who cannot afford to pay. For instance, millions of poor South Africans have experienced water cut-offs since the dawn of democracy in 1994. Moreover, McDonald and Pape (2002:19) claim that the imposition of prepaid meters that required registration fees contributed significantly to the outbreak of cholera in KwaZulu-Natal (KZN) and parts of Limpopo Provinces. Neoliberalism, in whatever form, is thus counter-productive to the interest of the poor. The neoliberal approach has weakened state control in the provision of services and compromised the principle of social justice as thousands of poor communities living in rural areas and townships continue to receive inadequate services (Templehoff 2012:98).

McDonald and Pape (2002:17) observed that despite the warning signs mentioned above, the South African government continues to create opportunities for privatisation in the form of utilities; the authors claim this move lays the groundwork for the private sector to operate. Furthermore, employees who leave municipalities' service are not replaced. This undermines the municipalities' capacity to deliver services and create opportunities for the private sector to take over the provision of water services. International experience, and the case of South Africa, paints a gloomy picture of the sustainability of water service privatisation. McDonald and Pape (2002) cite South American countries like Bolivia and Argentina, where the cost of services skyrocketed after the privatisation of services.

According to Robb (2020: online), the corporatisation model employed in South Africa is unique because adherence to the public ethos of universal access is compromised by a lack of political will and the state's incapacity. For example, Telkom competes in a cell phone market, but it has a developmental mandate to provide fixed telephone line

services without making a profit. As a result, corporatisation is purely implemented in a business-like cost-recovery manner. Bond and Dugard (2007:9) concur that privatisation of basic services such as water and sanitation has led to private providers implementing cost-recovery measures that violate the constitutional rights of the poor. For instance, Joburg Water under Suez (Pty) Ltd, a French private company that introduced pit latrines in porous soil, led to the spread of the E. coli-bacteria. The French company also offered a low-flush shallow sewerage system to residents connected by sanitation pipes much closer to the surface (Bond & Dugard 2007:21). The introduction of prepaid water meters in Soweto is another example of how a neoliberal policy on cost-recovery attempts to steal state control, thereby excluding the poor who cannot afford to pay for services. In countries like Bolivia, communities have witnessed mass mobilisation in a battle against privatisation of basic services (Bond & Dugard 2007:9).

According to Smith (2004:380), privatisation in the form of corporatisation leaves municipalities with the difficult task of reconciling contradictory values of public and private sectors. Robb (2020: online) agrees that corporatised entities in South Africa have a dual mandate in terms of social and commercial objectives. The SABC provides a good illustration of the dual mandate referred to above. The SABC competes with private channels for content, but it is also required to provide universal radio and television services to isolated communities. In reconciling different private and public service objectives, the corporatisation model promotes technical managerialism at the expense of political considerations such as upholding the value of public good over profits (Robb 2020: online). In such arrangements, decisions can be made by consulting a board of directors without following lengthy government protocols; all in the name of efficient management. This decision-making undermines political authority and transforms the state by moving power from the hands of politicians to bureaucrats. Ultimately, public accountability is eroded because it involves a policy shift from political processes to bureaucrats (Voorn, Van Genugten & Van Thiel 2019: online).

This shift in policy positions symbolises a more sophisticated form of neoliberalism by virtue of how the state restructures in order to adhere to market demands in the provision of public services. Greenberg (2006:98) notes, “neoliberal policies are beset by problems and faults and end up in crisis, which prompts in the next instance reform changes”. The author further claims service delivery has not been sustained in privatised

or corporatised companies in South Africa. Although corporatisation targeted the extension of infrastructure to those who previously did not have access, this condition was based on market-driven motives of profit-making. The author argues that in sectors such as telecommunications and water, infrastructure was built, but it was never fully utilised due to the high cost of the service or disconnection due to an inability to pay for services (Magdahl 2012). Similarly, Mathekganye, van Heerden and Ukwanda (2019:51) observed that private sector involvement in public service delivery has led to various services being disconnected and extensive debt being incurred by municipalities. In other sectors, the encroachment of the private sector has led to the creation of a dual system where those who can afford to pay for the service are provided high-quality service, while those who cannot afford have to accept “inferior” quality service. This is most prevalent in sectors such as health, education and housing. Mwebe (2004) shares the sentiment that privatisation in South Africa has resulted in what he calls a “two-tiered system of services”, with the focus on the rich on the one hand, and a poorly funded system that focuses on the poor who cannot afford quality service provided by the private sector. This reinforces the narrative that services provided by public institutions are of poor quality compared to high-quality services provided by the private sector. Furthermore, management contracts and water and sanitation concessions, such as those implemented in Mbombela LM and the Eastern Cape Province municipalities have drained both national and local government resources, as millions of rands were spent on such contracts (Mathekganye *et al.* 2019).

Another bone of contention is the regulation of the private sector. Naegele (2004:online) argues that the way the private sector is regulated is not in the general public’s interest. In addition, the author claims it is often a complex and costly process, the cost of which is not affected when planning to outsource public services (Naegele 2004:online). This is equivalent to the state paying the actual cost of privatising state-owned entities. The water and sanitation concession agreements have been particularly costly to the state in this regard.

For example, in build, operate and transfer (BoTT) types of concessions, government appoints a private company to build infrastructure. In such cases, the benefit to the public sector is that the state retains ownership of such infrastructure (Naegele 2004:online). However, the cost of capacity to run the infrastructure itself far outweighs the benefits.

The private sector then establishes itself as the service provider instead of the state, because it has the expertise to operate such infrastructure. For example, the operation of correctional services by a private company called Group 4 securities, with its prison operation in Bloemfontein in the Free State Province and Kutama Sinthumule in the Limpopo Province.

Greenberg (2006) observed that any other form of privatisation, be it concessions or contracting out, seeks to separate the management of public institutions from political decision-making. Citizens, to whom public institutions are politically accountable, are converted into customers or clients with responsibilities to pay for services and have no meaningful input in decisions about levels or types of services. As a result of this mode of operation, bureaucratic or technocratic decision-making is based on profit-maximisation. Naegele (2004: online) writes the government cannot abdicate its duty and responsibility to provide sufficient and affordable water and sanitation services by contracting with a private company to manage water services. It also cannot allow market-driven motives to dictate the provision of basic services.

According to Greenberg (2006:99), overall, privatisation has not had any positive spin-offs on the national economy. In particular, the ongoing privatisation of water, education and other resources – reflected in user-pay cost-recovery models, and the exclusion of those who cannot afford to enter the market – has prevented a majority of the Black population from gaining substantial material benefit from political democratisation (Greenberg 2006:99). Still, the privatisation of public services remains on the national agenda in South Africa. Even where the state retains control of assets, the business model pervades all thinking: cut costs, become self-sufficient, and seek to generate profit wherever possible, regardless of what goods or services you are providing. The current business model will not assist in redressing imbalances of the past.

The literature explored in this section suggests that privatisation of public services has not had positive effects in improving access to services. In fact, the opposite is true because the majority of poor people remain unable to access the public services they desperately need and are entitled to from a human rights perspective. A plethora of cases cited pay testimony to this reality. The next section pays attention to a theory that can be used to analyse challenges in the provision of sanitation services.

## 2.5 THEORETICAL UNDERPINNINGS

The systems approach can provide a theoretical framework and analysis of public service provision. This theory is discussed in the section below.

### 2.5.1 Systems approach to sanitation

According to Voulvoulis (2012:9), the systems approach can be a useful tool to analyse the interconnectedness and interrelationships between the different components of a sanitation system. Such a system is based on the philosophy that the system is greater than the sum of its parts. Proponents of the systems theory state that to fully comprehend a phenomenon in its entirety, it is necessary to take a holistic view of the system to ensure its components function effectively and efficiently (Mensah & Sabater 2019: online). The implication is that sanitation management should be holistic, and strategies should complement each other. Improving one part requires consideration to be given to the relationship with other parts of the system. As Tilley, Zurbrugg and Luthi (2010:70) point out, the major challenge in sanitation is not only building and maintaining infrastructure but understanding the connections between sanitation components and technologies or processes. Such components include toilets, the transportation of excreta, wastewater treatment plants, the quality of discharge released to the environment and its impact, and stakeholders (community and their needs, public officials, non-governmental organisations and business organisations).

For Ahmed and Ali (2006:473), systems thinking analyses stem from three different viewpoints. Firstly, it provides an analysis to determine the nature of the relationship between different components of the system. Secondly, continuous assessments should be made to determine how satisfactory relationships among various stakeholders are in the system. Thirdly, investigations must be undertaken to determine what factors force the system in a particular direction. The authors argue that relationships between stakeholders should be clearly defined. This will include various roles being allocated to different stakeholders to avoid marginalisation of other role players. This was seen in water and sanitation projects, such as BoTT in KZN Province, where a community-based organisation did not have a significant role in the project (Bond and Dugard 2007:8). The value of this approach for this research is that it provides an understanding of how to

manage the relationship among different stakeholders in the delivery of public services, such as water and sanitation. If one of the above components is neglected, the system is likely to fail. For instance, the exclusion of key stakeholders (communities) from public decision-making is likely to result in project failure or resistance. The system can also fail if, for example, waterborne toilets are built without considering the capacity of wastewater treatment plants where such waste should be treated. This could result in health hazards such as spillage due to stress in the system, and also poor-quality effluent discharge to natural streams, negatively impacting the natural environment. Having discussed the theoretical analysis of this research, attention is now devoted to the political perspectives on sanitation in South Africa.

## 2.6 POLITICAL PERSPECTIVES ON SANITATION

Prior to the 2011 “open toilet elections” saga, poor sanitation conditions in informal settlements hardly made it to the mainstream agenda of government or national political discourse (Robins 2013: online). This observation raised fundamental questions on what these service delivery protests tell us about poor sanitation conditions and the realities of structural poverty in informal settlements (Robins 2013: online).

In his book titled “*Formations of violence”,* Feldman (1991 *in* Robins 2013: online) notes how Irish prisoners became cognisant of the “politics of shit” when they protested against wearing uniforms. As a way of expressing their discontent, prisoners smeared cell walls with human excreta in their struggle to be recognised as prisoners of war and not criminals. Likewise, Khayelitsha township shack dwellers’ actions of taking faeces from shanty towns to corridors of power have become a powerful weapon through which the poor and marginalised communities expresses their discontent at the state of poor service delivery, bringing sanitation to the mainstream agenda of the Western Cape Provincial government. Conversely, the “poo protest” created a platform for politicians to battle for the control of the Western Cape Province.

Laporte’s (1978) book titled the “*History of shit (historie de la merde)”,* as cited in Robins (2013: online), is a reminder of medieval France’s royal decree where households were required to store human waste in their homes. The consequences of such domestication of human waste can still be witnessed today in post-apartheid South Africa as shack

dwellers in Khayelitsha township and elsewhere in the country are forced to keep stinking portable toilets (potta-potta) inside their homes (Robins 2013: online). The above examples suggest that the most private and "intimate" exercises such as defecation can, under certain circumstances, enter the realm of public debate and political life.

For a political theorist like Arendt (1958 *in* Robins 2013:online), everything that happens within the confines of the household was not regarded a matter of public concern. Robins (2013) argues that "proper" politics consisted of debates beyond what happens in private households, and private matters of defecation, toilets and sanitation did not qualify as "political" issues. Yet, in post-apartheid South Africa, matters such as defecation surface in public spaces and the political domain. As the British government responded to the British people's demands about the stench due to poor sanitation that came from the Thames River in 1858, the City of Cape Town will hopefully respond to the stench of faeces that makes living in Khayelitsha so uncomfortable. It is anticipated that politicians will begin to adequately cater for the needs and rights of those who exist on the outskirts of society, as Robins (2013: online) puts it.

Just like ancient Rome, where only homeowners could enjoy the privacy of a private toilet, a majority of residents in Khayelitsha and many other informal settlements in South Africa are alienated. For them, having a toilet inside the house or at least in their yard is a luxury and symbol of status. However, residents of informal settlements continue to use public toilets, which have become an essential part of informal settlements' infrastructure, the same way public latrines became an essential part of Rome's infrastructure during the first century AD.

## 2.7 CONCLUSION

The literature reviewed in this chapter highlighted the multi-disciplinary nature of debates in sanitation. It demonstrated the importance of consulting and incorporating literature from the natural sciences such as Engineering, Geo-hydrology and Geology. Any endeavour to understand the challenges in providing sanitation services and the contribution of these fields of study cannot be ignored. For instance, in Public Administration, public participation in public service delivery is important, as well as

recognising gender sensitivities in choosing the type of sanitation facilities. More importantly, there is recognition that the provision or installation of toilet facilities goes beyond the physical structure into a domain where toilets have deeper cultural meaning and political sensitivities. It also emerged from literature that toilets had become spaces where social class, gender, religion and race are contested. However, this does not disregard challenges with regard to funding and technological issues in the provision of sanitation services. The natural sciences literature informs us that the successful implementation of a sanitation project must consider hydrological conditions such as the groundwater table, the nature of unsaturated zones and hydraulic loads in determining the installation of dry sanitation, particularly in rural areas. This important consideration should be factored in during the planning of sanitation projects. Literature suggests that although engineers have come up with solutions to sanitation challenges, the social acceptability of these solutions is critical.

This chapter discussed broad ideological approaches to the provision of public services; these included neoliberalism and direct state provision. Proponents of neoliberalism argue that through the involvement of the private sector, service delivery will become efficient, and government will be able to broaden its tax base, resulting in more revenue in government coffers. In addition, privatisation means that the same service could be rendered at a reduced cost by the private sector. This move will save money and take away the burden of managing facilities. Furthermore, proponents of privatisation argue that the government will generate a lot of money by selling public assets, including public institutions like Eskom, SAA and DENEL, which cost the state billions of rands in bailouts each year. On the contrary, critiques of privatisation or those in favour of state provision of public services argue there is no evidence to support the view that privatisation has cut costs and improved public service delivery. They argue that privatisation has eroded and weakened public institutions and compromised the principle of social justice. This is evident in the cost of water services in municipalities where the private sector has taken charge of service provision. The cost has substantially increased, excluding those who cannot afford to pay. Privatisation has also created a dual service system where those who can afford to pay are provided with high-quality service, while those who cannot afford to pay have to accept “inferior” service from the public sector.

The history of sanitation, as captured by Steward (2014:15), demonstrates that the sharing of public toilet facilities is an ancient practice dating back to ancient Rome, where poor people shared public latrines. This is still relevant today as shack dwellers continue to share public toilets, *albeit* in modern form. The systems theory emerged as a theoretical framework that underpins the delivery and management of sanitation services.

The literature in this chapter demonstrated that although sanitation is considered a private matter under difficult conditions, it can emerge in public spaces or domains. The stench of porta potties (portable toilets) is becoming unbearable for residents of informal settlements, in the same way the stench of the River Thames was unbearable to England during the 1800s. The next chapter focuses on the nature and extent of sanitation in South Africa.

# CHAPTER THREE
# THE NATURE AND EXTENT OF SANITATION IN SOUTH AFRICA

## 3.1 INTRODUCTION

The previous chapter provided a theoretical framework within which sanitation services are provided. The chapter starts with a discussion of the state of access to sanitation services in South Africa. This is followed by a discussion about funding mechanisms for sanitation services in South African municipalities. Human resource capacity challenges facing municipalities are then explored. In addition, this chapter examines municipal infrastructure investment in water services. The maintenance and operation of sanitation infrastructure, municipal planning, sanitation technologies in South Africa, performance of wastewater treatment works, and capacity-building initiatives in South African municipalities are also interrogated. This chapter concludes with a discussion on institutional arrangements for sanitation services in South Africa.

## 3.2 THE STATE OF ACCESS TO SANITATION SERVICES IN SOUTH AFRICA

At first glance, it appears South Africa has made significant progress in the provision of access to sanitation services. However, a closer look paints a different picture of various challenges, ranging from the functionality of sanitation facilities, the financial viability of municipalities, and the state of sanitation infrastructure. Nationally, access to improved sanitation facilities, defined as a connection to a public sewer network, septic tank, VIP latrine or chemical toilet, has substantially increased from 61.7% in 2002 to 82% in 2018 (Statistics South Africa 2018:48). Furthermore, access to sanitation in metropolitan areas is well above the national average, sitting at 89%, with eThekwini metropolitan municipality at 83% and the City of Tshwane sitting at 82%. However, when these statistics are deconstructed, they depict a different narrative. In other parts of the country, there has been limited growth since 2011 to date. For example, in more rural provinces, no significant growth has been registered; in Limpopo Province, only 53% of the population has access to sanitation, in Mpumalanga Province, 65.8% has access, and in the North West Province, 66.4% has access.

According to Van Zyl (2017:15), about 7% of households never had access to sanitation services at all. Toxopeus (2019a: online) observes that while there is a consistent decrease (12.6% in 2002 to 2.8 in 2018) in Limpopo and Mpumalanga provinces' households without sanitation facilities or households using buckets, these figures do not indicate the functionality of these facilities.

In its report on the state of sanitation, the South African Human Rights Commission (2014:47) revealed the national statistics on sanitation show a higher level of access to sanitation than is the case in reality. The Human Rights Commission Report contends that non-functional sanitation facilities and infrastructure are considered part of government services (South African Human Rights Commission 2014:47). This is an indication of a government that lacks genuine concern about the provision of sanitation services. It is also notable that access to sanitation services varies across provinces and municipalities. For instance, metropolitan municipalities have a low backlog of sanitation facilities, while a high backlog can be observed in district and rural LMs or provinces (Statistics South Africa 2019:42).

Access to sanitation services in South Africa thus remains unequal, as evident by incidents of children falling into pit latrines. The use of a bucket-toilet system, which is regarded as unimproved sanitation, is still in use, albeit in very few households. For instance, in the Free State and Eastern Cape provinces, a reported 47 municipalities still use bucket toilets to provide sanitation services (Statistics South Africa 2019:42). Yet substantial changes have been witnessed, with over 82% of households being able to access water and sanitation. However, as Toxopeus (2019a:online) puts it, functionality and maintenance remain the biggest challenge in municipalities.

One can draw two deductions from the above discussion. Firstly, there is a direct link between urbanisation and the quality of access to sanitation. Secondly, in relation to the first point, those on the periphery of society have little or no access to the quality of sanitation enjoyed by those in urban areas, and the government mainly ignores them.

Due to municipalities' inability to cover the full cost of service delivery, funding mechanisms were developed to assist municipalities in providing services. The next section discusses these funding mechanisms.

## 3.3 FUNDING MECHANISMS FOR SANITATION SERVICES IN SOUTH AFRICAN MUNICIPALITIES

According to Mahabir and Mabena (2015:248), municipalities' inability (particularly rural municipalities) to generate adequate funding for the delivery of services is the main reason for intergovernmental transfers in the form of conditional and unconditional grants. This is worsened by the fact that rural municipalities often consist of relatively poor communities that cannot afford to pay for the services they receive. These grants are meant to assist under-resourced municipalities deal with service delivery issues, including infrastructure backlogs (Oosthuizen & Thornhill 2017:436). In addition, they are designed to help large municipalities improve and maintain service delivery to their communities.

For this research, the focus of the discussion on grants is limited to grants meant to fund water and sanitation services. Water and sanitation services are funded through various unconditional grants, equitable share and conditional grants allocated in terms of the *Division of Revenue Act* (*DoRA*), annually passed by Parliament. The *DoRA* is discussed in Section 4.2.6 of this study. Unconditional grants include equitable shares and do not have any conditions attached. They allow municipalities to determine how these funds are utilised. Conversely, conditional grants (for example, Municipal Infrastructure Grant (MIG), Water Services Infrastructure Grant, Urban Settlements Development Grant and Rural Household Infrastructure Grant) have conditions attached to them and may only be used for the intended purpose (Wilkinson & Duncker 2014: V). For instance, conditions attached for MIGs are that the grant should only fund capital expenditure on water and sanitation, and funded projects must be viable, feasible and sustainable (National Treasury 2018:71). The National Treasury has a formula that determines how funds are allocated for unconditional grants. This formula includes a component for free basic services for households below the R2300.00 affordability threshold (Wilkinson & Duncker 2014:33). These various grants form the subject of the discussion that follows.

### 3.3.1 Municipal Infrastructure Grant (MIG)

The MIG is a conditional grant designed to meet the capital cost of infrastructure development to provide basic municipal services such as water, sanitation, and electricity (Kobel & del Mistro 2015:248). This type of grant is allocated based on an analysis of each municipality's needs and fund availability. The primary intention of the MIG is to address the infrastructure gap or level of access by all households to basic municipal infrastructure services (Maake 2017:27). In addition, the MIG is intended to provide capital finance for basic municipal infrastructure for poor households (those households with monthly disposable income below R2300.00) (Wilkinson & Duncker 2014: V). Kobel and del Mistro (2015:249) emphasise that the MIG should be a temporary financing instrument that is used until a municipality is in a position to meet its own capital expenditures. In addition to these intended objectives, the MIG is meant to fulfil the following objectives:

- Provide a full subsidy for the capital cost of infrastructure for basic services to poor households. This means poor households' access to basic infrastructure must be prioritised by municipalities through the provision of, for example, bulk water services.
- Ensure the equitable, transparent allocation and distribution of municipal infrastructure funding in a manner that is efficient and supports coordinated approaches with local government, maximising municipalities' developmental objectives.
- Assist in enhancing municipalities' developmental capacity by supporting multi-year planning and budgeting systems.
- Provide a mechanism for the coordinated pursuit of national policy priorities with regard to basic municipal infrastructure programmes while avoiding the duplication and inefficiency associated with sectorally fragmented grants (National Treasury 2019b).

However, these objectives often cannot be achieved because many municipalities struggle to meet their own capital budgets amid poor financial management, as indicated in the AG Report (Auditor-General 2018). According to Kobel and del Mistro (2015:250), municipalities that cannot spend their allocated funds because of, *inter alia,* incapacity

(shortage of skill), face budget cuts for unused MIG funding in the year it is allocated. Furthermore, the conditions attached to MIG funding require municipalities to ensure the use of, for example, labour-intensive construction contracts. This means municipalities that do not have the required institutional and human resources to undertake large projects will be unable to comply with the conditions of the grant (Palmer Development Group 2005; Mjoli, Sykes & Jooste 2009). Lack of requisite skills and poor planning have been cited as contributing factors to underspending of MIG funds (Tjebana & Rachidi 2018: online).

According to the National Treasury Budget Review Report (National Treasury 2019a:71), the issue of unspent conditional grants remains a serious challenge for 95% of municipalities in South Africa. Tjebana and Rachidi (2018:602) note that underspending of MIG funds is most prevalent in rural municipalities due to poor planning and high turnover, among other issues. For example, in the 2016/17 financial year, municipalities requested R2.25 billion to be rolled over to the next financial year because they could not spend the funds. The National Treasury discovered that only 15% of the allocated MIG funds were spent by municipalities (National Treasury 2018). This clearly indicates serious underspending by municipalities. This problem has been exacerbated by these municipalities failing to return these funds to the National Revenue Fund. Instead, unspent funds are recouped by offsetting the amounts against the equitable share. This means these municipalities will, in future budget years, receive less funding allocated through equitable share; for example, in the financial year 2016/17, R1.4 billion was cut from the equitable share. However, the National Treasury indicated that municipalities are allowed to make payment arrangements, but the majority fail to do so.

The parliamentary committee on finance raised its concerns about the effects of this phenomenon on service delivery. Moreover, the Financial and Fiscal Commission reported (2015) that 60% of district municipalities are dysfunctional in revenue and asset management, primarily because they prioritise spending on new assets instead of maintaining existing assets (Parliament Monitoring Group 2015: online). Challenges such as poor financial management have thus negatively impacted the maintenance and development of sanitation infrastructure in the neediest municipalities.

The sustainable management of existing water and sanitation infrastructure in established settlements is a major issue for municipalities (Parliament Monitoring Group 2015: online). Also, despite municipalities' inability to spend MIG allocations, low allocations are influenced by the fact that the formula used to allocate funding places priority on new infrastructure, neglecting the need to refurbish the existing infrastructure that serves the needs of the poorest communities. The issue of infrastructure neglect is captured by Toxopeus' (2019a: online) article titled *"The state of sanitation and wastewater treatment services in South Africa"*. The author argues that funds allocated for maintenance are redirected towards building new infrastructure at the expense of maintaining existing infrastructure. This makes it difficult to ascertain local governments' true financing needs in the holistic delivery of infrastructure services. Therefore, it is incumbent on municipalities to introduce sound asset management reforms (National Treasury 2015:27).

LMs with underspending challenges are all authorised for the water and sanitation function, so district municipalities' overseeing roles are primarily aimed at coordinating rather than delivering services. As such, pending changes to the institutional makeup of these district municipalities, or changes to the functional arrangements, most infrastructure grants will not flow to them. The only exceptions are the potential general infrastructure funding for district municipalities that fund systems rather than infrastructure, such as the rural roads asset management systems grant (Parliament Monitoring Group 2015: online).

Besides the MIG, the local government's equitable share is also made available to assist WSAs in delivering basic services. This grant is discussed in more detail in the section below.

### 3.3.2 Local Government Equitable Share (LGES)

The Local Government Equitable Share (LGES) is designed to assist municipalities with operation and maintenance costs (National Treasury 2018). The LGES was introduced to assist municipalities in dealing with the burden of service delivery to communities. To this end, rural municipalities receive more grant funding than the larger cities because of their reliance on grants since metropolitan municipalities can raise their own revenue

(Oosthuizen & Thornhill 2017:436). The formula used for equitable share considers how many households have access to basic services. In cases where the cost of providing services exceeds the amount charged to very poor residents, the subsidy is then utilised to contribute towards the municipality's general operating account (Oosthuizen & Thornhill 2017:439). This statement is supported by Mahabir and Mabena (2015:249), who argue the grant is meant to cover the gaps that occur as a result of community needs exceeding available funds.

However, municipalities have raised concerns over the accuracy of the data used to determine the amounts allocated (Kobel & deli Mistro 2015:250). Some municipalities have stated that the LGES allocations are inadequate to cover the free basic services provided to communities amid a high population of poor households and cannot maintain adequate service levels (Loots 2004:20; Rao & Khumalo 2004:30; Tissington, Dettmann, Langford & Conteh 2008:18). This view is also echoed by Mahabir and Mabena (2015:246), who state that, given the downward trend of municipalities failing to fund their own capital investment, more funds should be allocated to fund municipal capital expenditure. This additional funding could be made available through infrastructure grants since the equitable share becomes insufficient because of increased populations of poor households (Mahabir & Mabena 2015:248). As discussed in the section below, municipalities can also raise their own revenue.

### 3.3.3 Locally generated funding

Local governments can also raise funds through local sources like taxes. Revenue generated locally may be used to cross-subsidise between the rich and poor households (City of Cape Town Metropolitan Municipality IDP 2008:8). A broad assessment of municipal income in rural areas (the areas with, for example, the highest sanitation needs) has revealed the serious funding shortfall for these rural municipalities. The identified shortfall in the funding of other services is financed by inter-governmental transfers. The total cost of service provision in rural areas is thus currently subsidised. Given the challenges in rural municipalities, it has become difficult for municipalities to implement cost-recovery measures. However, it is vital to deal with this matter because of its long-term unsustainability (City of Cape Town Metropolitan Municipality IDP 2008:8).

According to the National Treasury Report (2018), the challenge for many municipalities is that they do not have sufficient sources of locally generated revenue and therefore primarily rely on grant funding from national government. In addition, 50% of the 257 municipalities depend entirely on grants for the delivery of basic services. According to the South African Local Government Association Report (2017), this calls for action to improve the sustainability of these municipalities. The municipalities have discretion in deciding on the structure of the service delivery packages, the levels of service, and the means through which these are funded. The Integrated Development Plan (IDP) of each municipality is the instrument used in deciding on priorities and channelling and coordinating service delivery to avoid duplicated subsidies by national government (City of Cape Town Metropolitan Municipality IDP 2008:8).

### 3.3.4 Urban Settlement Development Grant (USDG)

The USDG was designed to support the devolution of the built environment function to metropolitan municipalities and housing accreditation processes (Oosthuizen & Thornhill 2017:440). Given its flexibility, the grant has been used to fund a broad range of projects, including water and sanitation projects (Department of Human Settlements 2015:79). The USDG is a supplementary grant introduced in the 2011 *DoRA* grant framework to replace the MIG for Cities. According to the Department of Human Settlements (2015:78), metropolitan municipalities have shown increased ability to administer the grant and use it for various projects. For example, in the Mangaung metropolitan municipality, the grant was used to upgrade informal settlements and for purchasing and servicing vacant land (Wilkinson 2017:56).

The Department of Human Settlements (2015:85) has identified some shortcomings in the grant. Amongst others, the report notes the grant's planning objectives have not been realised, and the intended effect between housing and infrastructure has not yielded expected results. Furthermore, the USDG grant evaluation report (Department of Human Settlements 2015:77) established that the grant is not a programme but a financial tool that supports the current built environment and human settlement programmes. The grant was designed with a purpose; it is conditional with a wide range of outputs, but this is not consistent with the idea of a supplementary grant, the purpose of which is to fill a fiscal gap. Therefore, in its current form (informal settlements, human

settlements), the grant does not serve the purpose for which it was created. It would have been more appropriate had it been designed as an intervention for built environments, and it would have been more efficient if it was a conditional grant designed as an intervention for housing and informal settlements (Department of Human Settlements 2015:26).

In addition, the grant's effectiveness has also been compromised by inefficiencies in the built environment's planning and is challenged by insufficient intergovernmental cooperation and coordination with other municipal planning processes (Oosthuizen & Thornhill 2017:445). In particular, the USDG is poorly coordinated. Further, it is evident that implementation efficiencies and inefficiencies largely impact the entire capital investment programme. Consequently, systematically addressing them is beyond the scope of the USDG as a capital finance instrument. There may well be a place for the cities support programme (programme designed to support the spatial transformation of cities with the objective to create sustainable urban built environments) to assist, with potential positive benefits for the USDG in the process (Department of Human Settlements 2015:8).

The ambitious nature of the grant has meant it has contributed to the achievement of many things but has not focused on its impact. It functions as a supplementary grant, yet the theoretical framework attempts to deal with it as a 'programme', entailing a coordinated set of activities, outputs, outcomes and processes necessary to constitute a 'programme' (Department of Human Settlements 2015:52). Under the current design, it is not appropriate to expect the grant itself to produce the desired outcomes stated in policy documents. However, this does not prevent the grant from being successfully applied as a funding source in support of other programmes aimed at similar outcomes (Department of Human Settlements 2015:59). Thus, although the USDG's design can be improved, its conceptual framework as a financial instrument (not as a programme) requires realignment (Department of Human Settlements 2015:59).

### 3.3.5 Rural Household Infrastructure Grant (RHIG)

The RHIG was designed to provide rural municipalities with funding to build dry sanitation facilities where waterborne sanitation is not feasible; for example, the potta-

potta and chemical toilets (Wilkinson 2017:57). This grant is also used in urban municipalities, particularly in informal settlements to deal with temporary sanitation challenges. The grant was directed to municipalities in 2013/14 because these sanitation projects involved significant community consultation processes. In the past, this grant used to be administered by the Department of Water and Sanitation, but it is now administered by LMs. This grant is also used to provide hygiene education campaigns and maintain facilities (Wilkinson 2017:57).

A similar approach exists in the provincial government sphere, where funds are given to provinces to support municipalities win the delivery of water and sanitation. Allocated funds thus support local governments with a specific project, such as water and sanitation programmes. These funds are conditional grants gazetted in the *DoRA* (Department of Water Affairs 2012b:51).

### 3.*3*.6 Regional Bulk Infrastructure Grant (RBIG)

According to Toxopeus (2020: online), the RBIG was introduced to develop bulk water and sanitation infrastructure that connects water resources to infrastructure within communities. The RBIG was created with the purpose of supplementing the financing of the social component of regional bulk water and sanitation infrastructure (Department of Water and Sanitation 2017:102). The grant is aimed at targeting projects that cut across many municipalities. In addition, the grant was also meant to provide water and reticulation services to households. This includes developing new infrastructure and rehabilitating, upgrading and replacing ageing infrastructure (Department of Water and Sanitation 2017:102). Through RBIG, water conservation and demand management could be addressed, or this grant could be used to implement bulk infrastructure projects. It can also be used to facilitate projects that will have a direct impact on bulk infrastructure requirements.

The Department of Water and Sanitation plays an oversight role in implementing these bulk infrastructure projects (Mutamba & Busari 2014:83). Some of the conditions attached (listed in *DoRA of 2017*) to the grant include that the grant should fund the social component of the regional water and wastewater projects approved by the Department of Water and Sanitation. Moreover, all projects funded by the grant should

be incorporated in the municipality's IDP and WSDP and should be clearly linked to the MIG.

### 3.3.7 Water Services Infrastructure Grant (WIG)

This grant is designed to assist WSAs in reducing water and sanitation backlogs. This is done through the reticulated water supply, on-site sanitation facilities and replacing buckets with appropriate sanitation facilities (Toxopeus 2020: online). It is clearly articulated in the *DoRA* that this grant is intended to expedite clean water and sanitation provision to communities that do not have access to these services or facilities (Department of Water and Sanitation 2017:104).

In addition, this grant was designed to facilitate the planning and implementation of various water and sanitation projects, reduce infrastructure backlogs, and improve the sustainability of services, particularly in rural and small municipalities. It was also designed to provide short- to medium term water and sanitation supply and ensure the provision of these services to identified and prioritised communities (National Treasury 2018). These include spring protection and groundwater development. This grant is also utilised to support municipalities implementing water conservation and water demand projects and support the elimination of the bucket-toilet eradication programme (National Treasury 2017).

According to the South African Human Rights Commission (SAHRC) Report on the Right to Water and Sanitation (2014:27), the Department of Human Settlements has confirmed to the Commission that rural household infrastructure programmes' responsibilities lie with the Department of Water and Sanitation. The purpose of this programme is to provide on-site sanitation and water facilities to rural communities. During the 2016/17 financial year, the Department of Water and Sanitation merged the Municipal Water Infrastructure, the Water Services Operating Subsidy, and the Rural Households Infrastructure Grants into a single grant called the Water Services Infrastructure Grant. The purpose of the WIG is to "facilitate the planning and implementation of various water and sanitation projects to accelerate backlog reduction and improve the sustainability of services" (Department of Water and Sanitation 2017:104). The merging of these grants

promotes integrated and coherent planning and budgeting in municipalities (Department of Water and Sanitation 2017:104).

## 3.4 HUMAN RESOURCE CAPACITY CHALLENGES IN MUNICIPALITIES

According to Thornhill (2012:136), human resources are among the most important resources for any public institution. The Non-Financial Census Report (Statistics South Africa 2016b) indicates that local government employs approximately 282,021 officials, which constitute 15% of the total number of officials employed in the public sector (Statistics South Africa 2016b). The same officials serve a total South African population of 57 million, who is also served by public servants in the other two spheres of government. This places enormous strain on municipal officials to cope with the demand for services. Thus, the quality of the appointed staff in municipalities becomes crucial (Thornhill 2012:136).

The practise of cadre deployment in senior positions has been a thorny issue in municipalities in South Africa in recent years. The challenge is that some of the posts are occupied by unqualified, inexperienced and unsuitably qualified officials (Thornhill 2012:137). This has a direct impact on service delivery. For example, unsuitable officials are employed to do technical work, like managing wastewater treatment plants in municipalities that require particular technical skills and qualifications (Thornhill 2012:137).

Legislative and other policy frameworks regarding the recruitment and appointment of public officials are in place. However, a recurring issue that hinders the delivery of basic services is municipalities' inability to fulfil their responsibilities. The AG Report (2017: online) established that municipalities lack succession planning for highly skilled staff, such as engineers and scientists. As a result, most municipalities are left with no option but to seek external technical expertise (Ncube & Monnakgotla 2016:75). Moreover, the operation and maintenance of infrastructure are affected because of a lack of expertise, particularly in district municipalities.

The issue of skills shortages is also highlighted in the Water and Sanitation Master Plan (2018c). The plan emphasises the lack of institutional capacity, poor asset management

and funding as some of the factors that led to certain the municipalities' failure to deliver reliable water and sanitation services (Department of Water and Sanitation 2018c:46). Toxopeus (2019b: online) agrees that, generally, municipalities lack the expertise necessary to perform their core operational and financial functions. Planning and project management are areas that need urgent intervention as they result in major cost constraints in the effective delivery of municipal services. In addition, municipalities are unable to fill vacant posts. For example, of the 317,000 funded posts available in 2017, 45,000 remained vacant, which translates to a 14% vacancy rate. It has thus proven difficult to fill posts in rural municipalities (Auditor-General South Africa 2019: online).

The AG has cited vacant posts as one of the factors that contribute to accountability failures in municipalities, in addition to a lack of skills by councils to do oversight on municipal management (Auditor-General 2019: online). In the Eastern Cape and KZN Province, in particular, the AG has found outdated recruitment and selection policies are still used to hire municipal employees (Auditor-General 2019: online).

According to the Department of Water and Sanitation (2018c:60), 144 of the 278 municipalities are responsible for the provision of water services. At least 33% of these municipalities are regarded as dysfunctional, and more than 50% have no or very limited technical staff. The 27 priority district municipalities have been identified as being particularly dysfunctional and requiring specific intervention; Merafong LM and JB Marks LM are included in the municipalities that require specific intervention (Auditor-General 2019: online). Finally, rural and small municipalities struggle to attract relevantly skilled and experienced staff, especially persons with technical in short supply in municipalities. The next section explores and interrogates challenges with regard to infrastructure investment for water services.

## 3.5 MUNICIPAL INFRASTRUCTURE INVESTMENT FOR WATER SERVICES

This section aims to describe the challenges municipalities face with water services infrastructure investment; in particular, sanitation infrastructure investment. Over the past 20 years, public infrastructure investment in South Africa has amounted to about R3 trillion (National Treasury 2019). However, the quality, speed and efficiency of many infrastructure projects have not matched the level of investment.

The work of Masindi and Dunker (2016:14) offers insights into the challenges and extent of under-investment in sanitation infrastructure by municipalities in South Africa. In their article titled "*The state of Sanitation in South Africa*", Masindi and Dunker (2016:14) highlight the extent of the problem of under-investing in the maintenance and refurbishment of sanitation infrastructure in municipalities across South Africa. The authors argue that the number of service delivery failures witnessed across the country in recent years illustrate the scope of the problem. For instance, the poor quality of water is an important indicator of the performance of a water treatment plant. If the quality of water entering a reticulation system is poor, it usually indicates operational problems with the treatment plant; either in the form of plant breakdowns, poor maintenance or delayed maintenance, and plants operating at above their designed capacities. Similarly, for sanitation services, highly contaminated and untreated sludge that is discharged indicates the poor state of treatment plants. The Blue Drop Accreditation System implemented by the Department of Water Affairs in 2008 demonstrates the extent of the maintenance challenges in South Africa (Masindi & Dunker 2016:23).

The high volume of water losses that occur because of pipe bursts and leakages result in substantial revenue losses for municipalities, and this revenue loss could have been used to fund infrastructure maintenance (Masindi & Dunker 2016:29). They also raise concerns about a lack of strategic asset management within municipalities, particularly in rural areas (Masindi & Dunker 2016:30). Municipalities also do not have records of their assets, their location, life span and how best to invest in those assets to extend their useful life. The SAICE Infrastructure Report Card (Amod & Wall 2017: online) reiterates this view by emphasising that a lack of asset data has a direct negative effect on scheduled infrastructure maintenance and there is no accountability for mismanagement.

It becomes very difficult for municipalities to determine and make informed investment decisions because of insufficient or, in some cases, no data on infrastructure (Masindi & Dunker 2016:30). Although the importance of developing an asset register cannot be overemphasised, for some municipalities it is a costly exercise. As a result of financial constraints and lack of capacity, many municipalities outsource this critical function. Municipalities generally allocate approximately 5% to 12% of their annual operating budgets to repairs and maintenance. However, these are merely the budgeted figures,

not the actual spending figures. Information on the actual repairs and maintenance spent by municipalities per asset class is currently unavailable (Masindi & Duncker 2016:30).

The National Treasury Report (2018) reiterates the views expressed by Masindi and Dunker (2016:29); non-prioritisation of renewal and maintenance expenditure and lack of asset management planning undermine the asset management efforts of municipal infrastructure. The National Treasury Report (2015) highlights the fact that the emphasis has been placed on investment in new infrastructure that connects previously serviced areas with water, sanitation and electricity, and the eradication of a backlog. Tsotetsi and McNamara (2015: online) refer to this emphasis on new infrastructure as "excessive focus" on new infrastructure. The authors argue that, although new infrastructure is required in certain cases, the government should strike a balance between new infrastructure and maintaining existing infrastructure to ensure sustainability and avoid excessive costs.

Infrastructure renewal has not been a priority for many municipalities despite the capital assets management guidelines issued by the National Treasury (2015). This lack of prioritising the renewal of existing infrastructure contributes significantly towards the unreliability of water and sanitation services. In addition, the limited budget allocated by some municipalities to operations and maintenance – relative to that allocated to new capital works – poor revenue management, and municipalities' failure to employ appropriately qualified technical staff has made the situation worse. Furthermore, as stated, the national infrastructure grant funding mechanisms incentivise the building of new infrastructure rather than maintaining existing infrastructure (Odendaal 2019: online).

The National Treasury Report (2015) notes that even though capital grants focus on investing in assets, the lifespan of those assets must be considered. Civil society organisations, stakeholders and service delivery protesters have drawn attention to the poor condition of municipal infrastructure. Municipalities have thus been under scrutiny regarding their ability to manage grant-funded assets, both in financial and organisational terms after their creation (National Treasury 2015).

The MIG policy clearly targeted backlog eradication by 2013/14. Other related programmes, such as the various Bucket Toilet Eradication Programmes, the Rural Households Infrastructure Grant, or the Municipal Water Infrastructure Grant, have had similar intentions. Backlog-targeting nationally funded projects resulted in a considerable expansion of municipal asset bases as capital is persistently used to create new infrastructure to provide electricity connections, running water and sewerage to communities previously without access. However, an unintended consequence of these government programmes has been that existing municipal infrastructure can do away with the necessary capital investment required to ensure full productivity, while new infrastructure is prioritised. The critical issue for many municipalities is to find a balance between capital spending that connects services to new households and sufficient investment in renewing existing infrastructure. This aim changes over time as municipalities move closer towards the goal of eradicating backlogs, despite the many challenges.

The Financial and Fiscal Commission Report (2014) noted that in recent years grant systems' split between funding to renew existing infrastructure and build new infrastructure did not encourage investment in existing infrastructure. According to the FFC Report (2014) for South Africa to develop and progressively realise the rights set out in the Constitution, existing infrastructure's refurbishment should play a crucial part in the allocation and spending of MIGs. The Review Report reiterates that funding should not only focus on investing in new infrastructure, but existing infrastructure should be prioritised as well (Financial and Fiscal Commission 2014).

Municipalities are thus beginning to recognise the importance of investing in existing infrastructure. Since 2011, municipal capital budgets have begun to move away from new infrastructure to the renewal of existing infrastructure. For instance, in the 2009/10 financial year, only 16% of capital expenditure went to the renewal of old infrastructure. Still, three years later, in 2013/14, over 40% of the capital budget was set aside for the renewal of existing infrastructure. However, it should be noted that this move is common in metropolitan municipalities, while small and rural municipalities are still lagging in this regard (Financial and Fiscal Commission 2014).

To discourage the purchasing of new infrastructure, the national government has created incentives that encourage municipalities to invest in the renewal of existing infrastructure. It has become a common practice for municipalities to use the MIG to refurbish existing infrastructure even though this practice is not permissible (Financial and Fiscal Commission 2014). However, the National Treasury has stipulated certain conditions to ensure the effective use of grant allocations and confirm that grant funding for existing infrastructure fits in with the broader fiscal framework for municipalities.

As indicated in the previous paragraph, municipalities are incentivised to create systems that will allow and ensure the optimal and sustainable use of funding meant for infrastructure renewal. Part of the purpose of creating systems is to develop asset maintenance plans. Such plans must go beyond the existing asset registers that are largely for accounting purposes and provide the municipality with comprehensive information on the state of the asset base. The plans indicate where funding needs to be prioritised to ensure continued functionality in the short- and long-term (Financial and Fiscal Commission 2014).

Although some municipalities have the plans in place, all municipalities must follow suit in developing maintenance plans. Moreover, to access such grants, municipalities must prove they have not been negligent in their maintenance, and report on financial and non-financial results with regards to the allocated grants (Oosthuizen & Thornhill 2017:8). This will hopefully ensure municipalities use their own maintenance budgets instead of relying on nationally funded infrastructure grants. Finally, renewal funding must largely be used for investment in assets serving the poor (Financial and Fiscal Commission 2014).

Masindi and Duncker (2016:30) caution that it is not sustainable in the short- or long-term to repair dysfunctional infrastructure without dealing with underlying factors that negatively affect operations and maintenance. The authors contend that without basic scheduled maintenance, the more sophisticated or less robust infrastructure (such as treatment plants or pump stations) cannot be expected to deliver service indeterminately. This view is also shared by Van der Mescht and Van Jaarsveld (2012:4), who argue that most of the newly refurbished water and sanitation plants could be in a derelict state in as little as five years.

## 3.6 MAINTENANCE AND OPERATION OF SANITATION INFRASTRUCTURE

This section explores the state and challenges in maintaining and operating sanitation infrastructure. The importance of maintenance is acknowledged by all stakeholders in the water services sector, yet municipalities are failing to prioritise it during their budget meetings – a predicament echoed internationally and in the literature. It is suggested that immediate budget pressures, often from politicians with short-term focus, disregard maintenance investment and its long-term benefits or returns. According to Van der Mescht and Van Jaarsveld (2012:4), municipal officials articulate how emergency repairs are prioritised, yet preventive maintenance that would have avoided the emergency is neglected. Reports by the Financial and Fiscal Commission (2014) also echoed these concerns and suggested that every six years, one year's maintenance is foregone, with every municipal type (from metros to rural municipalities) underspending on maintenance between 2005 and 2011 (National Treasury 2015:36).

In support, Van der Mescht and Van Jaarsveld (2012:4) claim municipalities in South Africa are struggling to maintain and operate their water services infrastructure in an efficient and sustainable manner. This is evidenced by the deteriorating assets and regular component failures that cause service delivery disruptions. Several issues have been highlighted, ranging from human resource capacity to financial constraints.

According to the AG Report (2017: online), the maintenance and operation of sanitation facilities in South Africa require municipalities to undertake big projects that cost substantial money. Metropolitan municipalities can raise these funds, but for smaller local or district municipalities with a low tax base it is a major struggle to get such projects underway. For example, the Ugu LM was responsible for undertaking a water reticulation project in the North West Province, but limited funding cause delays. It also becomes more difficult for smaller municipalities where, for example, there is no co-funding between LMs and the Department of Water and Sanitation.

In Greater Bizana LM in the Eastern Cape Province, sanitation projects were delayed because of a lack of funding. The AG Report (2017: online) also emphasise a lack of funding for the operation and maintenance of sanitation facilities. For example, in Merafong LM, operating expenditure for the sanitation function has decreased by 23.2%

between 2016/17 and 2017/18 (Merafong LM IDP 2018:63). The National Treasury (2014:36) concurs that under-budgeting for maintenance is a global issue, particularly in developing countries. It indicates a dysfunctional system with poor financial control and reflects a local government that fails to collect revenue. It is perhaps a sign of pre-existing issues that will not be resolved through funding. In fact, the increase in funding will not encourage municipalities to generate their own funding and possibly displace funds (from the LGES or own revenues). Currently, maintenance funding means the problem of poorly maintained municipal infrastructure will continue (National Treasury 2014:36).

In addition to under-budgeting for maintenance, the little that has been budgeted for is not substantially spent. Although data in municipal budgets on maintenance is not comprehensive and has only been emphasised in recent years, analyses show that the amount spent by municipalities on maintenance is well under 2% of the 'write down value' of their assets (Auditor-General 2019: online). Yet, the amounts budgeted for maintenance are between 3% to 4%. The issue of under-budgeting for maintenance is similarly articulated by the SAICE Sanitation Report Card (Amod & Wall 2017: online), claiming municipalities continue failing to fully spend allocated budgets. This failure to prioritise maintenance funding, in either the budgeting process or in-year spending, was echoed in municipal engagements. Technical officials and engineers were largely unaware of the maintenance funds (through LGES) allocated through the *DoRA* to explicitly subsidise maintenance costs on behalf of indigent households.

The review on grants undertaken by various stakeholders, including the National Treasury, illustrate investing maintenance funds into municipalities is not the solution. Instead, national government should exercise oversight, close monitoring and support to ensure functional municipal services. The Review Report, among other things, proposes that the following measures be undertaken:

- Conditionality surrounding life-cycle costing of grant-funded assets.
- Use of the 'renewal' reforms requiring asset management maintenance plans in every municipality to reduce the scope of maintenance being side-lined in the municipal budget processes.
- The infrastructure maintenance budget should be continuously monitored.

**Table 3.1: Repair and Maintenance spending patterns in municipalities 2014-2021**

| Description | 2014/15 | 2015/16 | 2016/17 | Current year 2017/18 | | | 2018/19 Medium Term Revenue & Expenditure | | |
|---|---|---|---|---|---|---|---|---|---|
| R' thousands | Audited Outcomes | Audited Outcomes | Audited Outcomes | Original Budget | Adjusted Budget | Full-year Forecasts | Budget Year 2018/19 | Budget Year 2019/20 | Budget Year 2020/2021 |
| Repairs and Maintenance by Asset Class | 17 946 071 | 17 946 071 | 18 020 191 | 21 543 579 | 24 485 649 | 24 485 649 | 27 398 703 | 29 462 871 | 31 657 353 |
| Infrastructure - Road Transport | 3 300 782 | 3 300 782 | 3 893 511 | 4 307 964 | 5 052 607 | 5 052 607 | 5 529 437 | 5 821 872 | 6 105 837 |
| Infrastructure - Electricity | 3 307 090 | 3 307 090 | 3 620 763 | 4 248 128 | 4 696 357 | 4 696 357 | 4 947 523 | 5 376 945 | 5 798 108 |
| Infrastructure - Water | 2 757 769 | 2 757 769 | 2 873 992 | 3 477 010 | 3 752 445 | 3 752 445 | 4 300 774 | 4 874 049 | 5 239 224 |
| Infrastructure - Sanitation | 1 556 718 | 1 556 718 | 1 812 282 | 1 888 544 | 2 326 417 | 2 326 417 | 2 816 073 | 3 044 942 | 3 241 093 |
| Infrastructure - Other | 487 664 | 487 664 | 332 345 | 613 131 | 431 810 | 431 810 | 469 626 | 519 321 | 561 911 |
| Infrastructure | 11 410 023 | 11 410 023 | 12 532 893 | 14 534 778 | 16 259 635 | 16 259 635 | 18 063 433 | 19 637 129 | 20 946 173 |
| Community | 1 212 477 | 1 212 477 | 952 980 | 1 038 266 | 1 436 361 | 1 436 361 | 1 728 338 | 1 841 631 | 1 931 025 |
| Heritage assets | 165 963 | 165 963 | 1 993 | 14 053 | 12 222 | 12 222 | 13 545 | 14 315 | 15 140 |
| Investment properties | 35 913 | 35 913 | 64 372 | 90 074 | 78 497 | 78 497 | 108 319 | 108 623 | 109 187 |
| Other assets | 5 121 696 | 5 121 696 | 4 467 953 | 5 866 409 | 6 698 934 | 6 698 934 | 7 485 067 | 7 861 172 | 8 655 828 |
| TOTAL EXPENDITURE OTHER ITEMS | 44 640 501 | 44 640 501 | 47 759 825 | 51 538 490 | 55 243 319 | 55 243 319 | 58 964 027 | 63 259 446 | 67 463 020 |
| % of capital exp on renewal of assets | 46,2% | 46,2% | 44,0% | 55,9% | 56,0% | 56,0% | 54,9% | 58,8% | 58,7% |
| Renewal of Existing Assets as % of depreciation | 62,3% | 62,3% | 62,2% | 84,4% | 83,0% | 83,0% | 82,4% | 81,3% | 77,6% |

| Description | 2014/15 | 2015/16 | 2016/17 | Current year 2017/18 | | | 2018/19 Medium Term Revenue & Expenditure | | |
|---|---|---|---|---|---|---|---|---|---|
| R' thousands | Audited Outcomes | Audited Outcomes | Audited Outcomes | Original Budget | Adjusted Budget | Full-year Forecasts | Budget Year 2018/19 | Budget Year 2019/20 | Budget Year 2020/2021 |
| R&M as a % of PPE | 3,4% | 3,4% | 2,8% | 3,5% | 3,7% | 3,7% | 3,9% | 4,0% | 4,1% |
| Renewal and R&M as a % of PPE | 6,0% | 6,0% | 6,0% | 8,0% | 8,0% | 8,0% | 8,0% | 8,0% | 8,0% |

*Source: National Treasury Local Government Database 2014*

Table 3.1 shows the national aggregate spending patterns on repairs and maintenance as a percentage of expenditure on property, water and sanitation plants and equipment for the financial years 2014/15 to 2020/21. This is an appropriate indicator of spending on repairs and maintenance as it measures spending against the value of the assets for which such spending was incurred. The national norm, according to National Treasury's financial indicators, is 8% (National Treasury 2014).

An increasing trend in investment can be seen, together with a 3.4% (2014/15) full-year forecast rising to 3.7% (2017/18), and up to 4.1% by 2020/21. In total, capital expenditure on asset renewal increased from a low 34.7% in 2015/16 to a substantial 56.7% in 2017/18. Nonetheless, significant under-investment continues to be evident. The pace of asset depreciation continues to outstrip investment in asset renewal by a significant margin, with renewal investments accounting for only 83% of depreciation values in 2017/18 (National Treasury 2018). In effect, this means that 17% of a municipality's asset base is being abandoned each year, which may have significant cumulative effects.

According to the National Treasury Report (2018), municipalities experiencing financial stress frequently seek to immediately reduce expenditures on repairs and maintenance as its impact is not immediately obvious. It is also less politically sensitive than reducing the capital expenditure programme. However, the medium- to long-term consequences of underspending on repairs and maintenance include:

- Deteriorating reliability and quality of services.
- A move to more expensive crisis maintenance rather than planned maintenance.
- Increased future cost of maintenance and refurbishment.
- Shortened useful lifespan of assets, requiring earlier replacement than would otherwise have been the case.

The next section explores municipal planning, which could be considered the centre of municipal service delivery challenges.

### 3.6.1 Merafong and JB Marks local municipalities' financial expenditure on water and sanitation infrastructure

This section intends to give an overview of the two municipalities' expenditure on repairs and maintenance relating to water and sanitation over two financial periods 2018/19- 2019/20. According to the Merafong LM unaudited annual report (2019:216), the municipality placed a moratorium on staff appointments due to serious cash-flow problems. In the 2018/19 financial year, the municipality closed off its financial books with a deficit of R87 million compared to a budget deficit of R 284 million in the 2017/18 financial year. During this period, it was clear the municipality's liquidity ratio had started to decline. The Merafong LM could not collect over 70% of its debt and had incurred a water loss of over R600 million, and an electricity loss of over R118 million. This situation negatively affected its cash-flow.

The audited financial report also indicates this situation was worsened by R50 million invested in the Venda Building Society mutual bank with no guarantees that the money will ever be recovered (Merafong LM unaudited annual Report 2019:219). Furthermore, the report indicates that the Merafong LM's current working capital ratio declined over a three-year period. For example, in 2016/17 it was 1:0.79, in 2017/18 it was 1:0.5, and in 2018/19 it was 1:0.4. The current ratio is a measure of the municipality's ability to meet its current financial obligations using its current assets. Generally, a ratio of 2:1 is ideal, but a current ratio of 1:1 is still acceptable. The Merafong LM's current ratio of 1:0.4 is an indication of its inability to pay its existing debt (short-term). From a liquidity point of view, the Merafong LM is under financial constraint. The municipality has incurred a shortfall of R161 million during the financial year ending June 2019. As a result of this situation, the provision of water and sanitation, including infrastructure repair and maintenance, is performed on an emergency basis and maintenance plans cannot be implemented. Salaries cost about 25% of the budget, while repair and maintenance is only allocated 4% of the budget (Merafong Unaudited Annual Report 2019:27).

Similarly, the JB Marks LM's inability to spend the allocated budget is highlighted as a serious concern. For example, in the 2019/20 financial year, of the R33 million budget for repairs and maintenance for water services, only R8 million was spent, leaving

about R18 million unspent. The late appointment of contractors was cited as the reason for unspent allocations (JB Marks Local Municipality Annual Report 2019:52).

The poor state of finances in Merafong LM mentioned in the previous paragraph shows that the municipality cannot meet its short-term financial obligations. This effectively means it will be difficult for the municipality to make a significant investment in water and sanitation infrastructure. This is in line with spending patterns identified by the National Treasury, which shows a decline in infrastructure investment by municipalities and asset depreciation continues to outweigh investments. As indicated previously in the National Treasury Report, the likely effect is that asset maintenance will continue to be unplanned but will happen on an emergency basis, and it will be more expensive to maintain infrastructure in the future. The Merafong LM has reached a crisis situation as it can no longer afford planned maintenance, and maintenance is only done on an emergency basis. As maintenance is delayed, the assets' lifespan is shortened. The JB Marks LM is faced with a similar situation of depreciating water and sanitation infrastructure assets. This is particularly urgent in Ventersdorp, where the WWTWs need urgent upgrades due to poor maintenance and the plant is running at design capacity (discussed further in Figure 6.31, Figure 6.32 and Figure 6.33 of this study).

Furthermore, the AG's Report (2019: online) noted the ineffective performance management systems of the municipality have resulted in an over-reliance on consultants to prepare financial reports. This is a challenge because it does not translate to skills being transferred to JB Marks LM finance staff (Auditor-General Report 2019: online). The next section discusses municipal planning.

## 3.7 MUNICIPAL PLANNING

Municipal planning is a local government function provided for in section 156 of the Constitution. Municipal planning is a functional area listed in schedule 4 part B in terms of which municipalities have the authority and right to administer. Various aspects of municipal planning in relation to water services are interrogated in this section.

According to Mutamba and Busari (2014:79), the government has developed various plans and strategies to deal with issues of poor infrastructure. Initiatives and plans

include the establishment of the Presidential Infrastructure Coordinating Commission. This Commission was created to ensure integrated and systematic planning and monitoring of large infrastructure projects (Mutamba & Busari 2014:79). In 2012, the national infrastructure plan was developed, and 18 strategic integrated projects (SIPs) were identified to provide support and address various service delivery issues, including water and sanitation infrastructure. The water and sanitation SIPs relate mostly to constructing, augmenting or upgrading bulk water schemes. Government has further prioritised infrastructure maintenance through the National Infrastructure Maintenance Strategy (Mutamba & Busari 2014:79).

The status quo is that planning is too often limited to the short-term due to the pressures of meeting in-year grant spending targets or the political cycle. Though the grant frameworks in DoRA stipulate certain planning deadlines, adherence to these is not widespread. Some grants, such as the MIG, allow a 5% top-slice of a municipality's capital allocation to be used for a project management unit (Lawless 2017: online). However, this is largely used for in-year project management rather than future planning. Equally, for municipalities with small MIG allocations – either small municipalities or ones with few backlogs – the 5% top-slice is insufficient to fund the necessary planning of their capital investments. Larger or wealthier municipalities, such as metros and secondary cities with significant revenue-raising potential, should already be funding planning departments with their own revenues rather than relying on national funding. The issue is therefore largely restricted to smaller and poorer municipalities (Lawless 2017: online).

Toxopeus (2019b: online) contends that the infrastructure challenges facing local government are merely signs of a deeper systemic governance problem. The author further argues that governance-related challenges have compromised the financial sustainability of both the Department of Water and Sanitation and the local government sphere. Furthermore, municipalities will continue to fail because of financial mismanagement and a general failure to plan and a lack of accountability. Toxopeus (2019b: online) warns that unless the government intervenes to deal with governance issues at the municipal level, infrastructure will continue to deteriorate. According to Lawless (2017: online), the over-reliance on private engineers and contractors to design and do planning has resulted in municipalities neglect in recognising the need

to retain planning capacity and address long-term and master planning. This has ultimately affected the municipalities' ability to effectively handle and attend to infrastructure operation and maintenance (Lawless 2017: online). In the next section, the researcher pays particular attention to the WSDP, a critical component of municipal planning in relation to water services.

### 3.7.1 Water Services Development Plan (WSDP)

The WSDP is the primary planning instrument for WSAs (any municipality responsible for providing water services). The fundamental purpose of a WSDP is to assist WSAs fulfil their constitutional mandate of providing water services. This plan requires a WSA to consider economic, environmental, financial and social aspects of water services provision (Department of Water and Sanitation 2017). The WSDP should inform the IDP of which it forms part as one of several plans. This includes water resource infrastructure planning, catchment management planning, and the national water resources strategy. The *Local Government: Municipal Systems Act of 2000* requires WSAs to regularly update the WSDP and report progress on an annual basis. According to the Strategic Framework for Water Services (2003), reporting will assist communities and the Department of Water Affairs and Forestry (now Department of Water and Sanitation) to determine how well municipalities are doing with their capacity and intentions (Department of Water Affairs and Forestry 2003b).

It is important to emphasise that WSDPs must be developed in consultation with communities who have a right to make inputs and have such inputs considered before a plan is adopted and implemented. The adopted plan, together with a report on the implementation thereof, must be made available to local communities. A legal review of the WSDP may reveal whether comments from the public have been adequately addressed in the adopted plan. A possible legal remedy for addressing the lack of consultation with communities would be to ask the court to set aside the plan since, for example, adequate public participation was not sought. A WSA must report on its implementation of the water services plan, and a summary of the report must be publicised (Algotsson, Murombo, Davis & Poole 2009:17).

The AG Report of 2017/18 highlighted municipalities' challenges with planning. Amongst the challenges is the lack of integrated planning and proper communication that has hampered the completion of water services projects. The AG has also established that many municipalities do not have the capacity to draft WSDPs because of a lack of technical expertise (Auditor-General 2018: online).

### 3.7.2 Integrated Development Plan (IDP)

The IDP is a plan through which the municipality gives a strategic vision of local development for a period of five years. This planning process deals with municipal budgeting, land management, economic development, the provision of water and sanitation. In fact, the WSDP informs the municipality's IDP. The *Local Government: Municipal Systems Act 32 of 2000* requires municipalities to undertake development-oriented planning to ensure the municipality gives effect to the Constitution.

According to McNamara, Raghubir, Naidoo and Manuel (2015: online), poor budgeting and poor planning are at the centre of many challenges facing municipalities in South Africa. The authors argue that municipalities should ensure their officials are adequately trained to develop and implement municipal plans.

In addition, the IDP must reflect, amongst others, the following:

- The municipal council's vision for the long-term development of the municipality, with special emphasis on the municipality's most critical development and internal transformation needs.
- An assessment of the existing level of development in the municipality, which must include an identification of communities that do not have access to basic municipal services.
- The council's development strategies must be aligned with any national or provincial sectoral plans and planning requirements binding the municipality in terms of legislation.

In addition to the requirements listed above, a municipality's IDP must also include the council's strategies for the municipality's operations, key performance indicators, and performance targets determined in terms of section 41 of the *Local Government: Municipal Systems Act 32 of 2000*.

### 3.7.3 National Water and Sanitation Master Plan (NWSMP)

The National Water and Sanitation Master plan (NWSMP) is a comprehensive plan aimed at eradicating backlogs in infrastructure investment, promoting institutional reforms in water resource management, and facilitating required capital and financial investment (Department of Water and Sanitation 2018c:3). The plan outlines various interventions to boost, among others, infrastructure development. The plan proceeds by giving an account of the state of water services in South Africa. The master plan is divided into four parts.

The first part is a long list of key actions to be taken in the short to long-term. Secondly, the plan provides a synopsis of the current state of water resources, responsible institutions, and governance. Thirdly, the plan provides a schedule of actions, including why these were not achieved, and finally, the plan provides an overview of water in the South African economy. In addition, the master plan envisages to guide sector investment and development planning for water resources and the provision of water and sanitation services to 2030 and beyond (Department of Water and Sanitation 2018c:3).

This plan seeks to improve universal access to water supply and sanitation services (Odendaal 2019: online). In line with the transformative agenda in water resources, the plan seeks to ensure equitable sharing and allocation of resources. Over and above the aforementioned, the plan intends to improve infrastructure management, including proper maintenance and operation of infrastructure (Odendaal 2019: online).

Apart from capacity, infrastructure and other challenges identified in the master plan, it refers to the restructuring of the Department of Water and Sanitation. This restructuring should hopefully deal with financial mismanagement issues facing the Department of Water and Sanitation (Kubheka 2019: online). Although the plan

provides a fair account of the state of water services in South Africa, it falls short in dealing with the high turnover of technical professionals lost to the country and the private sector. In addition, it does not provide a clear plan on how the current crop of engineering professionals are to be retained in the water and sanitation sector. Higher education institutions' role in training professionals or enticing young people into the field is not clearly articulated in the plan (Winter 2019: online).

Winter (2019: online) argues the success of the master plan depends on whether tertiary institutions can offer programmes to prepare future professionals who wish to follow water and sanitation as a career path. Furthermore, the master plan falls short in providing details about the skills and capacities needed to ensure it becomes a success (Winter 2019: online).

According to Stone (2019: online), the plan has been criticised because it is viewed as an expensive exercise that could be a major and costly failure. The issue of capacity to take responsibility for implementing the plan within the Department of Water and Sanitation has once again been raised as a serious concern given its dysfunctional state (Stone 2019: online). The next section explores the issue of sanitation technologies in South Africa.

## 3.8 SANITATION TECHNOLOGIES IN SOUTH AFRICA

Due to water scarcity in South Africa and the cost associated with conventional waterborne sanitation solutions, the Department of Water and Sanitation is leading initiatives for the use of alternative sanitation solutions that do not use water, otherwise known as on-site sanitation solutions. Providing sustainable sanitation solutions is one of the most difficult and politically sensitive issues municipalities grapples with. According to Pillay and Atkinsete (2019: online), the most affordable programme that offers at least a basic level of sanitation (i.e. ventilated improved latrine) should be pursued for those with little or no sanitation facilities. Such a system should at least attempt to close the gap between the highly preferred waterborne sanitation system and rudimentary pit latrines. For Pillay and Atkinsete (2019: online), the choice of sanitation should not only be limited to affordable sanitation technology but should be informed by, among other things, local socio-cultural practices. For instance, in certain

communities, women and men are not allowed to share toilet facilities and there is stigma around handling faeces. Furthermore, the cost of installing and maintaining the technology should also be considered (Pillay & Atkinsete 2019: online).

The next section explores what is considered appropriate sanitation solutions.

### 3.8.1 Appropriateness of sanitation solutions

Sanitation technology's appropriateness has been a topic of debate among experts in the sanitation sector for some time. The Sanitation Policy (Department of Water and Sanitation 2016) acknowledges that the choice of sanitation technology is based, to a large extent, on service level guidelines. This means on-site sanitation is the norm in rural municipalities, while waterborne sanitation is the norm for urban formal settlements. The policy does not clearly articulate criteria for appropriate technology. However, it is noted in the policy that the choice of technology should be based on the availability of resources in a municipality (Department of Water and Sanitation 2016).

### 3.8.2 On-site sanitation solutions

According to Pillay and Atkinsete (2019: online), on-site sanitation systems do not need any connection to sanitation infrastructure networks. For instance, septic tanks are one of these on-site sanitation systems, but the commonly used system is the VIP latrine, faecal waste drops into a hole in the ground. The best attribute of this system is that it does not use water. However, it is designed to be used temporarily, and it is very difficult to manage due to the high variability of users. Toilets can fill up quickly and require emptying. There is also a substantial cost associated with the disposal of faecal sludge. In addition, poor communities that constitute the majority of residents cannot afford to maintain conventional sustainability.

WSAs experience a challenge in implementing these costly options despite their long-term calls for the urgent need to find sanitation solutions that do not use water (in order to conserve water) while not requiring sludge handling and disposal (Pillay & Atkinsete 2019: online). The South African Institute of Chemical Engineering Report Card (Amod & Wall 2017: online) points to political pressure to provide full waterborne sanitation

despite a lack of reliable water supply. It also cautions against such a move as a wasted investment.

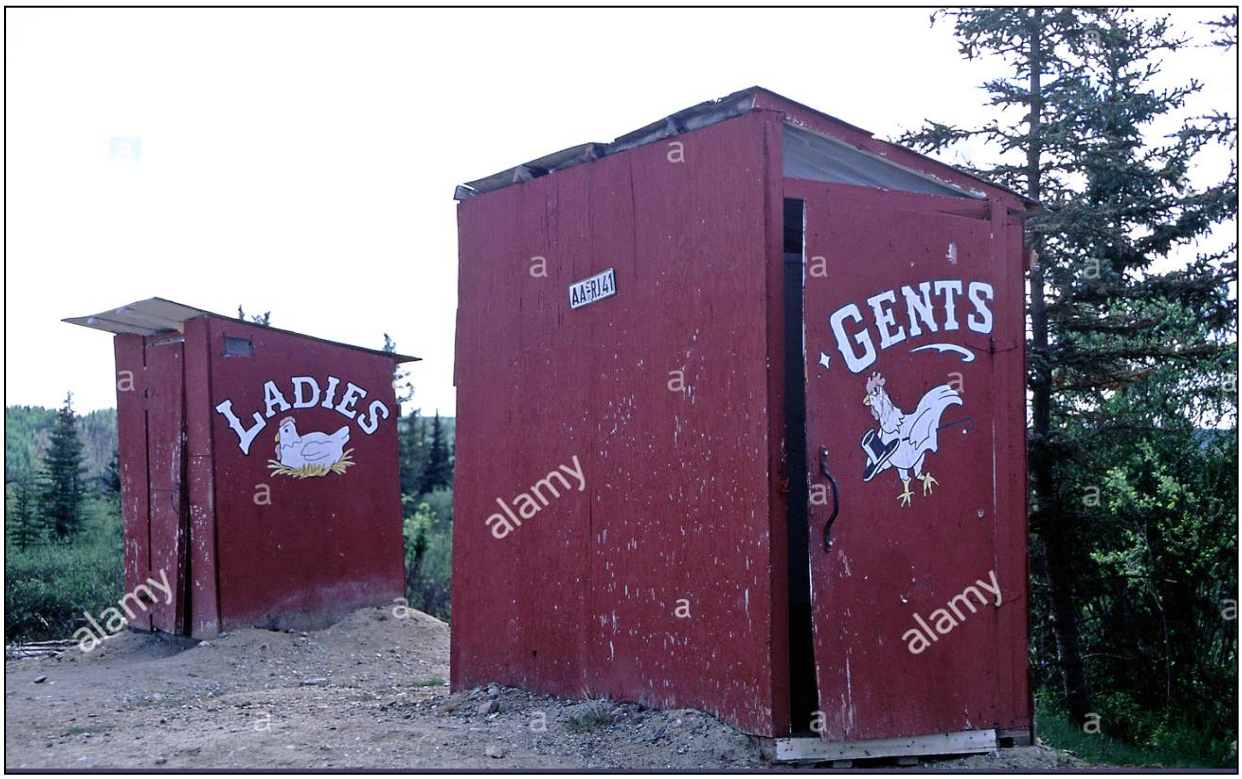



**Figure 3.1: Conventional pit latrine**

*Source: www.alamy.com,2017*

Conventional pit latrines, as shown in Figure 3.1, are a commonly used sanitation technology for on-site sanitation (Njoh 2016:175). It comprises a hole in the ground that may be lined or unlined with a reinforcing material such as concrete or bricks. This reinforcing concrete is fitted with a squatting hole. This is relatively easy and inexpensive to construct. However, several diseases such as tuberculosis are associated with this type of latrine. In terms of norms and standards for sanitation, it does not meet the minimum standards for basic sanitation (Orner, Naughton & Stenstrom 2018:3).

**Figure 3.2: Ventilated Improved Latrine**

*Source: Citizen.co.za,2018*

According to Orner *et al*. (2018:4), a VIP latrine, as shown in Figure 3.2, is a variation of the conventional pit toilet concept. Unlike the pit latrine, the VIP has an attached straight ventilation pipe that extends to the highest point of the roof of the toilet and is capped with a screen. The ventilation pipe is meant to improve airflow and reduce bad odours. In South Africa, VIPs are regarded as the basic or improved form of sanitation facility. Bester and Austin (2015:8) state that the VIP latrine comes in different designs and with different types associated with differing performance levels and user acceptability. The authors state that many VIP latrines installed across municipalities in South Africa do not function properly due to poor design quality. For instance, fly controls are inadequate, and airflow is not good (Bester & Austin 2015:8).

The VIP latrine requires regular maintenance for continual and optimal functioning. The maintenance includes termite control, stormwater diversion and fly-screen care. If these are maintained, there is no reason why VIP toilets would not be attractive and acceptable. However, Bester and Austin (2015:27) draw attention to the fact that the use of disinfectants could be detrimental in such facilities. In addition, they also draw attention to the problem of progressive loss of ventilation as the number of household users increases. While acknowledging the imperfection of any sanitation system, Bester and Austin (2015:1) claim that if attention is paid to cultural and social aspects,

users will enjoy the benefits of the VIP latrines. Figure 3.3 shows a picture of a portable toilet container, commonly known as potta-potta among informal settlement dwellers in the City of Cape Town.

**Figure 3.3: Portable toilet ("potta-potta")**

*Source: Sindane,2013*

Potta-potta is a portable toilet that allows for seating, water flushing and storage of wastewater in a tank attached to the toilet. In addition, the technology allows for the waste tank to be removed and emptied for future use (Stewart 2014:5). A company contracted to the City of Cape Town metropolitan municipality is responsible for emptying the tanks. The provision of portable toilets in Cape Town townships (i.e., Khayelitsha) has provoked political discourse on sanitation technologies since the "toilet elections" of 2011. The City of Cape Town metropolitan municipality installed the toilets as a temporary measure to provide sanitation services to informal settlements. However, more than 15 years later, residents of Khayelitsha and surrounding townships where these temporary toilets were installed still bear the brunt of foul-smelling toilets while waiting for permanent and sustainable sanitation solutions. Bond (2014: online) shares the sentiments that on-site sanitation solutions are the only justifiable options given the temporary nature of informal settlements.

According to the SAHRC (2014), temporary sanitation measures cannot be sustained and justified after 15 years. Residents of the informal settlements ran out of patience

and started demanding facilities they regard as hygienic and suitable for human use. Many of the residents of these townships demanded waterborne flush toilets, claiming flush toilets are more dignified. The City of Cape Town metropolitan municipality justified their choice on the grounds that it is extremely difficult to provide permanent sanitation solutions because of high levels of urbanisation and migration. Figure 3.4 shows a picture of chemical toilets installed in Khayelitsha informal settlements as part of temporary sanitation facilities provided by the City of Cape Town Metropolitan Municipality.

**Figure 3.4: Chemical Toilets**

*Source: Taing, 2015*

A chemical toilet is a stand-alone structure that uses a chemical to neutralise human waste. According to Tissington (2011), owing to the high cost and maintenance associated with chemical toilets, they should be used only as a temporary measure. However, their prolonged and large-scale use in South African townships tells a different story. Chemical toilets contain a chemical reservoir directly located under the toilet seat. This type of sanitation technology requires periodic maintenance and regular cleaning. Although these sanitation solutions were provided as a temporary measure for the people of Khayelitsha and other areas in the Cape Flats, residents of

these informal settlements continue to use these facilities after more than a decade. As was the case with the open toilet debacle between the ANC-led Rammolutsi and DA-led City of Cape Town metropolitan municipalities in 2011, and the residents of Klipspruit informal settlement in the ANC-led City of Joburg metropolitan municipality continue to use chemical toilets after over 20 years. These toilets are not serviced as prescribed and consequently pose a serious health risk to residents of the informal settlements. WWTWs form a crucial part of the sanitation value chain, and it is imperative that it should be dealt with in this study. It is discussed more comprehensively below.

## 3.9 THE PERFORMANCE OF WASTEWATER TREATMENT WORKS (WWTWs)

According to Ntombela, Funke, Meissner, Steyn and Masangane (2016:703), a total of 152 municipalities (WSAs) in South Africa provide wastewater treatment services through a network of 824 WWTW collector, treatment and discharge facilities. Over 70 of these WWTWs are micro- to medium-sized facilities. In total, South Africa has a collective hydraulic capacity of 6.509 ml/day and 79% of this capacity is accounted for by the operational flows of 5 128.8 ml/day (Reddy & Siqalaba 2018: online). Theoretically, these figures mean the collective surplus capacity of all municipalities is in the region of 22% for future use or demand (Ntombela *et al*., 2016:703). Of the 824-wastewater treatment works, 248 (30.1%) were assessed in 2013 to be in a critical condition and need of regulatory action (Toxopeus 2019a: online). A further 161 (19.5%) treatment works were in poor condition and warranted urgent attention. This means almost half the WWTWs in South Africa were not functioning adequately and needed some form of intervention. Only 60 (7%) received the Green Drop Accreditation Certification of the Department of Water and Sanitation (Toxopeus 2019a: online).

The appalling state and performance of wastewater treatment plants in South Africa have been a subject of much debate and growing concern among water and sanitation stakeholders and civil society in general (Lawless 2017: online). The poor performance of municipal WWTWs is a clear indication of a lack of capacity, among other factors (Reddy & Siqalaba 2018: online). Baseline information generated from studies on the performance of WWTWs shows 31% are on the brink of collapse. In response to the

challenges of poor performance of WWTWs indicated above, the Department of Water and Sanitation introduced the Green Drop programme in 2008 as an incentive mechanism to improve the management of wastewater treatment across South Africa (Ntombela *et al*., 2016:704).

Notwithstanding the incentives introduced by the Department of Water and Sanitation through the Green Drop programme, the condition of many WWTWs continues to deteriorate. This is witnessed in the results of the Green Drop programme indicating that 50.4% of WWTWs scored more than 50% in 2013, while the other 50% scored below 50%. In addition, 30.1% of all WWTWs (248 WWTWs) in South Africa were issued Purple Drops (indicating a score of less than 30%) during 2012/13, which means they are “in crisis” and regulatory actions need to be taken to address their poor performance (Department of Water Affairs 2013). Moreover, 121 WWTWs are in critical risk positions and need to be put under surveillance as ‘hot spots’ to ensure risk mitigation and compliance measures are “fast-tracked and up scaled” (Department of Water Affairs 2013).

To further illustrate this point, the Department of Water and Sanitation strategic overview document (2015) indicates that discharge from wastewater treatment plants is polluting the environment, and stringent measures need to be taken (i.e., increasing standards) to remedy the situation. What is puzzling for Ntombela *et al.* (2016:707) is that the admission by the Department of Water and Sanitation that the problems are worsening happen amid revelations by the same department that significant progress has been made since the inception of the Green Drop programme. Prinsloo (2015: online) shares the sentiments echoed by Ntombela *et al.* (2016:707) by cautioning that since April 2015, there have been 19 reported cases of WWTWs overflowing into water bodies. This should be a cause for concern despite improvements in the Green Drop programme’s results.

In addition to the aforementioned challenges, the issue of a shortage of skilled personnel has dominated recent debates on the management of WWTWs in South Africa. According to Amod and Wall (2017: online), in 2017 only 294 professional engineers were employed in municipalities. This number represents a significant drop from 455 in 2007. In addition, this number represents only half of the required number

of professional engineers to adequately deliver sanitation services. This includes planning, operation and maintenance services. Amod and Wall (2017: online) cited poor education and inefficient use of skilled and experienced engineers due to a shortage of these technologists.

The report further shows that the drop in the average age of qualified civil engineering staff from 46 in 2007 to 38 in 2017 is an indication that the current crop of engineers, technicians and technologists is relatively inexperienced (Amod & Wall 2017: online). According to Lawless (2017: online), it is also concerning that half of the qualified engineers are largely based in major metropolitan areas, leaving small town and rural municipalities with very few of these qualified staff. Ultimately, South Africa has relatively stringent requirements for the number and qualification of staff operating wastewater treatment works, which many municipalities fail to satisfy (Lawless 2017: online).

Masindi and Duncker (2016) claim there is a tendency among municipalities facing financial difficulties to reduce budgets for repairs and maintenance. The authors state this action is less likely to raise eyebrows politically. However, in the long run, it has a negative effect on the life span of infrastructure that is not maintained and affect the reliability of services. In addition, municipalities would move to crisis rather than scheduled and regular maintenance. This also means that cost will substantially increase and could mean total replacement (Masindi & Duncker 2016).

The next section explores the issue of capacity-building to improve service delivery. However, emphasis is placed on capacity-building within sanitation units or municipal departments.

## 3.10 CAPACITY-BUILDING IN MUNICIPALITIES IN SOUTH AFRICA

In response to various challenges facing local government, the Department of Cooperative Governance and Traditional Affairs (DCoGTA), in collaboration with other stakeholders in local government, introduced several programmes with a view to developing capacity defined as:

> *the potential or competency, or lack thereof, found within organisations. It includes human resource (collective individual capacities), strategic leadership, organisational purpose, orientation, institutional memory, internal confidence, partnerships, inter-governmental relations, powers and functions, resources and support systems, infrastructure and financial abilities, structures, processes, culture and by-laws (DCoGTA 2009).*

These initiatives were intended to serve as interventions and mechanisms to improve municipalities' performance, stabilise governance, and develop in-house skills. One such mechanism was the establishment of the Municipal Infrastructure Support Agency (MISA). Its mandate was to provide technical support and assist municipalities in building their own in-house capacity for improved service delivery. MISA's primary focus was to assist struggling local and rural municipalities to develop and maintain infrastructure. Support was mainly in the provision of basic services such as water and sanitation services (Parliamentary Monitoring Group 2015: online).

The Constitution makes provision for provincial interventions when municipalities cannot perform their functions. However, as Peters and Van Nieuwenhuyzen (2012:294) note, such interventions are yet to produce the required results, partly because intervention teams are weak. For example, concerns were raised about the MISA's capacity as an assisting agency and the skills within MISA itself. Concerns about its capacity were raised because of its alleged involvement in tender irregularities. Moreover, the capacity of the Local Government Sector Training Authority (LGSETA), as an assisting agency, also comes into question. LGSETA was tasked with promoting skills development in the local government sector. It was beset with financial problems, weak leadership, and could therefore not function optimally to deliver on its mandate (Parliamentary Monitoring Group 2015: online).

In other cases, lack of cooperation on the part of the municipal officials is a contributing factor. Peters and Van Nieuwenhuyzen (2012:294) state significant amounts of money are budgeted to improve municipal capacity, yet real translation into improved services and improved performance is yet to be seen. For example, Project Consolidate and Siyenza Manje were among the initiatives undertaken by the government to improve municipal capacity, although its success was limited. The extent of municipalities'

underspending raised serious concerns among various stakeholders, including the Financial and Fiscal Commission, on whether the South African government gets value for money in trying to improve municipalities' capacity. Municipalities have not prioritised capacity-building as envisaged by the national government (Peters & Van Nieuwenhuyzen 2012:295).

The initial focus of capacity-building efforts was on individuals and not the institution. For instance, training efforts and resources were targeted at training individuals who were not qualified or experienced in the positions they occupied. New appointees had to come with a basic level of competence, especially in the recruitment of senior managers. The appointment of middle and lower-level employees needed to be reconsidered (Parliamentary Monitoring Group 2015: online). The Department of Cooperative Governance and Traditional Affairs reviewed the use of external consultants to fill the skills gap and argued that this is not sustainable in the long-term. Besides Project Consolidate and Siyenza Manje, the national government launched a programme called Engineers Ensuring Rollout by Growing Young Skills (ENERGYS). This programme was designed to transfer skills and provide workplace experience to recently graduated engineers within technical departments in municipalities. According to Lawless (2017: online), the programme's progress was stalled by several factors, including little recognition of engineers' professional judgement, inexperienced management in municipalities, poor data records, and lack of institutional knowledge. Moreover, the side-lining of engineers in the hiring of technical staff and control of infrastructure budgets further exacerbated the problem (Lawless 2017: online).

Recently, the Department of Cooperative Governance and Traditional Affairs and the MISA undertook assessments to drive capacity for improved municipal infrastructure delivery. The objective was to determine government spending towards capacity-building since the current local government system's inception in 2000. It also intended to establish what can be done to understand what constitutes a lack of capacity and assess whether the national and provincial spheres of government are doing enough to support local government, as envisaged by the Constitution (Amod & Wall 2017: online).

The findings from the assessment point to several governance-related challenges. For instance, poor planning, implementation, lack of monitoring, evaluation, and poor conceptualisation of what constitutes capacity (Amod & Wall 2017: online). This is underscored by Kamara, Leonard and Haines (2017:42), who argue that poor monitoring and evaluation are key challenges for municipal training programmes. In addition, the lack of reliable data in municipalities about the number of training initiatives and how municipalities benefitted from such training has been a thorny issue in many respects (Kamara, Leonard & Haines 2017:42).

Similarly, Wall and Amod (2017: online) highlighted the chronic shortage of technical capacity within municipalities' water and sanitation directorates, where infrastructure is operated and maintained. The lack of accountability in respect to infrastructure, and insufficient data to schedule sanitation maintenance, has been cited as a common occurrence in local government. Mafunisa *et al*. (2017: online) contend that poor municipal performance is not only attributed to capacity constraints, but also tensions in intergovernmental roles and responsibilities, the political-administrative interface, leadership instability, and poor organisational design.

Peters and Van Nieuwenhuyzen (2012) propose a three-pronged comprehensive approach in dealing with poor performance and municipal capacity constraints, namely individual, organisational and institutional. Instead of focusing disproportionately on training, support programmes should include technical support for new systems, business process redesign and change. Based on fieldwork conducted by the Financial and Fiscal Commission (FFC), the following functions require particular attention: revenue management, supply chain management, sewerage and water treatment plant operators, road maintenance supervisors, health inspectors, and planning and project managers. In addition, the success of capacity-building initiatives lies in providing clarity on the roles and responsibilities of various stakeholders in the sanitation value chain. The lack of clarity has an enormous impact on the poor outcomes of government capacity initiatives and duplication of efforts (Financial and Fiscal Commission 2014). To this end, it is therefore necessary to ensure each municipality develops a capacity-building agreement that stipulates the national and provincial government's role in providing capacity support. It is important that this

agreement clearly defines measurable objectives for programmes intended to improve capacity (Financial and Fiscal Commission 2014).

This is in line with the municipal capacity-building strategy of the KZN provincial Department of Cooperative Governance and Traditional Affairs, which has been hailed as exemplary. This strategy recognises that training programmes alone are insufficient and do not equate to capacity-building. It is, therefore, important to consider capacity-building in its entirety. This means the appointment of skilled personnel in the right position, strengthened institutional capability by ensuring adequate resources such as human resources, equipment, policies, and organisational structure aligned to IDPs, as well as powers and functions of municipalities (KZNCogta 2018). In addition, it is important to recognise that the issue of funding is central to capacity-building efforts. Therefore, it is imperative that conditions attached to capacity grants must commit municipalities to specific verifiable capacity improvements. Grants' design should consider the quality of capacity-building interventions instead of focusing on the numbers. An evaluation dimension should also be added to the requirements of capacity grants. The next section focuses on the institutional arrangements that are central to the coordinated and effective delivery of services.

## 3.11 THE INSTITUTIONAL ARRANGEMENTS FOR SANITATION SERVICES IN SOUTH AFRICA

This section deals with institutional arrangements for different stakeholders' roles and responsibilities in the sanitation value chain. It spells out the powers and functions of different institutions in the water services.

### 3.11.1 The role of Water Services Authorities and Water Services Providers

Chapter three of *Water Services Act 108 of 1997* sets out the Water Services Authority (WSA) and defines a Water Services Authority as any municipality, including district and rural municipalities responsible for ensuring access to water services. Section 11 (1) of the *Water Services Act 108 of 1997* outlines legislative responsibilities of WSAs as having among its duties a "duty to all consumers or potential consumers to ensure efficient, affordable, economical and sustainable access of water services in its area

of jurisdiction*".* The Strategic Framework for Water Services (2003) and the *Local Government: Municipal Structures Act 117 of 1998* provides the institutional arrangement with regard to water services at the local sphere of government in more detail (Department of Water and Sanitation 2016:23). WSAs also have the responsibility of appointing, contracting and regulating water service provision as provided for in sections 77 and 78 of the *Water Services Act 108 of 1997*.

In addition, the *Water Services Act 108 of 1997* provides for the appointment of water services providers, defined in section 1 of the Act as any entity that has a contract with a WSA to assume responsibility for providing water services to one or more users within a particular geographic area. The primary duty of a water services provider is to provide water services in accordance with the provision of the Constitution, *the Water Services Act 108 of 1997,* by-laws of the WSA, and conditions set out in the contract between the WSA and the water service provider. Section 77(1) of the *Local Government: Municipal Systems Act of 2000* states that a WSA may either provide the water service itself (this arrangement is referred to as internal mechanism) or appoint a water service provider to provide such service (this arrangement is referred to as external mechanism). If the WSA wishes to provide services internally, it must distinguish itself between its authority and provider function and account separately for the two functions. In practice, this means the municipal manager acting on behalf of the municipality enters into a contract with the head of the water service to provide services in terms of a performance contract with the municipality (Department of Water and Sanitation 2016:24).

However, if the WSA wishes to appoint a water service provider – defined in chapter one of the Water *Services Act 108 of 1997* as a person who provides water services to consumers or another water service institution but does not include a water service intermediary – it must take section 19 of Water *Services Act 108 of 1997* into account. It stipulates that the WSA may enter into a written contract with a water service provider or form a joint venture with another water service institution or contract with a private sector water services provider. However, it is important to indicate that the WSA can only do so once it has considered all known public sector water service providers willing and able to perform the water services function (Department of Water and Sanitation 2016:28).

In the context of the regulatory framework set out above, WSAs are the primary regulators of water services responsible for effective, efficient and sustainable service. They offer parameters within which water services may be provided. However, it should be noted that their regulation is subject to national and provincial legislation. Steyn and Van Heerden (2011:169) concur that WSAs have the ultimate responsibility to ensure supply and access to water and sanitation services in their area of jurisdiction. This responsibility extends to how effluent is managed, transported and discharged at WWTWs. The WSA has the responsibility to ensure the collection, treatment and discharge of wastewater, and is required by *Water Services Act 108 of 1997* and *National Water Act 36 of 1998* to comply with national standards relating to the functioning of WWTW. Furthermore, it is the duty of water service authorities to ensure all personnel working in the plants are competent and qualified and have all required equipment to discharge their function as required by legislation (Kgopo 2013:30).

As part of the condition for appointing water service providers and compliance with the *Local Government: Municipal Systems Act of 2000*, the provider must publish a consumer charter consistent with municipal by-laws and other regulations and approved by the WSA (Tissington 2011). This charter must provide details about the duties and responsibilities of the water services provider, including conditions of supplying water services and payment details. It should be emphasised that if a water services provider is not the same as a WSA, approval must be sought from the WSA in order to provide water services; it may be regional or local depending on whether it provides water to more than one WSA. A WSA may act as a water services provider outside of its area of jurisdiction if contracted to do so by the WSA for the area in question (Tissington 2011). It should be noted that the main difference between the WSA and water services provider (WSP) is the authority, responsibility and obligation conferred to WSAs to provide water services. This authority lies with the WSA, not the WSP as provided by section 152(1)(b) of the Constitution and section 11(1) of *the Water Service Act 108 of 1997.* Therefore, the WSA cannot delegate its authority to the WSP, but it can assign certain functions to WSPs.

According to Muller (2002), a core principle of the *Water Services Act 108 of 1997* was the distinction, at the local sphere, between a WSA and the WSP. The responsibility

for ensuring access to basic water and sanitation services was assigned to those municipalities designated as WSAs. Actual provision was the responsibility of designated WSPs, which could be the technical section of the same municipality, another municipality, or an external contracted agency. The key distinction was between the authority function – responsible for setting policy, ensuring universal access to at least a basic service and regulating service provision to ensure effectiveness, efficiency and sustainability – and the provider function, which was responsible for executing the policies and strategies of the authority and delivering the actual service. However, subsequent developments show that this elegant, conceptual separation between the local regulator and provider was seldom achieved, primarily because the local government sphere was preoccupied with far-reaching transformation processes of its own, with a different agenda.

### 3.11.2 The role of water boards

Water service boards are established in terms of section 28(1)(a) of *the Water Services Act 108 of 1997* and play a key role in the water sector. They are characterised as a schedule 3B national government business enterprise in terms of the *Public Finance Management Act of 1999*. Their functions include operating dams, bulk water supply, infrastructure, and some of the water boards operate wastewater treatment plants. Through their involvement in the operation of dams, they are pivotal in managing water resources in South Africa (Water Research Commission 2010). Most water boards are empowered to raise the funds required to operate and maintain their systems through tariffs charged for water sold to municipal and industrial clients. Income can also be used to service debt raised to build new infrastructure for future demand.

There are 12 water boards in South Africa; they differ in size and capacity. They supply a total bulk potable water volume of approximately 2.46 billion $m^3$/annum (some 57% of the total domestic supply), have a total fixed asset value of R19.6 billion, and a total operating cost of R5.6 billion per annum. Water boards supply potable water to 28 million people (just over half the country's population); however, they have a supply footprint that could reach 39 million people, representing approximately 11790 communities, including several large industries. It should be noted that the *Water*

*Service Act* added a new responsibility to WSPs, including water boards. The Act stipulates that service providers must be formally appointed by the recipient municipality to provide such services when they are required. According to Wilkinson (2017), the Department of Water and Sanitation has undertaken a realignment process through which the existing 12 water boards will be reorganised into eight regional water utilities, one in each province. Amatole Water in the Eastern Cape Province has taken the lead as a project implementation agent in this process of realignment and institutional reform (Wilkinson 2017). Water boards distribute raw and potable water across vast distances to multiple users (via regional water supply schemes). This role is mandated and fully controlled by the minister of Water and Sanitation.

### 3.11.3 The role of Department of Water and Sanitation in the provision of water services

According to the White Paper on Basic Household Sanitation 2001, the Department of Water and Sanitation is the custodian of water resources and the *National Water Act 36 of 1998* and *Water Service Act 108 of 1997*. The Department is primarily responsible for the formulation, monitoring and implementation of policy on water and sanitation. According to section 155(7) of the Constitution and section 62(1) of *Water Service Act 108 of 1997,* the Department of Water and Sanitation is mandated to monitor the performance of all WSAs. Among other roles, the Department is responsible for providing macro-planning, regional bulk services and monitoring.

According to the National Sanitation Policy (2016:20), the Department of Water and Sanitation plays a central role in the following key areas:

- Regulating water services, which comprises two main functions, namely monitoring sector performance, including conformity to national norms, standards, and regulatory interventions to improve performance or enforce compliance.
- Policy development and reviewing national water and sanitation policies.
- Support for water services and support for institutions undertaking this function as provided for in the Constitution and principles of cooperative governance.

- Information management. The department is responsible for creating and managing a database used to monitor the regulation, planning and compliance of all WSAs (Department of Water and Sanitation 2016:20).

It is noted in the Sanitation Policy (2016:20) that despite a strong regulatory framework in the water services sector, the Department of Water and Sanitation's regulatory responsibilities are still unclear, and there is a shift of sanitation responsibilities between departments. For instance, the role of the Department of Education for sanitation in schools and the role of the Department of Health in providing sanitation in clinics and other public institutions is problematic. It is the researcher's view that there is a disconnect in terms of the regulatory role of various departments in the sanitation value chain. This situation has created confusion regarding roles and responsibilities between various government departments, including local government (Department of Water and Sanitation 2016:70).

**Table 3.2: Summary of stakeholders in the water and sanitation sector**

| Function | Assignment (legislation) | Functionary |
|---|---|---|
| Regulation | Water Services Act, 108 1997 | Department of Water and Sanitation |
| Oversight | Water Services Act, 108 of 1997 | Department of Water and Sanitation |
| Bulk infrastructure | Water Services Act, 108 of 1997 | Department of Water and Sanitation |
| Sanitation Services | Water Services Act, 108 of 1997 | Water Services Authority (municipality) |
| Monitoring | Public Finance Management Act,1 of 1999 & Municipal Finance Management Act, 56 of 2003 | National Treasury |
| Regulation | Municipal Systems Act 32 of 2000 & Municipal Structures Act, 117 of 1998 | Department of Cooperative Governance & Traditional Affairs |

Table 3.2 depicts a summary of the roles of various stakeholders in the water and sanitation sector. It seeks to present clarity on the roles of the aforementioned stakeholders, which has been a subject of discussion owing to the duplication of functions and processes in the water services sector.

### 3.11.4 The role of the Department of Cooperative Governance and Traditional Affairs in the provision of water services

The CoGTA, as the custodian of the *Local Government: Municipal Systems Act 32 of 2000* and *Local Government: Municipal Structures Act 117* of 1998, is responsible for regulating local government matters, while the Department of Water and Sanitation is responsible for ensuring municipalities' compliance and performance in discharging its constitutional responsibilities. Matters relating to provincial and local government systems and structures fall within this department's ambit. CoGTA has the following responsibilities relating to sanitation services:

- Regulating local government matters through *the Local Government: Municipal Systems Act 32 of 2000* and the *Local Government: Municipal Structures Act of 1998.*
- Regulating municipal affairs and interventions together with the provincial government in the event municipalities are not performing or complying with their sanitation mandates.
- Providing a support function to local government for their sanitation needs and coordinating with Department of Water and Sanitation and provincial government.

Smith (2009: online) claims the overlapping functions between CoGTA and Department of Water and Sanitation has resulted in a fragmented approach to the provision of water services. The 2016 *National Sanitation Policy* (Department of Water and Sanitation 2016:21) highlighted this problem and pointed out that municipalities perceive their reporting responsibility as only being to CoGTA and not the Department of Water and Sanitation. This situation has hindered local governments' regulation and effective monitoring of the Department of Water and Sanitation.

### 3.11.5 The Role of National Treasury in Water Services

The National Treasury plays a critical role in supporting the optimal allocation and use of financial resources allocated to municipalities. In addition, the National Treasury is involved in the oversight and monitoring of grant allocations to municipalities in South Africa (National Treasury 2018).

### 3.11.6 The role of Water Catchment Authorities in the management of water resources

The Catchment Management Agency (CMA) was established in terms of the *National Water Act 36 of 1998*. The purpose of establishing CMA was to assign water resource management to the local government level. The CMA is an organ of state assigned powers by the *National Water Act*. The CMA is established for a particular water resource management area after consultation with local communities. In the event the CMA is not established in a specific water management area, the minister responsible for water and sanitation serves as CMA (Meissner, Stuart-hill & Nakhooda 2017: online). The CMA's powers are derived from the *National Water Act of 1998*, and they relate primarily to a catch management strategy. The CMA has the power to regulate water resources and issue water licences (Water Research Commission 2009:58).

## 3.12 CONCLUSION

This chapter highlighted the poor state of water and sanitation services in South African municipalities. Among the issues explored in this chapter is municipalities' inability to spend funding from the national government meant to assist municipalities in delivering basic services such as water and sanitation. Poor governance, lack of capacity and lack of accountability appear to be at the centre of the challenges facing municipalities. For instance, poor planning, a lack of prioritising basic services, and diversion of funds for service delivery are among the challenges. The underspending by municipalities is attributed to many factors, such as poor planning, human resource capacity and poor coordination between local government and provincial and national departments responsible for water and sanitation services. Efforts by CoGTA to remedy this situation have fallen short in many respects. For instance, capacity-building

interventions like MISA, designed to provide technical assistance to municipalities, are under scrutiny for failing to bring about substantial changes.

Other initiatives to train young engineers to take over from the current crop has not materialised as envisaged by CoGTA and the Department of Water and Sanitation. Despite incentives provided by the national government, the state of wastewater treatment continues to deteriorate, with funding prioritised for new infrastructure at the expense of upgrading existing infrastructure. Infrastructure spending appears only to receive attention when there is an emergency. The high turnover of engineering professionals in technical directorates has not received much attention in municipalities. Clear guidance regarding the roles of national sector departments responsible for functions and services delivered at local government level is also absent.

Similar guidance is needed for coordinating departments – such as CoGTA or the National Treasury – on the role they are expected to play in overseeing the grant system. The ambiguity of these roles has led to unnecessary duplication of processes, and even duplication of grants in instances such as the Municipal Water Infrastructure Grant, and distorted accountability. Clarity over a sector department's role in overseeing and supporting grant implementation, and the role a coordinating department is expected to play in managing, allocating and evaluating grants and the grant system, could reduce intergovernmental friction and improve the coordination of MIGs. The next chapter focuses on the legislative and policy frameworks that regulate sanitation services in South Africa.

# CHAPTER FOUR
# LEGISLATIVE AND POLICY FRAMEWORKS FOR SANITATION SERVICES IN SOUTH AFRICA

## 4.1 INTRODUCTION

The preceding chapter reviewed literature on the provision of sanitation services in the local government sphere. This chapter reviews the already discussed legislative and policy frameworks through which water and sanitation services are provided and regulated. The adoption of the Constitution of the Republic of South Africa, 1996, paved the way for enacting laws that give effect to the right of access to water and sanitation services. Principal among legislative statutes meant to regulate the provision of water services is the *Water Services Act, 108 of 1997* and the *National Water Act, 36 of 1998.* Other legal statutes that impact the provision of sanitation services include the *Local Government: Municipal Systems Act, 32 of 2000*; the *Local Government: Municipal Structures Act, 117 of 1998* and the *National Environmental Management Act, 107 of 1998, DoRA* and *Local Government: Municipal Finance Management Act, 56 of 2003*. Complementing the legislative schema are several policies on water and sanitation services. These include the White Paper on Water Supply and Sanitation (1994), White Paper on Basic Household Sanitation (2001), Strategic Framework for Water Services (2003) and Sanitation Policy (2016). All these legislative provisions and policies are further expounded on in this chapter. As a point of departure, this chapter discusses legislative provisions relating to sanitation services as per the Constitution.

## 4.2 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, 1996

There is no explicit right to sanitation in the Constitution. However, it could be inferred from the right to housing in section 26(1), which states that “everyone has the right to have access to adequate housing”. The right to sanitation can also be derived from the right to an environment that is not harmful to human health and well-being in section 24(a) of the Constitution (Tissington 2011). Section 27(2) gives effect to these rights by stipulating that the state must take reasonable measures within its available

resources to ensure the realisation of the right of access to sufficient water: implicitly including the right to sanitation. According to Dugard (2016:5), section 27(1)(b) of the Constitution guarantees the right of access to sufficient water, and this is linked to waterborne sanitation. In her doctoral thesis titled "*The concept "beneficial" use in South African water law reform",* Van der Walt (2011:76) refers to the landmark *Grootboom* case, in which the Constitutional Court interpreted the right to housing to include sanitation. The court argued that the right of 'access to adequate housing' recognises that housing entails more than bricks and mortar. Adequate housing means land must be made available, appropriate services such as water and the removal of sewage must be accessible, and all these must be financed, including the building of the house itself. These conditions must be fulfilled before a person can be regarded as having adequate housing (Van der Walt 2011:76).

Section 152 of the Constitution reflects the role that local government should play to fulfil its constitutional mandate. This includes, *inter alia*, the provision of sustainable services like sanitation, promoting a safe and healthy environment, and encouraging community participation in local government matters through vehicles such as integrated development planning.

Section 156(1) stipulates the legislative powers of municipal councils, since a municipality has executive authority in respect of and has the right to administer local government matters listed in part B of schedule 4, and part B of schedule 5. One such matter is water and sanitation services, defined as domestic wastewater and sewage disposal. The specific delegation of sanitation service functions to local government provided by the Constitution (in schedule 4) is significant because it gives municipalities executive authority to make and administer by-laws. It also limits the authority of other spheres of government to impede a municipality's ability to perform its functions. However, such by-laws should align with national legislation and the Constitution. In addition, the national government and provincial government may set standards that municipalities have to comply with when delivering water services (Taing 2015:66). It is worth noting that municipal sanitation services were limited to domestic and sewage disposal systems. However, environmental, public health, housing and urban development were also specified as concurrent responsibilities between the national and provincial spheres of government.

Section 155(6)(a) of the Constitution provides that each provincial government must monitor and support local governments in their respective provinces through legislative and other measures. Section 155(7) states that the national government – subject to section 44 and the provincial governments – have the legislative and executive authority to see to the effective performance of municipalities in their functions. These functions include water and sanitation services, limited to potable water supply systems and domestic and sewage disposal systems.

Furthermore, local governments' developmental duties are outlined in section 153(a) of the Constitution. Thereby local government must manage and structure its administration, budgeting and planning processes to give effect or priority to the basic needs of the community(s) and promote social and economic development. These basic needs include the provision of water and sanitation services, as listed in part B of schedule 4 in the Constitution. According to Belinskij and Kotze (2016:34), basic services are limited by the availability of resources as set out in section 27(2) of the Constitution. However, the government should have clear plans, timeframes, and budgets to provide these services and increase access.

Although the Constitution does not offer details about the services municipalities should provide, it does mention, for instance, that municipalities have a duty to deliver on socio-economic rights. These include access to water and sanitation services, the provision of services in a sustainable manner, the promotion of social and economic development, and encouraging community participation in local governance (Dugard, Langford & Anderson 2017).

Section 33 of the Constitution provides for just administrative action that is lawful, reasonable and procedurally fair. This provision strengthens the right of access to sanitation services because sanitation is deemed a public service that falls within the definition of administrative actions (Dugard 2016:5). Therefore, the provision of sanitation services must comply with administrative justice prescripts.

Outside of the Constitution, the *National Water Act 108 of 1998* and *Water Services Act 36 of 1997* are the primary statutes that regulate water and sanitation services in South Africa. These statutory provisions are explored in detail in the section below.

### 4.2.1 Water Services Act 108 of 1997

The *Water Services Act 108 of 1997* is the primary legal instrument regulating the provision of water services to households in South Africa. “Water services” is defined in the Act to mean water supply and sanitation services. One of the primary objects of the *Water Services Act,* as set out in section 2(a), is to provide for the “right of access to basic water supply and basic sanitation necessary to secure sufficient water and an environment not harmful to human health or well-being”. Section 1 of the Act describes sanitations services as the collection, removal, disposal or purification of human excreta, domestic wastewater, sewage and effluent resulting from the use of water for commercial purposes (water supplied to premises to be used for the purpose of conducting a trade or business).

To give effect to the realisation of these objectives, the *Water Services Act*, section 3(2), provides that water service authorities must take reasonable steps within their water plans to ensure the right to access basic water supply and basic sanitation are realised. It is worth noting that the *Water Services Act* does not refer to sufficient water, as set out in section 27(2) of the Constitution. Perhaps the intention was to align it with the section 27(2) requirement of progressive realisation. In addition, section 1 of the *Water Services Act* limits the definition of basic water supply to water for households, and water service authorities’ duty is also confined to the provisions set out in section 1. It stipulates that WSA must take reasonable measures to realise these rights.

Section 146(2)(b) of the Constitution provides scope for the national government to develop norms, standards and policies that bring uniformity across the country for functional areas that fall under schedule 4. Moreover, the *Water Services Act* stipulates that the minister responsible for water and sanitation should prescribe regulations that govern the provision of water and sanitation services. These regulations are statutory requirements in terms of the law and serve as guidelines that dictate how provisions of the Act are applied. It is important to note that these regulations apply to all water service institutions. The regulations’ objective is to protect consumers, municipalities, and water service institutions and ensure the application of sound management principles.

In 2001, regulations relating to compulsory national standards and measures to conserve water were published. Regulation 2 defines “basic sanitation” as follows:

The minimum standard for basic sanitation services is:

(a) the provision of appropriate education; and

(b) a toilet that is safe, reliable, environmentally sound, easy to keep clean, provides privacy and protection against the weather, well ventilated, keeps smells to a minimum, and prevents the entry and exit of flies and other disease-carrying pests.

It should be noted that the definition of “basic sanitation” in regulations 2 above altered the content of the basic sanitation service defined in the *Water Services Act* to include the word “toilet”. Notably, important concepts such as hygienic, adequate collection, removal, disposal or purification of human excreta, domestic wastewater and sewage from households, including informal households, were excluded from the definition. The removal of important concepts such as disposal of human excreta and wastewater places the environment at risk because of untreated sewage’s impact on the health of communities (Republic of South Africa 1997d). As indicated in section 1.8.2.1, sanitation should not only be defined as the removal of human excreta and provision of a facility, but it should encompass sustainable programmes for the promotion of hygiene education and training at the community level (see sanitation definition 1). Community-based organisations could play a meaningful role in such programmes.

### 4.2.2 National Water Act 36 of 1998

Following the repeal of the *Water Act 54 of 1956*, the *National Water Act 108 of 1998* (hereafter referred to as *NWA*) was introduced to reform water laws and stipulate the state’s role in terms of managing water resources for the benefit of all in South Africa. The NWA provides basic guidelines for wastewater disposal in relation to sanitation services. The Act provides that WSAs take reasonable measures to prevent objectionable substances from entering a watercourse. Section 21(f) of the *NWA* states how wastewater treatment plants should operate in terms of effluent discharged into the watercourse.

Water use is managed through authorisations and licensing (Republic of South Africa 1998b). In other words, all water users, including water service authorities, must be authorised to use water. According to section 21 of the *NWA,* water use authorisation in South Africa is classified as follows:

- Schedule one use – is mainly for household water use, and no licence is required.
- General authorisation – in this category, larger volumes of water may be generally authorised for a specific type of water use. The user needs to register but does not need a licence.
- Existing lawful use – this allows for the continuous and lawful use of water before the *NWA* came into effect to continue until such time the use can be converted into a licence using compulsory licensing. This mechanism was created in the *NWA* to allow the Department of Water and Sanitation to review all water use authorisations.
- Licensed water use – these are licenses issued under the NWA and require approval by the minister responsible for water and sanitation. Water service authorities' water use to discharge effluent falls under this category (Republic of South Africa 1998b).

In South Africa, the *NWA* system for the integrated use of licenses includes the licensing of wastewater discharge into the watercourse. Wastewater discharge is permissible in cases where they are made into a channel or conduit under the control of someone who will ensure appropriate treatments, as set out in schedule 1 of the Act. For the middle tier, the general authorisations make provisions for certain discharges of on-site sewerage (i.e., septic tanks, pit latrines, VIP latrines and soakaways) and the storage and reuse of wastewater for irrigations with volumetric limits as long as the effluent meets certain standards as provided in the general authorisations 665 of 2013.

However, if effluent contamination is above a certain threshold, and if accepting it poses a risk to the treatment process, the WSA may only accept once harmful substances have been reduced to the stipulated standards. All registered users, particularly industries, must comply with the following conditions:

- Pre-treating effluent in such a way it complies with conditions stipulated in the permit
- Effluent discharges and discharge treatment with harmful contaminates must be done separately
- Effluent should not be diluted for the sake of compliance
- Harmful substances must be collected and removed by appropriate waste disposal contractors (Stephenson & Barta 2005:6).

Large wastewater treatment plants will require a full license, incorporating effluent standards. Thus, all the jurisdictions take a tiered and proportionate approach (Henry 2015:91). The wastewater treatment plants are registered with the Department of Water and Sanitation, and compliance is assessed and monitored under the Green Drop schemes, parallel to the blue drop for drinking water, giving scores across a set of parameters, including effluent quality, management and operational processes (Henry 2015:91).

The *NWA* should be seen against the legislative framework of the *Water Services Act 108 of 1997,* and the connection between the National Water Strategy and *Water Services Act* is expressed as a fundamental principle in the 2004 National Water Resource Strategy (Department of Water Affairs and Forestry 2004). While the NWA deals specifically with conservation and water resources management, the *Water Services Act* provides a regulatory framework within which water supply and sanitation services are provided by the local sphere of government.

### 4.2.3 Local Government: Municipal Systems Act 32 of 2000

*Local Government: Municipal Systems Act, 32 of 2000* regulates the provision of basic municipal services, including water and sanitation services. The provision of basic municipal services, as set out in section 73(1)(c) of the *Municipal Systems Act*, gives effect to local government matters listed in Part B of schedule 4 of the Constitution (Republic of South Africa 2000:43). The *Act* focuses on municipal services defined as “a municipal service that is necessary to ensure an acceptable and reasonable quality of life and, if not provided, would endanger public health or safety or the environment”.

The definition of basic municipal services set out in the *Municipal Systems Act 32 of 2000* makes reference to section 27(1), which provides for the right of access to sufficient water, and the right to a healthy environment in section 24 of the Constitution. To give effect to the provisions of section 152 of the Constitution, the *Municipal Systems Act 32 of 2000* stipulates that a municipality must prioritise the basic needs of the local community, promote the development of the local community, and ensure that members of the local community have access to at least the basic level of municipal services.

According to Dugard *et al*. (2017), the *Municipal Systems Act* emphasises equitable access to basic services in municipalities. For instance, section 4(2)(f) mentions that the municipal council must "give members of the local community equitable access to the municipal services to which they are entitled". However, section 4(2)(d) states that although the municipality has a duty to provide equitable access to services, they must consider their financial and administrative capacity (Belinskij & Kotze 2016). This means the availability of resources will determine the level of service provided by the municipality.

Over and above its regulatory purpose, the Act also encapsulates developmental objectives of providing machinery and procedures to enable municipalities to uplift their communities socially and economically. They thereby guarantee affordable universal access to basic services (Tissington 2013). In addition, the Act was promulgated to specify the way in which municipal powers and functions are exercised and performed. Establishing a framework that will ensure the undertaking of important municipal planning, performance management, resource mobilisation and organisational change is set out. According to Smith (2009), the Act seeks to empower the poor and ensure that municipalities establish pro-poor service tariffs and credit control policies.

Chapter 4 of the *Municipal Systems Act* focuses on community participation, outlining the mechanisms, processes and procedures to be followed by the municipality in order to "encourage, and create conditions for the local community to participate in the affairs of the municipality". Section 16(1)(a) states that this participation should occur in the preparation, implementation and review of the IDP, the preparation of the municipal budget, and "strategic decisions relating to the provision of municipal services".

Furthermore, the *Municipal Systems Act* presents mechanisms to provide municipal services internally or externally. The criteria and processes for deciding on mechanisms are stipulated in section 78 of the Act. In addition, section 78 states that each WSA (defined by the *Water Services Act* as any municipality, including a district or rural council responsible for ensuring access to water services) should first assess whether it is able to undertake service provision by itself. This is done by organising its administration and developing the required capacity.

It is further stipulated in subsection 78(a)(v) of the Act that the municipality should also consider the views of organised labour in their assessments. If the municipality concludes that it has done the assessment or can develop the required capacity to provide the service internally, section 78(2) allows it to exit the process, i.e., make the final decision. However, should the municipality decide to explore external options, it will be required by section 3(a) of the Act to consult widely with the public. During this process, the municipality is also required to consider a range of issues, such as direct and indirect cost benefits, capacity, and future capacity in terms of skill, expertise and the required resources to provide such service, and whether the option is beneficial to the poor. After having gone through the provisions in section 78(3), the municipality must consider the requirements of section 73(2). These requirements state that municipal services must:

(a) be equitable and accessible.
(b) be provided in a manner that is conducive to:
    (i) the prudent, economic, efficient and effective use of available resources; and
    (ii) the improvement of standards of quality over time.
(c) be financially sustainable; and
(d) be environmentally sustainable.

It is worth noting that the *Municipal Systems Act* is silent on mechanisms municipalities can use to achieve the above-listed requirements (Bekink 2006:14). It appears individual municipalities should exercise discretion in this regard. To ensure that municipalities adhere to the stipulated requirements, policies and programmes should be put in place.

According to Smith (2009), many municipalities have taken the route of providing services internally through an internal technical service department as the water service provider. Smith (2009) claims municipalities who choose to provide services internally often do so because of misinterpretation and incorrect implementation of section 78 of the *Municipal Systems Act*. The author emphasises this has contributed to municipalities primarily keeping the provision function in-house, even when the capacity to adequately do so is lacking. Among other reasons put forward by municipalities is the need to avoid job losses and keep funding in municipal control. On the contrary, such decisions have led to a situation in which municipalities can no longer perform their functions (Smith 2009).

Notwithstanding the aforementioned constraints, contracting out can lead to inequities in the delivery of services and can erode local government's accountability. For example, contracting out can put citizens at a disadvantage in eliciting responsiveness, while providing services internally can give citizens opportunities to become active participants in their own affairs. This view is supported by Castro (2008), who observed contracting municipal services out has caused substantial increases in the cost of services to the public (see Section 2.4.5 of this study).

### 4.2.4 The Local Government: Municipal Structures Act 117 of 1998

The *Local Government: Municipal Structures Act of 1998* aims to promote the establishment of municipalities and criteria for determining the categories and types of municipalities. Municipalities are divided into three main categories: Category A is the metropolitan municipalities with exclusive municipal executive and legislative authority within their area of jurisdiction. Category B is the district municipalities that share municipal executive and legislative authority with Category C, which is the LMs. A district municipality has more than one LM in its area of jurisdiction. With specific reference to this research, it should be noted that Merafong and JB Marks are LMs, sharing their legislative and executive authority with district municipalities. In the case of Merafong, it is the West Rand district municipality, and in the case of JB Marks, it is the Kenneth Kaunda district municipality.

According to Steyn and Van Heerden (2011:169), the Act was promulgated with the intent to deracialise and integrate municipalities and promote accountability and public participation. The powers of a district municipality are defined in terms of section 84(1) of the *Local Government: Municipal Structures Act of 1998,* and LM powers and functions are defined in section 84(2). The functions of a district municipality include, among others, the provision of a portable water supply system and domestic wastewater and sewerage disposal systems.

In terms of section 85(1), the executive council for local government in a province may adjust the division of functions and powers between a district- and LM by assigning any functions vested in the LM to a district municipality, or vice versa. However, it should be noted that such adjustment may only be effected if the municipality in which the powers and functions are vested lacks the capacity to fulfil that function.

According to Sutherland, Hordijk, Lewis, Meyers and Buthelezi (2014), there are 169 water service authorities in South Africa. These include municipal entities, water boards, local and district municipalities. Usually, municipalities provide water and sanitation services directly through a municipal unit or department. For example, eThekwini metropolitan municipality provides these services through the eThekwini Water and Sanitation Unit (Sutherland *et al*., 2014). Section 83(3)(c) of the *Local Government: Municipal Structures Act of 1998* places a duty on district municipalities to ensure LMs are capacitated to provide municipal services. Furthermore, it is entrusted to promote the equitable allocation of resources between LMs in its area of jurisdiction and ensure appropriate levels of municipal services (Republic of South Africa 1998a). The *Local Government: Municipal Structures Act of 1998* provides a legal framework for the establishment and function of municipalities in South Africa. This is very important in realising the objective of section 27 of the Constitution.

### 4.2.5 The National Environmental Management Act 107 of 1998 (NEMA)

The *National Environmental Management Act 107 of 1998* (hereafter referred to as NEMA) aims to provide cooperative environmental governance by establishing principles for decision-making on matters that affect the environment. It was also

established to provide institutions that promote cooperative governance and procedures for coordinating environmental functions exercised by state organs.

NEMA is the legal framework that gives life to section 24 of the Constitution, stipulating that “everyone has the right to an environment that is not harmful to their health and well-being and an environment protected for the benefit of present and future generations through reasonable legislative and other measures that prevent pollution and ecological degradation and promote conservative and secure ecologically sustainable development and the use of natural resources”. Sections 7(2) and 24(a) of the Constitution translate into a duty of the three spheres of government to protect, respect and promote the right of everyone to an environment not harmful to their health or well-being.

It is worth noting that the duties of the state in terms of section 24 of the Constitution are only referred to once in the form of the object of local government (Du Plessis 2015: online). Section 152(d) of the Constitution states that municipalities must promote a safe and healthy environment. This objective is complemented by matters related to environmental issues relevant to local government’s competence as listed in schedule 4B and schedule 5B of the Constitution (Du Plessis 2015: online). These matters include water and sanitation, pollution and municipal health services.

The efficient management of water services (wastewater treatment plants in particular) plays an important role in protecting the ecosystem and environment in general. Fuggle and Rabie (2009:18) posit that environmental management and good practices rely on the cooperation of institutions, individuals and communities. Failure to effectively manage and comply with section 28(1) of NEMA, which imposes duties to prevent harm to the environment and require any person responsible for causing harm to the environment to take measures to remedy such harm could result in the degradation of the environment and water resources. Section 28(12) of NEMA presents an invaluable remedy for WSAs’ failure to deliver water and sanitation services due to sewage spilling into watercourses. A recent example in which section 28(12) could be invoked is the spillage of wastewater into the Vaal River system because of ageing infrastructure and poor management of wastewater treatment plants in the Emfuleni LM (Mabuza 2019: online).

The aforementioned problem originated at Sebokeng Township's wastewater treatment plant, where the primary settling tanks of about seven metres deep filled with compacted sludge and were overflowing since 2008 (Monteiro 2019: online). According to the Save the Vaal Environment Report (2019: online), the Riet Spruit (a tributary of the Vaal River) is receiving most of the spillage supposed to be treated at the Sebokeng WWTWs. Moreover, the Riet Spruit treatment plant is not operating properly with its effluent discharge not meeting the required standards, therefore adding to sewage spilling into the Vaal River. The pollution of water has been ongoing for the past 15 years. It reached crisis levels when the pump stations, pipes and three wastewater treatment plants collapsed in 2017 (Mabuza 2019: online).

Fuggle and Rabie (2009:19) ultimately draw attention to the importance of integrated legislation as a means through which environmental safety can be promoted. The authors argue fragmented legislation results in duplication and overlap of environmental management efforts. This duplication and overlap occur despite mechanisms and procedures to facilitate the coordination provided for in chapter three of the *Environmental Management Act of 1998*.

Mitchell, de Wit, Bliaut and Crookes (2014:10) agree with the views shared by the above authors that legislation is not integrated and thus results in duplication of functions. For instance, water service authorities are responsible for the management and regulation of wastewater treatment plants; however, the quality of the environment is regulated by both the Department of Water and Sanitation and the Department of Environmental Affairs. A question that arises then is why legislation is not integrated. Due to this fragmentation, the overall quality of the treated wastewater discharged to the environment becomes difficult to manage (Mitchell *et al.,* 2014:10). In addition, urbanisation, high levels of industrialisation and a lack of mechanisms to monitor and prevent unlawful effluent discharging practices in municipalities in South Africa have exacerbated the problem (Bhagwan 2018: online).

Mitchell *et al.* (2014:10) state that the quality of untreated wastewater negatively impacts the health and livelihoods of downstream users (be they rural communities, urban, agricultural or industry). In addition, Trollip and Van Vuuren (2016:42) claim that poorly treated wastewater is more likely to increase the treatment costs for

downstream water users. Nansubuga, Banadda, Verstraete and Rabaey (2016) also agree that poorly treated water will not likely be used and negatively affect the cost of purification. The *Division of Revenue Act*, which determines the allocation of funds among spheres of government, is thus critical in the provision of water and sanitation services. It is briefly discussed in the section below.

### 4.2.6 Division of Revenue Act (DoRA)

As indicated, the objectives of the yearly Division of Revenue Bill are to ensure equitable division of revenue allocation among the three spheres of government. The yearly Division of Revenue Bill is passed in terms of section 214(1) of the Constitution. It requires that Parliament ensure the equitable division of revenue raised nationally among national, provincial and local spheres of government. As indicated in Section 3.3 (see Chapter Three of this study), grant allocation is divided into unconditional (including local government equitable share) and conditional grants. Conditional grants include, but are not limited to, the MIG, Water Services Infrastructure Grant, Urban Settlements Development Grant and Rural Household Infrastructure Grant. These grants have conditions attached to them and should be strictly used for the purposes for which they were intended. However, for unconditional grants, there are no attached conditions. This allocation assists municipalities and provinces in planning their budgets over multi-year periods. It promotes predictability and certainty in respect of all allocations to provinces and municipalities, allowing them to plan their budgets over a multi-year period. The allocation also promotes better coordination between public policy, planning, and budgeting (Busari & Jackson 2006).

Conditional allocations to municipalities in the 2018/19 financial year – from the national government's share of revenue raised nationally – are set out in parts B of schedules 4-6 of DoRA. Part B of Schedule 4 specifies allocations to municipalities to supplement the funding for functions subsidised from municipal budgets. Part B of Schedule 5 specifies specific-purpose allocations to municipalities. Part B of Schedule 6 specifies allocations-in-kind to municipalities for designated special programmes (Republic of South Africa 2016: 28). A municipality that intends to pledge a conditional allocation or a portion thereof as security for any obligations in terms of section 48 of the *Local Government: Municipal Finance Management Act 56 of 2003*, must, in

addition to notifying the National Treasury in terms of section 46(3) of that Act, notify the transferring officer and the relevant provincial treasury of that intention. It must also provide the transferring officer and National Treasury with at least 21 days to comment before obtaining approval from the municipal council. A municipality must submit financial and non-financial reports, as determined by the National Treasury, for any project pledged to be partially or fully funded by using a conditional allocation, or a portion thereof, as security.

### 4.2.7 Local Government: Municipal Finance Management Act 56 of 2003

The *Local Government: Municipal Finance Management Act 56 of 2003* was promulgated to ensure the sound and sustainable financial management of municipalities and other institutions in the local government sphere of South Africa. The Act established treasury norms and standards for sound financial management in the local sphere of government. This encompasses the management of their revenues, expenditures, assets and liabilities, handling their financial dealings, budgetary and financial planning processes, the local government borrowing framework, the handling of financial problems in municipalities, and supply chain management (Republic of South Africa 2003).

The *Municipal Finance Management Act* emphasises municipalities' accountability and sound financial management practices. It is important that proper financial management systems are established in municipalities as this will assist them in dealing with issues of financing water and sanitation services. Additionally, municipalities must be capacitated to manage complex engineering projects that deal with health and sanitation matters. Such a system should focus on two important aspects of financial management: first, that recurrent expenditure operates at breakeven point, at least, and second, the financial system must provide credibility in the search to raise capital for new projects.

Despite the financial mismanagement challenges, there is significant scope to improve basic financial management at the local government level (Ambe & Negash 2008). This is where leadership can play a more visible role to influence adherence to these financial management best practices and enhance financing options in local

government. Section 34(1) of the *Local Government: Municipal Finance Management Act of 2003* makes provision for the national and provincial governments to assist municipalities in building their capacity for efficient, effective and transparent financial management. However, this requirement has not been extended to building technical capacity, which is crucial for sustainable water and sanitation service delivery to all citizens (Mjoli 2015). Despite this shortcoming, the KZN provincial Department of Cooperative Governance and Traditional Affairs has developed a local government capacity-building strategy that has been widely regarded as an effective tool to improve municipal capacity, including technical capacity (KZNCOGTA 2018: online). Other provinces have adopted this strategy as a blueprint for improving municipal capacity.

In its quest to promote equitable services and redress past imbalances, the South African government has introduced several policies to regulate the provision of sanitation since the dawn of democracy. These are explored in the section that follows.

## 4.3 THE POLICY FRAMEWORK FOR SANITATION SERVICES

The provision of water and sanitation services in South Africa is regulated by four policy documents, namely the White Paper on Water Supply and Sanitation (1997), The White Paper on Basic Household Sanitation (2001), The Strategic Framework for Water Services (2003) and The Sanitation Policy (2016). These policies outline procedures, goals, principles and mechanisms for sanitation services in South Africa, which are, in turn, implemented through laws, regulations and programmes. The Strategic Framework guides the implementation of the *National Sanitation Policy in South Africa for Water Services (2003).* It essentially provides a road map on how sanitation services should be addressed and delivered. These policy documents are discussed next. For the purpose of clarity on how the sanitation policy framework developed into what it is today, a table is presented. This table illustrates the periods and sequence of the development of sanitation policies since the 1994 dawn of democracy in South Africa.

**Table 4.1: Sanitation policy development**

| POLICY | PURPOSE AND RELATIONSHIP WITH OTHER POLICY DOCUMENTS |
|---|---|
| White Paper on Water Supply and Sanitation,1994 | The first water and sanitation policy was drafted by the then Department of Water and Forestry in 1994. |
| White Paper on Basic Household Sanitation,2001 | The primary focus of this policy was to promote access to sanitation for rural and informal settlement communities neglected by the White Paper on Water Supply and Sanitation, 1994. |
| The Strategic Framework for Water Services,2003 | The Strategic Framework is an update of the White Paper on Water Supply and Sanitation, 1994. It addresses a full range of water supply and sanitation services. It is an overarching policy framework on water services in South Africa. It brings together all other policies and legislation on water services. |
| Sanitation Policy,2012 | The sanitation policy 2012 was a culmination of a lengthy policy review process of the White Paper on Basic Household Sanitation 2001 undertaken by the Department of Water and Sanitation, together with other stakeholders involved in the sanitation sector. |
| Sanitation Policy,2016 | The Sanitation Policy of 2012 formed the basis on which the current National Sanitation Policy of 2016 was built. |

*Source: Researcher 2020*

### 4.3.1 The White Paper on Water Supply and Sanitation (1994)

Due to the lack of a coherent policy for water supply and sanitation services in 1994, the Department of Water Affairs and Forestry (renamed Department of Water and Sanitation in August 2021) formulated the White Paper on Water Supply and Sanitation (1994) to address this policy gap. The primary objective of the White Paper on Water Supply and Sanitation (1994) was to create a policy framework for the provision of water and sanitation services in South Africa (Republic of South Africa 1994:2).

The White Paper on Water Supply and Sanitation (1994) defines the minimum acceptable level of sanitation as: appropriate health and hygiene awareness and behaviour; a system for disposing of human excreta, wastewater and refuse, which is acceptable and affordable to users, safe, hygienic and easily acceptable, and does not have an unacceptable impact on the environment; and a toilet facility for each household (Republic of South Africa 1994:2).

The White Paper on Water Supply and Sanitation (1994) acknowledges that the country's development rests on the promotion and provision of water and sanitation services to all. It recognises the injustices of the past and advocates that sanitation should be integrated into programmes to provide other basic services. The White Paper on Water Supply and Sanitation (1994) draws from international experience that confirms the provision of basic services such as water and sanitation will not be sustainable. It will fail if consumers of such services are not directly involved (Republic of South Africa 1994:6).

According to Tissington (2011), the White Paper on Water Supply and Sanitation (1994) emphasises that sanitation services should be self-financed at local and regional levels, with the exception of communities that cannot afford basic services. It also makes provision for the construction of toilets in poor communities but is silent on the maintenance and operating cost and where the funds should be sourced. The White Paper on Water Supply and Sanitation (1994) is based on the following principles:

- **Development should be demand-driven and community-based.** Decision-making and control will be devolved as far as possible to accountable local structures. There is a reciprocal obligation on communities to accept responsibility for their own development and governance, with the assistance of the state.
- **Basic services are a human right.** Interpreted in terms of the Constitution as a right to a level of services adequate to provide a healthy environment. They do not imply the right of an individual person or community to demand services at the expense of others.

- “**Some for All”, rather than “All for Some”.** To give expression to the constitutional requirements, priority in public funds’ planning and allocation will be given to those who are presently inadequately served.
- **Equitable regional allocation of development resources.** The limited national resources available to support the provision of basic services should be equitably distributed among regions, considering the population and level of development.
- **Water has economic value**. The way water and sanitation services are provided must reflect the growing scarcity of good quality water in South Africa, illustrating their value and not undermining long-term sustainability and economic growth.
- **The user pays.** This is a central principle to ensure sustainable and equitable development, as well as efficient and effective management.
- **Integrated development**. Water and sanitation development are not possible in isolation from development in other sectors. Coordination is necessary among all tiers of government and other involved parties. Maximum direct and indirect benefits must be derived from development in, for instance, education and training, job creation, and the promotion of local democracy.
- **Environmental integrity.** It is necessary to ensure that the environment is considered and protected in all development activities.

Apart from the principles discussed above, the basic policy framework for water and sanitation is based on the following points:

(a) Government will subsidise the provision of basic water and sanitation services to those who cannot afford these.

(b) Subsidy will only cover the cost of services, not operation and maintenance.

(c) Subsidies will be paid out directly to municipalities.

(d) The pay-out will be determined by the cost of providing water and sanitation services.

(e) Other subsidies provided by the then Department of Water and Forestry will be phased out, particularly those that deal with maintenance and operations.

The White Paper on Water Supply and Sanitation (1994) set the groundwork for a water and sanitation policy framework in South Africa. According to Harvey (2007), this framework is characterised by accomplishments and failures. For instance, in 1994, it failed to recognise the deep-seated poverty among most Black communities who could not afford to pay for basic services, let alone maintain them. The shortcomings of the aforementioned White Paper culminated in the development of the White Paper on Basic Household Sanitation (2001); it forms the subject of discussion below.

### 4.3.2 The White Paper on Basic Household Sanitation (2001)

The White Paper on Basic Household Sanitation (2001) aims to ensure that everyone has access to adequate sanitation services. However, the emphasis is on providing a basic level of household sanitation to rural and informal settlements (Madi 2016:38). To give guidance on sanitation, this policy defines "sanitation as principles and practices relating to the collection, removal or disposal of human excreta, household wastewater and refuse as they impact upon people and the environment" (Republic of South Africa 2001:5). Good sanitation includes appropriate health and hygiene awareness and behaviour, and acceptable, affordable and sustainable sanitation services.

According to Goldin (2010), the review process of the White Paper on Water Supply and Sanitation (1994) culminated into the White Paper on Basic Household Sanitation (2001). It identified rural and informal settlements as areas in urgent need of sanitation services. It should be noted that the policy principles upon which the White Paper on Water Supply and Sanitation (1994) rest are largely the same as the White Paper on Basic Household Sanitation (2001). The White Paper on Water Supply and Sanitation's (1994) central point is that sanitation should be demand-driven, and communities should be at the centre of such an approach.

The Department of Water and Sanitation undertook an audit to determine the sustainability of sanitation services. Findings of the audit pointed to a number of challenges. Amongst the challenges identified by the audit was the issue of inconsistencies between the White Paper on Basic Household Sanitation (2001) and the *Strategic Framework for Water Services 2003* (see Section 4.3.3 of this chapter for

further discussion). For example, the White Paper on Basic Household Sanitation stipulated measures to ensure households are trained and equipped to maintain their sanitation facilities. In contrast, the *Strategic Framework for Water Services (2003)* promotes sustainable servicing by municipalities. In other words, the 2001 White Paper on Basic Household Sanitation promoted a demand or community-led approach to sanitation, while the *Strategic Framework for Water Services (2003)* promoted a supply driven approach to sanitation provided by the municipality. However, Tissington (2013) contends that the White Paper on Basic Household Sanitation (2001) is unclear how communities will participate and how funding will be provided for communities to do their own maintenance. In addition, it is unclear whether rural households should contribute or participate in the construction of their own toilets, and whether this approach is equitable in relation to urban approaches. In addition, it does not say whether funds will be made available in settlements scheduled for relocation.

Since 2011, the White Paper on Basic Household Sanitation has been revised, and the following were included in the policy:

- Community participation.
- Institutional arrangements/roles and responsibilities.
- Integrated environmental and financial management.
- Technical considerations.
- Monitoring, evaluation and regulation.

According to the Statistics South Africa Report on Status of Sanitation (2017), rural communities are still at the receiving end of inadequate sanitation facilities. Despite significant improvements in access to water services, deep inequality remains. Particularly worrying is the lack of water services in rural and informal settlements. There are, according to Maree (2016:139), serious lags in the delivery of sanitation services. In terms of the report, little or no treatment of wastewater occurs in some cases, such as informal settlements. Where treatment is available, sewer reticulation is often inadequate or poorly maintained, resulting in uncontrolled releases such as leakage and overflow.

### 4.3.3 The Strategic Framework for Water Services (2003)

As indicated in Section 4.3.2, the White Paper on Basic Household Sanitation (2001) is more of a community-led demand approach to sanitation, while the Strategic Framework for Water Services (2003) is a supply driven approach to sanitation and an all-encompassing framework for the water services sector in South Africa. It addresses a wide range of water supply and sanitation services and all relevant institutions. The Strategic Framework is an update of the White Paper on Water Supply and Sanitation, 1994. It stipulates the roles and responsibilities of WSAs, WSPs, relevant government departments, as well as other stakeholders (Republic of South Africa 2001).

It also set the targets for sanitation service delivery. The first target was to have everyone in South Africa access appropriate, safe and affordable basic sanitation by 2010 (inclusive of a Free Basic Sanitation policy implemented in all WSAs). The Strategic Framework envisages that WSAs should be at the centre of the delivery of sanitation services, with the Department of Water and Sanitation playing a monitoring, regulatory and support role.

The second target is that adequate sanitation services should not be limited to households but reach all schools and clinics. The third target is to have hygiene education in all schools, clinics and households, hence universal access to sanitation services. Although much work has been done, many schools and clinics are yet to receive adequate sanitation facilities (Tissington 2013). In his speech at the launch of the Sanitation Appropriate for Education (SAFE) initiative, President Ramaphosa indicated that the focus should not be on what has been achieved but rather what needs to be done to increase access to adequate sanitation facilities as he reflected on the deaths of many school children; particularly, the deaths of Michael Komape and Lumka Mthethwa. These two school pupils died in 2014 and 2018, respectively, while using a pit latrine toilet in rural Limpopo and rural KZN provinces (Bhagwan 2018: online).

Furthermore, the Strategic Framework for Water Services (2003) commits municipalities to the provision of at least a basic level of sanitation service, defined as “the provision of a basic sanitation service facility which is easily accessible to the

household, the sustainable operation of the facility, including the safe removal of human waste and wastewater from the premises where this is appropriate and necessary, and the communication of good sanitation, hygiene and related practices" (Department of Water Affairs and Forestry 2003b).

Unlike its predecessor, the Strategic Framework for Water Services (2003) makes reference to universal services. This extends to people living on commercial farms and game parks, mining land, church-owned land, industrial-owned land, as well as those living in informal settlements on private land, backyard shacks and so-called 'bad buildings' in inner-city areas. The Strategic Framework for Water Service (2003) acknowledges that "the provision of services to people living on land without permission of the owner of the land poses a challenge to water services authorities". It advises that WSAs "should seek to address the security of tenure issues expeditiously" and provide interim basic water and sanitation services under a progressive plan that addresses both land tenure and basic services (Department of Water Affairs and Forestry 2003b).

Notably, policymakers did not offer any definition of sanitation technology in the *Strategic Framework for Water Services (2003)* because the type of technology had to suit diverse conditions, hence this decision is left to the discretion of WSAs (Taing 2019:539). Langford, Bartram and Roaf (2017:372) pointed out that environmental conditions dictate the type of technology that can be used based on resource availability. For example, ventilated pit latrines might not be suitable in humid environments where faeces do not dry easily (Langford *et al*., 2017:372). However, the Framework provides some guidance on the selection of technology. It states that technology choice depends on the settlement type, and the following scenarios are provided:

- In densely populated areas, waterborne sanitation is the appropriate technology and should be regarded as the basic level of service.
- In low-density areas, on-site sanitation solutions are more appropriate as a basic level of sanitation service.

- In peri-urban or rural areas with high settlement density, WSAs must decide on the type of sanitation solution most appropriate, which is financially viable and sustainable. The challenge is the inclusion of the word “appropriate” in the definition of sanitation, and it is not clear what “appropriate” means (Department of Water Affairs and Forestry 2003).

### 4.3.4 The National Sanitation Policy (2012)

The adoption of the National Sanitation Policy (2012) was a culmination of a review process of the White Paper on Basic Household Sanitation (2001). This process was undertaken by the Department of Water and Sanitation, together with other stakeholders in the water services sector. Although this policy was not gazetted, it formed the basis for the current sanitation policy (Department of Water Affairs 2012b).

### 4.3.5 The National Sanitation Policy (2016)

Since the National Sanitation Policy’s (2012) adoption, several challenges have been identified, necessitating a review of the Policy. For instance, the national and international imperatives have changed since 2012, along with policy and the service delivery environment and priorities. These imperatives include the national development plan targets of ensuring universal access to affordable and reliable sanitation by 2030, and the achievement of adequate and equitable sanitation for all as stipulated in the sustainable development goals. The third imperative is to end open defecation and direct attention to the needs of women, children, and other vulnerable groups by 2030 (Department of Water and Sanitation 2016).

The National Sanitation Policy is underpinned by seven pillars. These pillars are outlined below:

#### I. Integrated planning of sanitation services

The policy acknowledges that sanitation services in South Africa are still fragmented and uncoordinated, largely due to the large number of institutions involved in providing sanitation services. For instance, the provision of sanitation in schools and clinics falls within different departments (i.e., Department of Education and Department of Health).

In addition, subsidised services, such as housing programmes, do not fully appreciate the effect of human settlements on municipal sewage systems. As such, current systems are strained beyond the intended capacity. The policy recognises this shortcoming and advocates for more integrated planning of sanitation services. Furthermore, the Department of Water and Sanitation (2016) acknowledges that health, social and environmental benefits could be enhanced when sanitation is planned in an integrated manner. This would require policy coordination among various stakeholders involved in delivering basic services (Department of Water and Sanitation 2016).

### II. Institutional arrangement for sanitation services

The policy also provides for institutional arrangements for sanitation services. It is noted in the policy that there has been a lot of confusion with regard to the regulatory responsibilities of various institutions involved in sanitation services. It is further noted that the shift of sanitation services from the then Department of Water Affairs to the Department of Human Settlements, and back to the Department of Water and Sanitation, has created a disjoint between the regulatory role of the Department of Water and Sanitation and the role of the Department of Cooperative Governance and Traditional Affairs. The move has also created policy uncertainty among various stakeholders, including municipalities themselves (Department of Water and Sanitation 2016). However, since the affirmation of the mandate of the Department of Water and Sanitation in 2014, responsibilities have been clearer. These responsibilities include, *inter alia,* regulating water and sanitation in the country, providing macro-planning, regional bulk services, and monitoring performance (Department of Water and Sanitation 2016). This policy stipulates the responsibilities of other stakeholders, including water services institutions.

### III. Participation in sanitation services

The National Sanitation Policy (2016) acknowledges there is a strong and visible link between hygiene and sanitation. Therefore, it has taken a position that hygiene education should be an ongoing activity during programme implementation and post-implementation. This was not the case before the review process. In fact, hygiene education was a once-off activity undertaken by WSA. The Sanitation Policy (2016)

also states that end-users provided with sanitation facilities must take ownership and responsibility for them.

### IV. Capacity and resource development for sanitation services

Apart from end-users' participation and the importance of hygiene in sanitation, the policy refers to capacity and resources for sanitation services delivery. The policy acknowledges a lack of critical skills and capacity gaps as one of the sanitation sector's main challenges. This situation has brought into question the sustainability of water services. The report also pointed to the lack of wastewater monitoring in many wastewater treatment plants due to a lack of qualified and experienced personnel (Amod & Wall 2017: online).

Similarly, the South African Local Government Association (SALGA) and Water Research Commission reported in 2015 that there is a serious shortage of engineers in municipalities. It indicated the national average of 0.26 engineers per 100 000 capita in 118 water service authorities (South African Local Government Association Annual Report 2015). This skills shortage has serious implications for the provision of sanitation services. To address this problem, the policy states that the minister responsible for water and sanitation will develop regulations for sanitation skills. All three spheres of government will develop human resource plans, including succession plans, retention strategies and capacity-building through education (Department of Water and Sanitation 2016:36). Whether the political will exist to undertake these interventions remains to be seen.

### V. Financial requirements for sanitation services

The National Sanitation Policy (2016:42) refers to financially effective and efficient sanitation services. Particular attention is paid to the implementation of rising block tariffs by municipalities. The benchmarking study undertaken by SALGA and the Water Research Commission in 2015 indicates municipalities did not have cost-reflective tariffs in place. Therefore, revenues from tariffs do not cover operations and maintenance costs, debt service and depreciation cost (indication of the municipal ability to invest in infrastructure without depending on grants from the government).

## VI. Sustainable sanitation services

According to Powell (2012), the main challenge for many municipalities in South Africa is their inability to deliver on the principles of section 153 of the Constitution, which states that “a municipality must structure and manage its administration and budgeting and planning processes to give priority to the basic needs of the community, and to promote the social and economic development of the community and participate in national and provincial development programmes”. To address the aforementioned challenges, the sanitation policy has taken the position that the user pays, and the polluter pays principle should be implemented and enforced by municipalities. In addition, sanitation revenue allocation must be prioritised, and municipalities must ensure financial stability by implementing a cost-recovery mechanism that promotes social equity.

The National Sanitation Policy (2016:44) also refers to the appropriateness of sanitation technologies. Currently, the selection of sanitation technologies for an area is largely based on guidelines for the levels of service in the country. For instance, flush toilet systems are a norm in formal settlements, and dry on-site sanitation is provided in rural areas. Experience has shown that the selection of so-called appropriate technologies is often not the most appropriate for the area in which they are provided. This view is supported by Tissington (2011), who argues that although the current policy and legislation define “sanitation services” as having access to adequate, safe, appropriate and affordable water and sanitation services, it is unclear what should be deemed appropriate and how municipalities should determine appropriateness.

The policy needs to address the issue of appropriate technology and change the pre-conceived notion of waterborne sanitation in formal settlements and dry systems in rural areas. Technology selection should be based on the availability of resources within a settlement area (Department of Water and Sanitation 2016:44). Langford *et al*. (2017:372) take the argument further by stating dry sanitation technologies like VIP latrines might not be appropriate for humid environments where the faecal matter does not dry quickly or in urban centres where space might be an issue. The authors (Langford *et al.,* 2017:372) emphasise that VIP latrines need to be frequently emptied

by local authorities, which seldom occurs. This suggests that such systems might not be as cost-effective as assumed.

### VII. Regulation of sanitation services

The Constitution and the *Water Services Act* provide scope for the development of norms and standards. The minister of Water and Sanitation is mandated to develop these norms and standards. In addition, the Department of Water and Sanitation is responsible for ensuring regulations are developed and enforced. However, in the local sphere of government, WSAs are the regulators of sanitation services. For instance, they determine by-laws and plan for the provision of sanitation services through the development of WSDPs. To that end, the Strategic Water Services Framework provides guidance in terms of how monitoring should be undertaken (Department of Water and Sanitation 2016).

The Policy is currently weak in terms of ensuring enforcement. However, with the current review, the Department of Water and Sanitation, Department of Cooperative Governance and Traditional Affairs, National Treasury and provincial government can take the following measures to force the WSA to comply:

- Enforce compliance; failure can be published (name and shame).
- The National Treasury, CoGTA, and provincial government can withhold funding as contemplated in the *DoRA* and *Local Government: Municipal Finance Management Act.*
- If the above measures fail, the listed institutions can directly intervene, and legal action can be taken if all else fails. The policy recognises that the key to successful regulation and provision of sanitation is the integration of laws and coordination of key stakeholders in the sanitation sector (Department of Water and Sanitation 2016).

## 4.4 CONCLUSION

This chapter presented a review of legislative provisions and policies relating to water and sanitation services. The discussion draws on provisions in the Constitution

(schedule 4-part B and 5-part B), stipulating the functions of municipalities. The chapter highlighted the inconsistencies in the definition of basic sanitation in the *Water Services Act* and subsequent regulations. In addition, inconsistencies in the enforcement of norms and standards between rural and urban areas are also noted in the discussion. For example, more focus is placed on building infrastructure in urban areas at the expense of rural areas. Resource availability has become a determining factor in the level of service provided by a municipality, despite section 4(2)(d) of the *Local Government: Municipal Systems Act* stipulating that a municipality has a duty to provide equitable services. Attention has also been drawn to the administrative incapacity of the departments of Water and Sanitation as well as Environmental Affairs to monitor and manage municipalities' compliance, for instance, monitoring non-compliance, particularly related to the discharge of effluent to rivers and lakes.

The efficient management of wastewater treatment plants and water services play an important role in protecting the ecosystem and environment in general. This can only be achieved through good environmental practices, intergovernmental relations, and cooperation by institutions, communities, and all three spheres of government. The efficient management of funds allocated through DoRA is critical in ensuring and improving basic service delivery, including water and sanitation services. The National Treasury plays an important role in monitoring funds' allocation and spending by municipalities. The interpretation of sections 77 and 78 of the *Local Government: Municipal Systems Act of 2000* notes that municipalities or WSAs undertake water services they do not have the capacity to provide. The environment's sustainability is also fundamental in water services provision. The chapter also explored the development and inception of various water services policies. The next chapter discusses the research design and methodology employed in this study.

# CHAPTER FIVE
# RESEARCH DESIGN AND METHODOLOGY

## 5.1 INTRODUCTION

The previous chapter provided a discussion of legislative frameworks and policies governing water and sanitation in South Africa. The chapter explored challenges and shortcomings in implementing various pieces of legislation regulating the provision of water and sanitation in South Africa. This chapter discusses the methodology through which this study was undertaken. Babbie and Mouton (2001:75) assert that the research methodology focuses on the research processes and the kind of tools and procedures used. Further, the focal point of this thesis was the individual steps in the research process and the most objective procedures were used. The selection of the research methodology and its application is dependent on the aims and objectives of the research (as provided in Section 1.5 and 1.6 of Chapter One of this study), the nature of the phenomenon being studied, and the expectations of the investigator (Babbie & Mouton 2001:xxiv-xxv).

## 5.2 PHILOSOPHICAL PERSPECTIVES

According to Creswell (2009:35), philosophical ideas influence the practice of research, and it is therefore important that they should be identified in research efforts. The author states the research objectives should determine the choice of research approach; consequently, it is crucial that the researcher explicitly state the research approach at the start of the research process. The philosophical research perspectives offer guidance to the researcher on how research questions and the research problem should be formulated.

### 5.2.1 Research paradigm

A paradigm is defined as “a set of shared beliefs within a community of researchers who share a consensus about which questions are more meaningful and which procedures are the most appropriate for answering those questions” (Plano-Clark &

Creswell 2008:35). Different philosophical paradigms have different views about the nature of the world (ontology) and the ways in which knowledge can be acquired (epistemology). This shared way of thinking is reflected in the research strategies used and accepted as appropriate in a particular research community (Saunders, Lewis & Thornhill 2012).

The researcher's ontological perspective is viewed through the lens of the pragmatic paradigm. The philosophical paradigm called "pragmatism" focuses on an attempt to gain knowledge in the pursuit of desired goals (Creswell 2013:28). The research philosophy guiding this study was pragmatism. The approach was deemed appropriate for this study for two reasons. First, there is a consensus among mixed-methods researchers that the rationale for a mixed-methods approach must be pragmatic (Tashakkori & Teddlie 2010:97). As a research paradigm for mixed-methods research, the importance of pragmatism can be found in its focus on the research problem and use of pluralistic approaches to derive knowledge about a problem (Tashakkori & Teddlie 2010:96). Secondly, with pragmatism, researchers are free to use procedures and instruments that best answer their research questions. Researchers within the mixed-methods research paradigm look at many approaches to collect, analyse and interpret data rather than subscribing to one method. In this way, the researcher is able to provide a clear understanding of the problem being investigated. This includes collecting data using interviews, questionnaires, personal observations and field notes.

## 5.3 MIXED-METHODS RESEARCH DESIGN

The research design can be described as a blueprint for the entire study. Therefore, it is important that a conceptual framework be put in place within which the research can be conducted, and this is done through the research design. According to Bryman (2001:29), the research design is a framework for the collection of data. For Babbie and Mouton (2001:75), the research design focuses on the end product; that is, what kind of research is being planned and what kind of results are aimed at. In view of the preceding assertions, the researcher focused on the aim of the research, which dictated the kind of evidence required to address the research questions adequately. This research aimed to determine shortcomings (if any) in the delivery of sanitation services in Merafong and JB Marks LMs through a multiple case study approach. As

articulated in Section 1.3 of Chapter One, the poor state of sanitation service delivery is a central focus of this study. The reasons for the poor delivery of sanitation services are complex in nature and thus required more than one method of investigation. According to Creswell (2009:33), mixed-methods research is an approach to inquiry combining both qualitative and quantitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks. The basic assumption of mixed-methods research is that the combination of both qualitative and quantitative approaches allows researchers to address more complicated research questions and collect richer data than can be achieved using a single method (Creswell 2009:33).

Tashakkori and Teddlie (2010:9) caution that mixed-methods research goes beyond simply combining qualitative and quantitative research methods. It entails selecting and then synergistically integrating the most appropriate techniques from a myriad of qualitative, quantitative, and mixed methods to investigate a phenomenon of interest more thoroughly. This process is referred to as methodological eclecticism. Eclecticism means the freedom to combine methods and choose the best tools for answering one's research questions (Tashakkori & Teddlie 2010:9).

The work of Campbell and Fiske (1959 *in* Tashakkori & Teddlie 2010:10) prompted many researchers to begin collecting multiple forms of data, such as personal observations, field notes, interviews, together with traditional research surveys. The rise and popularity of mixed-methods research reside in the idea that all other methods have biases and weaknesses and collecting qualitative and quantitative data will minimise the weaknesses of each data form. The idea of mixed-methods research can also be found in triangulation, which is the means of seeking divergent and convergent information sources across qualitative and quantitative methods.

According to Creswell and Plano-Clark (2011), mixed-methods research has the following advantages:

- Mixed-method research can simultaneously address a range of confirmatory and exploratory research questions, while a single approach can only address one issue.

- It is an iterative, cyclical approach to research that includes deductive and inductive logic in the same research.
- Properly conducted mixed-method research allows an assortment of divergent conclusions and inferences to be drawn due to the complexity of the data sources and the analysis involved in the research.
- It is a means for quantitative and qualitative data to be integrated. For example, one database could be used to check the accuracy and validity of the other.
- One database could also be used to explain the other.
- One database could explore questions not explored by the other.
- In addition, the one database could help build on the other database.

Quantitative research's weaknesses include taking a snapshot of a phenomenon. It overlooks the respondent's experiences and opinions in a highly controlled setting because of a disconnect between the researcher and participants during the data collection process. In addition, it is time consuming, and the results cannot be generalised to an entire population. Similarly, qualitative research has its own shortcomings. These include its inability to consider contextual sensitivities, and it is primarily focused on the meaning and experiences of participants. In addition, qualitative studies do not take cognisance of the relationships between variables, and the sample size tends to be smaller, raising concerns about generalisability to the whole population (Rahman 2016:105).

This study adopted the convergent parallel mixed method because it allowed the researcher to collect both quantitative and quantitative data from Merafong LM and JB Marks LMs at more or less the same time. The researcher merged both quantitative and qualitative data to provide an in-depth analysis of the research problem and then integrated information to interpret and analyse the findings.

## 5.4 MULTIPLE CASE STUDY

According to Yin (2009:18), "a case study is an empirical inquiry that investigates a phenomenon in depth and within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident". Kumar (2014:155)

describes a case study as an individual, a group, a community, an event, or a subgroup of a population. It is important to treat the research population that is considered a case study as one entity.

Yin (2009:18) argues that surveys can try to deal with the phenomenon and context, but their ability to investigate the context is very limited. For this reason, the researcher opted to employ multiple case studies to adequately investigate the phenomenon in its real-life context. Using the multiple case study design, this study focused on shortcomings in the delivery of sanitation services in Merafong LM and JB Marks LM. At first, the case studies relied on holistic data collection strategies for studying the main cases, but then called on surveys and other quantitative techniques. However, in this research, case studies were part of the mixed-methods research study (interviews, questionnaires and document analysis); the main investigation relied on surveys and case studies. This assisted the researcher in investigating conditions in both municipalities. Case studies are very useful when exploring an area where little is known, or a holistic understanding of a phenomenon is desirable.

## 5.5 POPULATION AND SAMPLING

A population refers to the complete set of units or the whole group one is interested in or group from which a sample is usually drawn (Laws 2003:457). Babbie (2003:116) and Salkind (2006:85) agree that a population is a group that the researcher wants to draw conclusions about.

### 5.5.1 Sampling

A sample is a subset of a population being studied (Ekka 2014:24). It represents the larger population and is used to make inferences about the population. In addition, a sample allows the researcher to draw accurate conclusions of the thoughts and behaviour of the larger population. It is a research technique widely used in social science research as a way of gathering information about a population without having to measure the entire population (Ekka 2014:24). A sampling method should be appropriate for a specific research's purpose (Teddlie & Yu 2007:77; Neuman 2014:277). In this study, two sampling methods were applicable given the nature of the

research, namely purposeful sampling which is a non-probability sampling method based on convenience or other criteria and systematic random sampling which is a probability sampling which allows the researcher to make statistical inference about the population.

- **Sampling methods**

The purposeful sampling method was applied in selecting municipal officials because only certain individuals possessed knowledge and experience that qualify them to answer the researcher's pointed questions. In any community, certain important information is obtainable only from a select group of aptly placed individuals. This research thus targeted specific people with knowledge of the topic under investigation, and whose involvement enhanced the quality and legitimacy of the research data. Regarding municipal officials, the researcher's initial intention was for the sample size to remain open until data saturation had been reached. Targeted officials included the superintendents responsible for sanitation, supervisors of WWTWs, and technicians in each of the two municipalities.

In the case of households (residents) of the two municipalities, a systematic sampling method was employed so that each household in the population had an equal chance of being selected. This method involves randomly selecting a relatively large number of units from a population, so the probability of inclusion for every member of the population is determinable. The aim was to achieve representativeness, which is the degree to which the sample accurately reflects the entire population (Teddle & Yu 2007:77). To guard against possible human bias in this method, the researcher selected the first household at random. This is called a systematic sample with a random start. The total number of households in Merafong LM and JB Marks LM was 91,936 and 80,572, respectively, at the time of data collection (Merafong Local Municipality IDP 2018:32; JB Marks Local Municipality IDP 2017:49). This study sampled 110 households within each of the two LMs, i.e., 220 households in total. The sample in this research was constituted as follows:

- Residents (110 households per municipality) of the two LMs (Merafong and JB Marks). The household response rate of 100% was achieved.

- Fourteen officials from Merafong LM and JB Marks LM responsible for water and sanitation services.

## 5.6 DATA COLLECTION INSTRUMENTS

The researcher notes that one cannot fully rely on interviews and questionnaires because respondents might not wholly reflect the current state of affairs. Thus, document analysis becomes critical in the quest for accurate information and data. In view of the preceding contentions, the two methods are outlined and explained in this section.

The data collection process for this research began when the researcher identified data collection instruments appropriate for the study. As part of the mixed-methods research design, the researcher planned how information and data would be collected and recorded to keep it intact, organised and complete. The data collection instruments were constructed in line with the concurrent convergence of mixed-methods research, which dictates that qualitative and quantitative data should be collected at more or less the same time (Plano-Clark & Creswell 2011:274).

Once the University of South Africa granted ethics clearance, the researcher received consent from individual participants reflecting their willingness to take part in this study. A consent form (Annexure A) was given to all participants to complete and sign.

The researcher appointed six field workers, three from each municipality. The fieldworkers were trained prior to commencing fieldwork, and the instrument and fieldworkers' ability were tested. A few issues were identified by the researcher and then resolved before the fieldwork could commence. The researcher closely monitored the whole process of training and piloting. Data were collected through two separate questionnaires (one designed for municipal officials and the other for households), and structured interviews were conducted with senior municipal officials from the sanitation departments of the two municipalities. These were people with experience and knowledge about their work and the challenges they were facing in their place of work. Official documents like official municipal reports (assessment report from Municipal Demarcation Board, spatial planning reports and integrated development planning

documents and municipal self-assessment reports) from the municipalities were sourced and used as part of primary data sources. During the course of data collection, the researcher took field notes and pictures to demonstrate, in particular, the conditions in these municipalities.

The researcher undertook a pilot study to test the data collection instruments (see Section 5.8.2). Over and above the aforementioned data collection methods, the researcher extensively consulted with literature relating to the topic. As part of the in-depth literature review process, the researcher examined various sources ranging from legislation that regulates the provision of sanitation services (including the Constitution), to articles bearing pictures of sanitary conditions under which communities who struggle with sanitation issues live to have a deeper understanding of the topic. The researcher was confronted by literature on municipal infrastructure planning and recent AG reports. All these documents were used as part of the extensive literature review process.

## 5.7 DOCUMENT ANALYSIS

According to Bowen (2009:27), document analysis is a systematic process of examining and evaluating documents. Like other analytical methods, document analysis requires data to be examined to gather meaning. Document analysis is a form of qualitative research where documents are interpreted by the researcher to give voice and meaning around an assessment topic (Bowen 2009:27). By analysing documents, the researcher incorporates coding content into themes, similar to how focus group or interview transcripts are analysed (Bowen 2009:32).

Documents can be used for various purposes. For example, it can be used to track changes and development. It can also be used to suggest questions to be asked; for example, it can help generate supplementary interview questions. In the case of this research, document analysis was used as a way to corroborate and refute evidence from other sources such as interviews and surveys. According to Cardno (2018:627), it is not uncommon to find researchers using documentary evidence as a primary source of information and data in their studies. In addition, the rationale behind

choosing document analysis lies in its appropriateness as research technique. In this study, the following documents were used as primary sources of information and data:

- IDPs of both municipalities (2018, 2019, 2020)
- Data from Statistics South Africa
- Policy documents from the Department of Water and Sanitation
- Legislation
- Budget documents from both municipalities
- Annual reports
- AG reports
- Reports on municipalities' capacity to deliver sanitation services conducted by the Municipal Demarcation Board in 2018

Information obtained from the above sources was used as a point of departure in the analysis of data because it provides a background and understanding of issues raised in the study. It also immensely contributed to triangulation with other data sources, for instance, data from questionnaires and interviews.

### 5.7.1 Questionnaire

The data collection questionnaire is a primary data collection instrument commonly used in a survey (McMillan & Schumacher 2001). It is a series of written or verbal questions for which the respondent provides answers. McMillan and Schumacher (2001:42) assert that a questionnaire encompasses an assortment of instruments where the subject responds to written questions, eliciting reactions, beliefs and attitudes. While interviews often provide in-depth insight on participant experiences, thoughts and attitudes, they are not feasible when research involves a large number of people. All 220 participants in this research received the same questionnaire and were required to respond by indicating in the appropriate space provided.

### 5.7.2 Piloting of questionnaire

Pilot studies play a critical role prior to conducting full-scale research. Although a pilot study does not guarantee success in the main study, it increases the likelihood of success. Pilot studies fulfil several important functions, and they provide valuable insights that can improve the validity of a study. According to Van Teijlingen and Hundley (2001:1), pilot studies can also be the pre-test of a particular research instrument. In addition, pilot studies identify potential problems regarding compliance with the research protocol.

Van Teijlingen and Hundley (2001:3) recommend the following procedures be followed in developing a questionnaire's internal validity:

a) Administer the questionnaire to pilot subjects in exactly the same way as will be the case during the main research.
b) Ask the subjects for feedback to identify ambiguities and difficult questions.
c) Record the time taken to complete the questionnaire and decide whether it is reasonable.
d) Discard all unnecessary, difficult or ambiguous questions.
e) Assess whether each question allows for an adequate range of responses.
f) Establish that replies can be interpreted in terms of the information that is required.
g) Check that all questions are answered.
h) Re-word or re-scale any questions that are not answered as expected.
i) Shorten, revise and, if possible, pilot again.

### 5.7.3 Piloting of the questionnaire in this study

In pre-testing the questionnaires' feasibility, 10 household representatives from Khutsong Township in Merafong LM completed the questionnaire. For the municipal officials, five questionnaires were administered in Merafong LM. In addition, 10 more households from JB Marks LM, including Potchefstroom and Ventersdorp, completed the questionnaire. Ventersdorp was recently incorporated into JB Marks LM in 2016.

In total, 20 questionnaires were administered to representatives of households in both areas.

Following the pilot in this research, the following changes were made to the questionnaire in line with the recommendations received from households:

Question 3: The initial questionnaire only included two options that did not cover participants who did not pay for services. An alteration was then made to add the third option.

**3. Please indicate your experience with the level of affordability of services provided by the municipality by ticking on the appropriate box below**

| | **Affordable** | **Expensive** | **Do not pay** |
|---|---|---|---|
| Piped water | 1 | 2 | 3 |
| Sanitation/Toilet facility | 1 | 2 | 3 |

### 5.7.4 Questionnaire administration

Two sets of questionnaires were used to elicit responses from households and municipal officials regarding the delivery of sanitation services in and by the two municipalities. Two hundred and twenty questionnaires were self-administered to household representatives. In addition, 14 questionnaires were self-administered to municipal officials in both municipalities. In total, 234 questionnaires were administered.

The municipal officials' survey questionnaire comprised the following three sections (see Annexure B):

a) Section 1 covered questions/statements related to sanitation service infrastructure, including the availability of stormwater drainage systems and toilet facilities.

b) Section 2 covered questions/statements related to municipal water services planning, including the involvement of communities in the development of municipal WSDPs.
c) Section 3 sought information relating to sanitation resources, including the availability of human resources, qualifications of municipal officials, staff training and capacity to undertake required duties, and availability of material resources needed for the daily operation of wastewater treatment plants.
d) Question 20 was an open-ended question that required participants to raise their main concerns regarding water and sanitation services.

Overall, the questionnaire comprised closed-ended questions except for the last follow-up open-ended question. Likert-scale statements, Yes or No type questions, as well as number type questions, required participants to tick the number next to the correct answers. Questions that asked respondents to indicate the extent to which they agreed or disagreed with statements were included. Every section of the questionnaire was important in relation to the objectives of this study, especially to determine whether the independent variable 'where one lives' really determines officials' perceptions and opinions about their experiences.

The households' survey questionnaire comprised 17 questions (see Annexure C):

a) Question 1 - 5 covered questions/statements related to sanitation service infrastructure, including the availability of stormwater drainage systems and toilet facilities.
b) Question 6 - 9 covered questions/statements related to municipal water services planning, and sanitation facilities.
c) Question 10 - 16 sought information relating to the municipality's response time in dealing with service delivery issues, communities' involvement in public decision-making about service delivery, quality of services delivered to communities (particularly sanitation services), and communities' perception of the municipality's role in basic services delivery.
d) Question 17 – was open-ended: residents were required to raise their main concerns regarding water and sanitation services in their municipality.

Similar to the municipal officials' survey, the household survey questionnaire's questions were primarily of a closed-ended nature, except for the last follow-up open-ended question. Likert-scale statements, Yes or no type questions, as well as questions that required participants to indicate the extent to which they agreed or disagreed with statements were included in the questionnaire.

### 5.7.5 Cronbach's test of reliability and validity

Apart from following the procedure discussed above, it is important that a statistical measure be used to assess and evaluate the validity and reliability of the research instruments. According to Tavakol and Dennick (2011:53), internal consistency describes the extent to which all the items in a test measure the same construct, concept, and is thus connected to the interrelatedness of the items within a test. In this research, Cronbach's alpha was employed to test the reliability and internal consistency of the two questionnaires. Cronbach's alpha is a measure of internal consistency; that is, how closely related a set of items are as a group. It is considered a measure of scale reliability. It is important that the Cronbach's alpha test should be undertaken before the start of the data collection process to ensure validity. The Cronbach's alpha takes values from 0 to 1, with 1 being the highest value, meaning perfect internal consistency. A Cronbach's alpha with a value higher than 0.7 is considered reliable, compared to values below 0.7. The results for the household questionnaire used in this research to collect data from participants are presented in Table 5.1 and indicates a high internal consistency since the alpha value of the 17 items is 0.788. The Cronbach's alpha was also measured for the questionnaire designed for municipal officials. The results presented in Table 5.2 show high internal consistency since the alpha value of the 19 items is 0.859.

**Table 5.1: Reliability Statistics (household questionnaires)**

| Cronbach's Alpha | N of Items |
|---|---|
| .788 | 17 |

**Table 5.2: Reliability Statistics (municipal officials' questionnaires)**

| Cronbach's Alpha | N of Items |
|---|---|
| .859 | 19 |

## 5.8 STRUCTURED INTERVIEWS

An interview refers to a conversation between two people. It involves a set of assumptions and understanding about the situation not normally associated with a casual conversation (Wilkinson & Birmingham 2003:43). According to Bless and Achola (1990:106), an interview involves direct personal contact with the participant who is asked to answer questions. Those interviewed are free to expand on the topic as they see fit, focus on particular aspects, and relate their own experiences. Structured interviews were conducted in this research. As Bryman (2001:107) aptly puts it, the structured interview entails the administration of an interview schedule by an interviewer. McMillan and Schumacher (2001:42) refer to a structured interview as a standardised interview. It is an oral, in-person administration of a standard set of questions prepared in advance.

Personal structured interviews were conducted with four managers responsible for wastewater treatment plants in both municipalities, and two managers from each municipality. The aim of interviewing the managers was to understand the challenges experienced by the respective municipality with regard to sanitation services. This included the maintenance of the sanitation infrastructure, operation of wastewater treatment plants, and management of sanitation services in both municipalities. The interviews also explored what is being done by the municipalities to address those challenges. The researcher thus enquired about their strategic plans to improve sanitation services in the municipalities. The responses to these questions were intended to provide the researcher with a vivid picture as to what the challenges are, both internal and external. Consent forms were provided to the interviewees to indicate that their participation was voluntary, and that confidentiality and anonymity were crucial. Respondents were free to withdraw from the process at any time.

## 5.9 FIELD NOTES

Field notes refer to various notes recorded by scientists during or after their observation of a specific phenomenon they are researching. They are particularly valued in descriptive sciences such as ethnography, biology, geology, and archaeology, each of which has a long tradition in this area.

Anderson (2004:252) defines “field notes” as descriptive records of research accounts, describing experiences and observations the researcher has made while participating in an intense and involved manner. The researcher included field notes as part of the research instruments to record what he observed in an unobtrusive manner. During the data collection process, the researcher closely observed the state of infrastructure in both municipalities. For example, in JB Marks LM, the researcher observed sewage overflow in the street of Ikageng Township, and the dilapidated state of WWTWs in Potchefstroom. In Carletonville in the Merafong LM, the researcher observed that some of the WWTWs were not functioning (only two were functional out of five) and were dilapidated. There was an overflow of sewage in the street, and untreated effluent entering a natural Wonderfontein Spruit (tissue and diapers could be seen in the natural stream). This has a negative effect on the environment and the people of Potchefstroom because their main source of water is the Boskop Dam, which feeds from Wonderfontein Spruit.

## 5.10 QUANTITATIVE DATA ANALYSIS AND INTERPRETATION

The process of data analysis begins with a critical examination of collected data. In this study, the process of data collection started when all data collected through questionnaires and interviews were completed. The analysis of data refers to the way in which the data that were captured are analysed, and statistical procedures are used to derive meaning and measurement (De Vos, Strydom, Fouche & Delport 2005:333). According to De Vos *et al.* (2005:217), analysis means categorising, ordering, manipulating and summarising data to answer the research questions of a study. The purpose of the analysis is to reduce data to an intelligible and understandable volume so that relations of the research problem can be tested, and a logical conclusion is drawn.

In this study, primary data were collected through two survey questionnaires (one household survey questionnaire and one municipality official's survey questionnaire) and interviews with senior municipal officials of the two municipalities. Secondary data sources included academic journals, unpublished doctoral theses, and academic books. SPSS was used to analyse the quantitative data. Its general features include the ability to read and analyse complex file- and record structures, such as hierarchical files. Data were captured on Excel spreadsheets and exported to SPSS for analysis. Descriptive data were then analysed. The descriptive data level analysis consisted of frequencies, tables, pair-wise tests of the equality of column proportions and charts. The SPSS statistics software was used to generate custom tables on the Merafong LM and JB Marks LM or the households and municipality staff. Through descriptive analysis, the researcher was able to identify trends or patterns.

## 5.11 QUALITATIVE DATA ANALYSIS AND INTERPRETATION

In this study, a comparative analysis was used to transcribe and analyse qualitative data. Constant comparison is the data-analytic process whereby each interpretation and finding are compared with existing findings as it emerges from the data analysis. This method of data analysis is commonly used in qualitative analyses to compare pieces of data and look at common themes that emerge from data sources and how these themes relate to each other. According to Ratchliff (undated: online), the following tasks should be undertaken:

- Read through documents, e.g., field notes.
- Look for indicators of categories in observed events and behaviours, and name and code them on source documents.
- Compare codes to find consistencies and differences. Consistencies between codes entail similar meanings or pointing to a basic idea.
- Draft a memo on the comparisons and emerging categories.
- Categories are saturated when no new codes related to them are formed.
- Certain categories appear more central than others.

## 5.12 RELIABILITY OF THE RESEARCH

To ensure the reliability of the research, the Cronbach's alpha test was employed in this study. This test measures the internal consistency of the research instruments, viz the questionnaires. In addition, the following procedures were followed while drafting the questionnaires:

- The questionnaires were reviewed by an expert in the field.
- Piloting of the questionnaires was undertaken in the JB Marks LM and Merafong LM.
- Adjustments were made to the questionnaires based on expert advice.
- Collecting and analysing data according to established scientific and methodological principles.

## 5.13 STRATEGIES FOR ENSURING TRUSTWORTHINESS

For the qualitative phase of the research, the following criteria were followed to assess the trustworthiness of the qualitative research findings:

- Credibility – entails confidence in how well the data addresses the intended focus.
- Dependability – refers to the stability of data over time and under different conditions.
- Transferability – reflects the application of findings to other settings or contexts.
- Confirmability – refers to the extent to which findings are affected by personal interest and biases.

During the data collection process, the researcher observed that employees were not completely free to complete the questionnaire in the presence of their seniors. They asked to move to a different room to complete the questionnaire.

## 5.14 LIMITATIONS TO THE STUDY

The researcher's initial plan was to keep the size of the sample open until he reached data saturation. It should be noted that the researcher did not select specific officials to complete the municipal questionnaire; only seven participants per municipality were made available by the two municipalities. As a result, statistical analysis could not be run because of the small sample of participants. The researcher only managed to interview two senior officials per municipality. The researcher was also only allowed 15 minutes per interview and thus had limited time in terms of what he hoped to cover. However, this situation was offset by the availability of official documents from the internet, which were used as one of the primary data sources to increase the validity of the research.

## 5.15 ETHICAL CONSIDERATIONS

It is researchers' duty to ensure ethics principles that guide their research are adhered to, particularly when they undertake research that involves human beings (Bryman 2001:480). The following measures were undertaken to ensure that this research proceeded in an ethical manner.

Firstly, the researcher applied for ethics clearance from the ethics review committee of the Department of Public Administration of the University of South Africa. The researcher was also required to obtain permission from the institutions implicated in this research (i.e. Merafong LM and JB Marks LM). Such permission was sought, acquired, and is attached as Annexure E. Presenting a participant information sheet prior to conducting interviews or administering questionnaires was strictly observed by the researcher.

According to Bryman (2001:479), ethical principles in social research revolve around four main ethical principles, namely voluntary participation; privacy, confidentiality and anonymity; no harm to participants; and deception. Babbie and Mouton (2001:528) concur with Bryman (2001:479) that the rights and interests of all participants in social research should be protected. The preceding contention implies that no participants should be asked questions that may be used against them. The researcher made sure

that he complied with the research ethics principles in his interactions with the research subjects. The following formed the core of research ethics:

### 5.15.1 Voluntary participation

Often, social research requires participants to reveal personal information about themselves that is unknown to others. In addition, social research requires that such personal information be shared with strangers. Professionals such as attorneys and medical practitioners also request such information, but their request may be justified because their purpose is to assist. However, social researchers can seldom make this claim. They can only argue that their research is for the improvement society and humanity in general (Babbie 2003:61).

According to Babbie (2003:62), a major tenant of medical research ethics is that experimental participation must be voluntary. The same norm should apply to social science research, and no one should be forced to participate in any research endeavour if they do not wish to do so. Before any research is undertaken, participants should be informed that their participation is completely voluntary, and they can withdraw anytime during the process. To ensure compliance with this principle, the researcher compiled a participation consent form and presented it to all the participants. Through the participation information sheet, participants were informed that participation in this research was voluntary and that they could participate in the research or withdraw at any time if they so wished. The researcher explained the purpose of the questionnaire so that they had ample time to accept or reject participation. Consent forms were provided to the interviewees to indicate that their participation was voluntary, and confidentiality and anonymity was the crux on which the interviews were based. The participation information sheet was attached to all questionnaires administered to households and the municipal officials' questionnaires.

### 5.15.2 Privacy, confidentiality and anonymity

Confidentiality in research refers to an agreement as to how information collected in the research will be kept secured. Privacy refers to the research participants' right to control others' access to information about them. Anonymity refers to the removal of

any unique characteristic; for instance, name, address and affiliated institution (Kanuka & Anderson 2007:30). The researcher informed participants about all relevant details of the research and gave them an opportunity to agree or refuse to participate. They were promised privacy and confidentiality. Information will be strictly kept confidential on a password-protected computer. The researcher informed participants that they had the right to insist their names not be recorded anywhere and that no one, apart from the researcher and identified members of the research team, would know about their involvement in this research. Their names were not recorded anywhere, and no one would be able to connect them to the answers they provided. Participants were assured that their answers would be given a code number or a pseudonym. They would be referred to in this way in the data, any publications, or other research reporting methods, such as conference proceedings.

### 5.15.3 No harm to participants

Social researchers have an obligation to ensure participants do not incur or suffer any injury as a direct result of participating in research. Before participation, the researcher assured participants that there were no possible or reasonably foreseeable risks of harm or side-effects to them, including any risk that may come from others identifying the person's participation in the research.

## 5.16 CONCLUSION

This chapter provided a detailed discussion of the methods and procedures through which this research was undertaken. It explored pragmatism as the philosophical basis upon which this study was based. The chapter also explained the mixed-methods research approach adopted in this research, and the rationale for this choice of research method. It further explained how both quantitative and qualitative data were collected and analysed. The statistical methods were also explained in this chapter.

This chapter fully explained the ethical considerations and processes followed during the course of data collection. The researcher is hopeful that the guarantees provided in this research in relation to the trustworthiness, validity and reliability of the research

are sufficient to the reader. The next chapter discusses the data analysis and presents an interpretation of the findings.

# CHAPTER SIX
# DATA ANALYSIS AND INTERPRETATION

## 6.1 INTRODUCTION

The preceding chapter outlined the research design and methodology used in this research. This chapter presents the data analysis and its interpretation. Such data are interpreted with a view to answer the main research question of the study. In line with the mixed-methods research approach, information and data were gathered through an in-depth document analysis, two survey questionnaires, and semi-structured interviews. The one questionnaire was administered to households and the other to municipal officials. Interviews were also conducted with senior officials from the Merafong and JB Marks LMs.

The questionnaires used in this research tested households and municipal officials from both municipalities' views of shortcomings in the delivery of water and sanitation services.

**Table 6.1: Participation rate per local municipality**

| | Frequency | Percent (%) | Valid Percent |
|---|---|---|---|
| Merafong local municipality | 110 | 50.0 | 50.0 |
| JB Marks local Municipality | 110 | 50.0 | 50.0 |
| **Total** | **220** | **100.0** | **100.0** |

As indicated in Table 6.1, 220 households participated in the survey. Of those, 110 (50%) were from JB Marks LM, which was established as a result of the amalgamation of the erstwhile Tlokwe LM and the Ventersdorp LM. The other 110 (50%) were from Merafong LM, which falls under the West Rand district municipality. According to the MuSSA Report (2018), both municipalities are experiencing serious administrative challenges in delivering of water and sanitation services (see Section 3.1 of the thesis).

A total of four towns and four townships participated in this research (see Section 2.1 of the thesis). Two belonged to Merafong LM and the other two to JB Marks LM. The

participants were evenly spread across the two municipalities; on average, 40% of participants were from informal settlements, and between 50% and 60% of participants resided in town and formal areas of the township.

## 6.2 ANALYSIS OF RESULTS OF THE HOUSEHOLD QUESTIONNAIRE

This section presents results obtained through questionnaires administered to households. It explores questions related to the nature and state of municipal water and sanitation infrastructure in residential areas. In addition, it intended to establish the source of water for households in both municipalities and households' views regarding the quantity, quality and affordability of water and sanitation services. Lastly, water service development planning and the quality of services delivered to residents were interrogated.

**1. Please indicate the type of residential street in which your house is located**

To determine whether stormwater drainage is available in the streets in which participants lived, they were asked to indicate the type of residential street on which their houses were located. As illustrated in Figure 6.1, participants had to indicate whether their home was situated on a street with a tarred or gravel road.

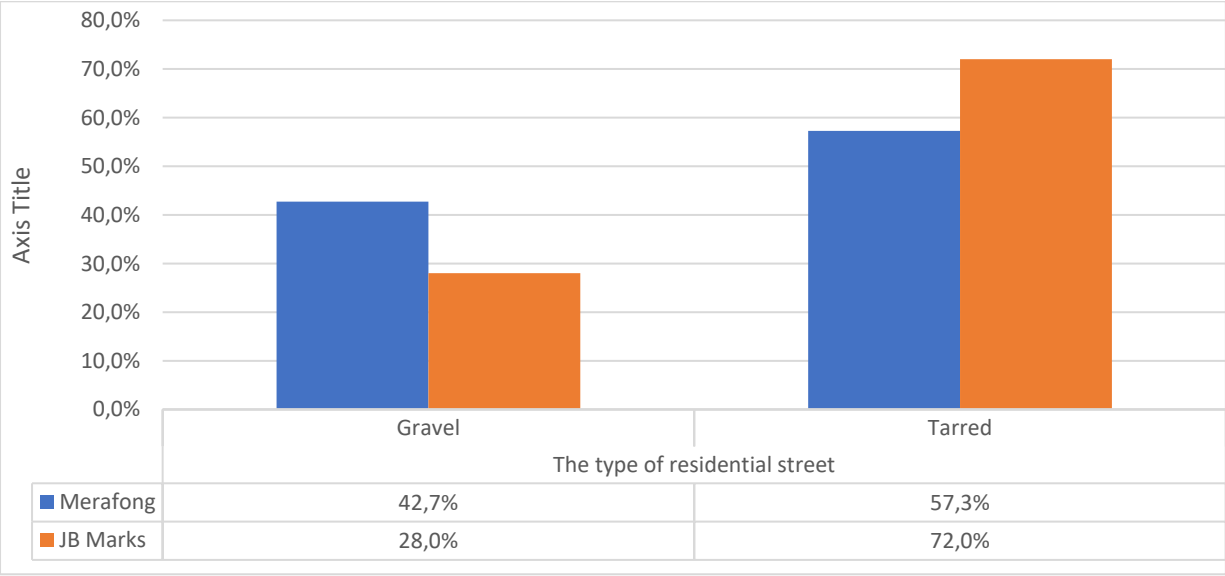



**Figure 6.1: Please indicate the type of residential street in which your house is located**

The results in Figure 6.1 show that 72% of participants in JB Marks LM lived on a tarred road, and only 28% lived on a gravel road. This is indicative of infrastructure developments in this municipality. In Merafong LM, results show that 57% lived on tarred roads, while 42% still lived on gravel roads. This could be attributed to declining municipal financial viability. For instance, the dependency ratio of the Merafong LM has grown from 33% in 2001 to 38.5% in 2016. The dependency ratio is a good indicator of the level of dependency on government to take care of its community. Essentially, more residents have difficulties in paying for municipal services and meeting their own basic needs. By implication, the municipality revenue declines and with it its ability to provide infrastructure development (Merafong Local Municipality IDP, 2019:22).

The amalgamation of erstwhile Tlokwe LM and Ventersdorp LM caused serious financial challenges for the JB Marks LM. For instance, the collection rate of taxes in the former Ventersdorp and Tlokwe LMs before the merger was 35% and 92%, respectively (JB Marks, 2017:190; Mafikeng Mail, n.d.: Online). This case fits into what the Municipal IQ describes as a merger of a delinquent municipality with a vibrant and decent tax base. Such a merger does not really strike the balance of financial viability but certainly adds a new layer of responsibility to the merged municipality to deliver services to a much larger geographical area with a low tax base. In the absence of long-term grant funding from the national government, this type of amalgamation may result in the further marginalisation and neglect of already poor rural communities (Municipal IQ, 2009:1).

**2. Household access to water (where is your water coming from)**

The source of water is a good determinant of the type of infrastructure or development in a municipal area. To establish the source of water for residents of the two municipalities, participants were asked to select from a list of possible options, ranging from piped water, borehole, river and other sources. The results are shown in Figure 6.2.

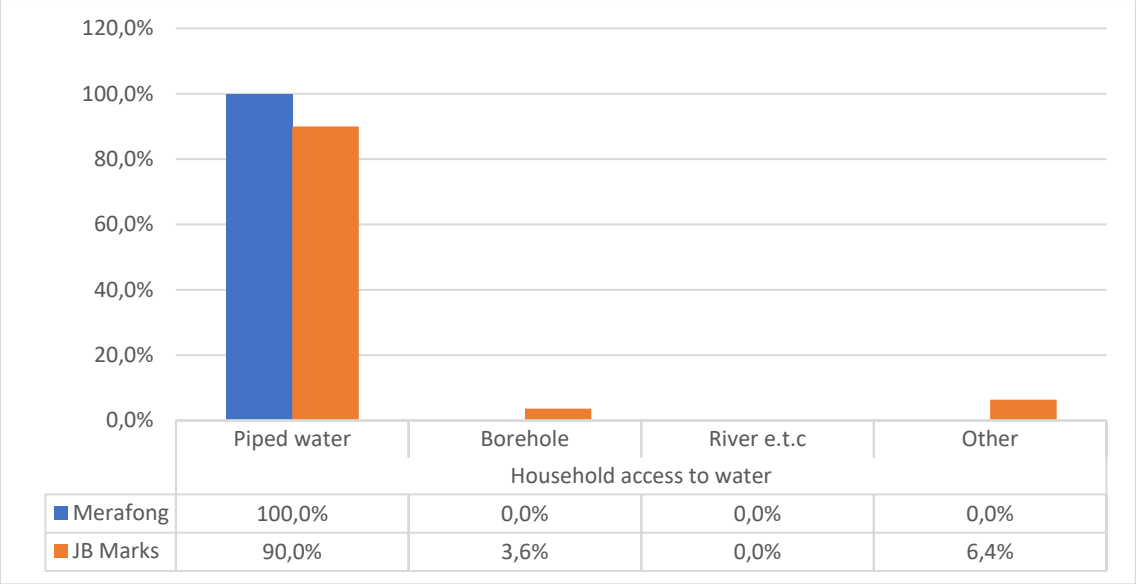



**Figure 6.2: Household access to water (where is your water coming from)**

Despite the challenges alluded to earlier, both municipalities have done well in providing access to piped water; this is reflected in Figure 6.2. In other words, in the Merafong LM, 100% of participants had access to piped water (access include communal taps in the street), and in JB Marks LM, 90% of participants indicated they could access piped water connected to the municipal network. This is in line with the national average of 89% of households with access to piped water (Statistics South Africa, 2016d:14). The above figures are indicative of an increase in the number of households who have access to piped water.

According to Stats SA (2017:38), the number of households in South Africa who have access to piped water has increased from 4.2 million in 2006 to 13.9 million in 2017. It should be noted that the availability of infrastructure in both municipalities were observed by the researcher while administering the household questionnaire. The researcher noted that areas with inadequate or no infrastructure are informal settlements within the municipality. Of the participants in the JB Marks LM, 3.6% accessed water through boreholes, and 6.4% used other means (rural parts of the municipality). The use of boreholes and other means to access water could be attributed to an infrastructure backlog of 13.9% in the North West Province, particularly in the rural municipalities (Statistics South Africa, 2016d:17).

**3. Please indicate your experience with the level of affordability of municipal services**

Here, participants were asked through a set of questions/statement to share their views about the affordability of water and sanitation services. Results are provided in Figure 6.3.

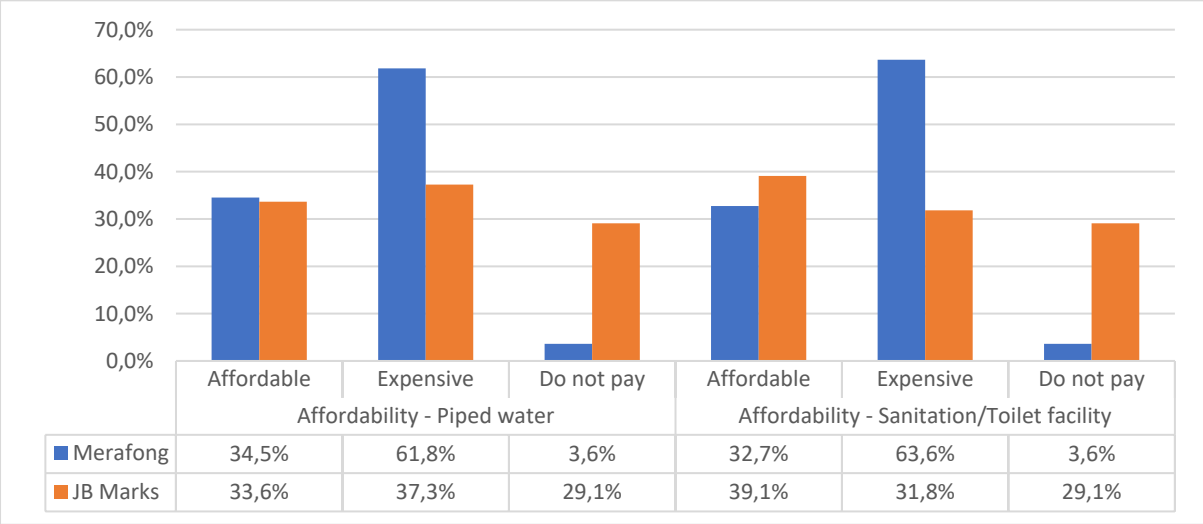



**Figure 6.3: Experience with the level of affordability of municipal services**

Regarding participants' experiences of the affordability of water and sanitation services, a majority of participants (61.8%) in Merafong LM regarded the municipal water as expensive, 3.6% did not pay for water, while 34.5% regarded the service as affordable. Residents of JB Marks LM were split between those who perceived the service to be affordable (33.6%), expensive (37.3%), and those who did not pay for this service (29.1%). Residents indicated the following reasons for not paying for services.

*"We cannot afford to pay for municipal services because we are unemployed and we don't even have water meters installed in our yards and we fetch water from communal taps in the street" (Resident JB Marks LM, June 2019).*

A majority (63.3%) of Merafong LM residents viewed sanitation services as expensive. Residents of JB Marks LM were split with 31.8% of participants perceiving the service as expensive, 39.1% regarded the services as affordable, and 29.1% did not pay for the service. It is concerning that 29% of JB Marks LM residents did not pay for services

because this directly affects municipal revenue and ultimately its ability to provide services.

One of the participants in JB Marks LM said:

"*Although we have toilet facilities in our dwellings, they are not connected to the municipal sanitation infrastructure network because of incomplete infrastructure project and we have resorted to illegal connection to the main municipal network" (Resident JB Marks, June 2019).*

In the Merafong LM, the majority of residents (63.6%) regarded sanitation services as expensive. Moreover, 32.7% viewed the service as affordable, and 3.6% indicated they did not pay for sanitation services.

"*Most of us are unemployed so it is difficult to pay for municipal services as we struggle with basic things like food" (Resident Merafong, June 2019).*

According to Bekink (2006:7), many services remain unaffordable for many South African residents. In order to enhance quality of life, municipalities should strive to make services as affordable as possible. This is not an easy task, as many factors have an impact on pricing.

**4. Please indicate the type of sanitation/toilet facility in your premises**

In the section below, participants were asked to indicate the type of sanitation/toilet facility they use on their premises. The statement was meant to determine access to adequate sanitation facilities, as defined by regulations in the *Water Services Act 108 of 1997*. The results are presented in Figure 6.4.

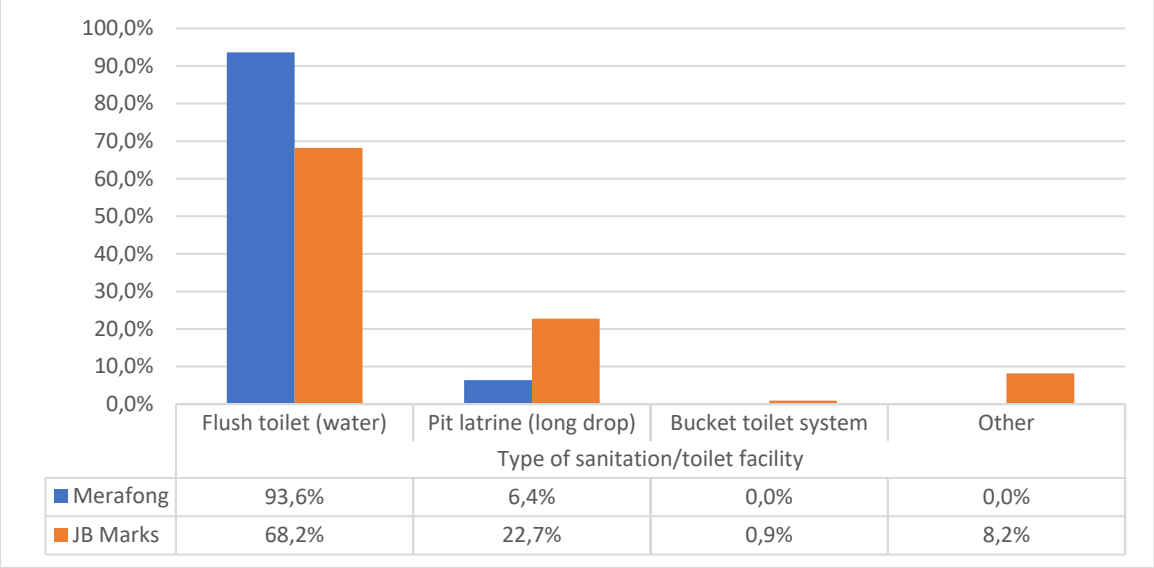



**Figure 6.4: The type of sanitation/toilet facility**

Figure 6.4 indicates the type of sanitation facility participants used in both municipalities. Thus, 93.6% of the households in Merafong LM and 68.2% in JB Marks LM used flush toilets. However, in JB Marks LM, 22% of participants used pit latrines without ventilation, while 8.25% relieved themselves through other means. This result indicates that more should be done to provide adequate sanitation facilities. According to Statistics SA's Report on the State of Service Delivery (2016a:34), providing all households access to adequate sanitation remains a challenge due to various factors, including rapid population growth, overcrowded and unplanned informal settlements, an inability of households to pay for such services, and lack of maintenance of existing infrastructure. It should be noted that since the amalgamation of erstwhile Tlokwe and Ventersdorp LM to form JB Marks LM, the population has grown exponentially from 162,762 to 243,572 residents. This amounts to a 49.6% increase in the size of the population. This population increase creates service delivery challenges because Ventersdorp is a poor and rural town with a low tax base and a lot of strain is put on the finances of the amalgamated municipality.

**5. Is your toilet facility shared by more than one household?**

This question intended to determine the accessibility and convenience of facilities by asking participants to indicate whether their toilet facility is shared by more than one household. This is very important because it provides a clear indication of the sanitary conditions endured by residents of the two municipalities. People using shared toilet

facilities are often exposed to unhealthy conditions and suffer ill health as a result (Sinharoy *et al.*, 2019: online). The findings are presented in Figure 6.5.

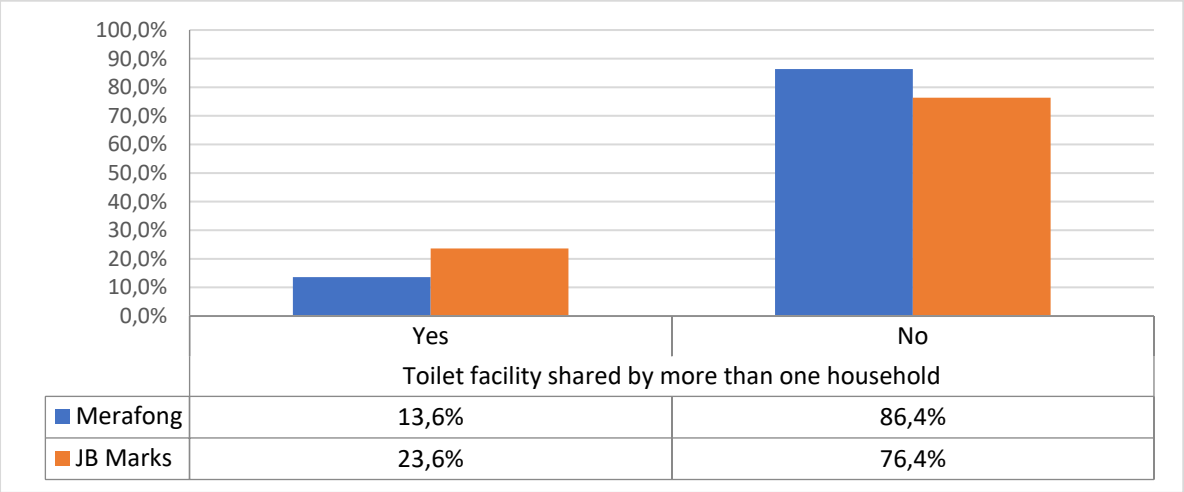



**Figure 6.5: Is your toilet facility shared by more than one household**

Figure 6.5 illustrates whether participants' toilet facilities were shared by more than one household. The majority (86.4% in Merafong LM and 76.4% in JB Marks LM) of residents did not share their toilet facilities. It should be noted that more than 10% of residents in both municipalities shared sanitation facilities, with JB Marks LM ranking the highest (23.6%). According to Stats SA Report (2017:63), more than two thirds (68%) of households living in informal settlements in South Africa share toilet facilities, in comparison to 19% of households living in formal dwellings and 12% of households living in traditional dwellings.

Although more than 10.9 million South Africans have been provided with access to free basic sanitation since 2015, this service is only available to households in areas that are already connected to municipal sewerage networks. As a result, the policy does not benefit the poor and most vulnerable households living in rural areas and dense informal settlements (Socio-Economic Rights Institute, 2018: online).

**6. Do you know of a Water Services Development Plan in your municipality?**

Here, participants were asked if they knew about a WSDP in their municipalities. Participants had to answer yes or no to this question. The WSDP is the basis upon

which water services are provided as per the *Local Government: Municipal Systems Act 32 of 2000*. The results are shown in Figure 6.6.

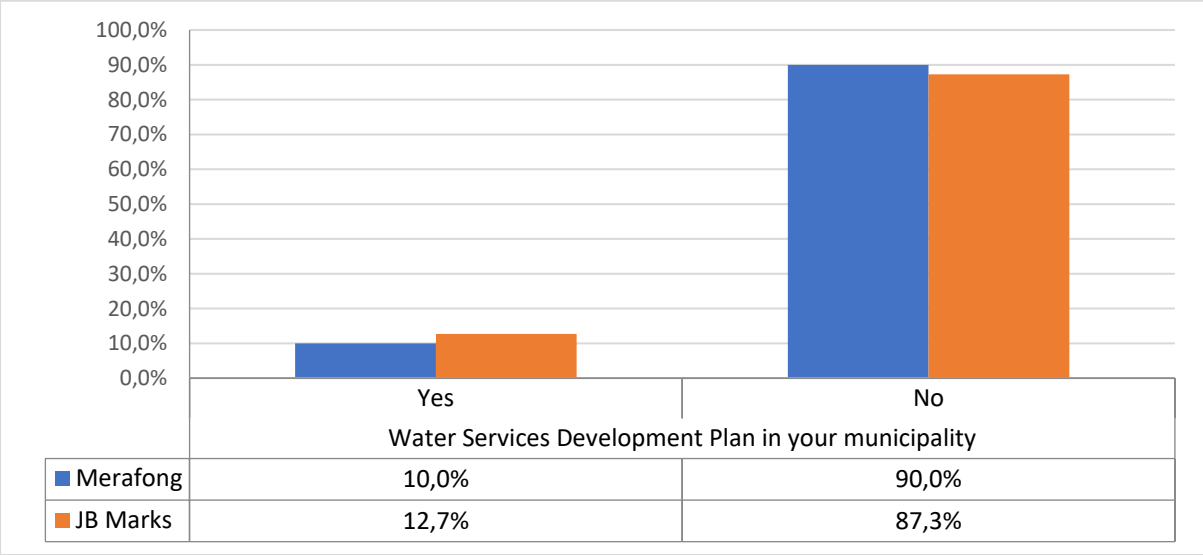



**Figure 6.6: Do you know of Water Services Development Plan in your municipality?**

Figure 6.6 shows participants' views on whether they have knowledge about the existence of a WSDP in Merafong and JB Marks LMs. As illustrated, most residents (90% in Merafong LM and 87% in JB Marks LM) claimed to have no knowledge about the existence or use of a WSDP in their respective municipalities. This result indicates municipalities in both cases are not doing enough to comply with section 14(1) of the *Water Services Act 108 of 1997.* It requires WSAs to take reasonable steps to bring a draft of the WSDP to the notice of consumers and invite public comment to solicit their views and input regarding water services by means of a public participation process. Community involvement and engagement in the plan should ensure they take ownership of the WSDP and the development process of their respective municipalities. This will make it easier to implement the WSDP. This plan provides communities with an opportunity to give input on how water services should be provided in their municipality.

According to Maphanzi, Raga, Taylor and Mayekiso (2013:57), communities should be empowered to participate meaningfully in municipal processes. Mpehle (2012:218) agrees that communities should not only be seen as recipients of public services but

as active participants and an integral part of public decision-making processes. Hove *et al.* (2019:8) propose that communities be involved in public decision-making processes about matters that affect their daily lives. The authors caution, however, that community involvement and participation should not be limited to forums only, but communities should be directly involved in the day-to-day operation and maintenance of sanitation infrastructure, or what they call “local knowledge” (Hove *et al.,* 2019:9). Furthermore, section 152(1) of the Constitution places a duty on the local government sphere to ensure and encourage the involvement of communities and community organisations in matters of local government. Such matters include communities’ participation in the development of a WSDP in their municipalities. It is sad that residents of both municipalities did not fully participate in matters that affect their daily lives. Both municipalities should do more in promoting meaningful public participation in their respective communities.

**7. Do you participate in water services development planning processes of your municipality? If so, do you think your municipality considers your views before adopting the WSDP? The municipality keeps me informed about developments in the municipality.**

Residents’ views were tested through a set of questions related to water services planning. The questions sought to determine how often residents of the two municipalities participated in water services planning processes in their municipalities, and if they did participate, how often, and if they felt their participation is meaningful. In other words, how often their inputs are taken seriously by their municipalities. In addition, the question intended to establish how often residents were informed about developments in their municipalities. The results are provided in Figure 6.7.

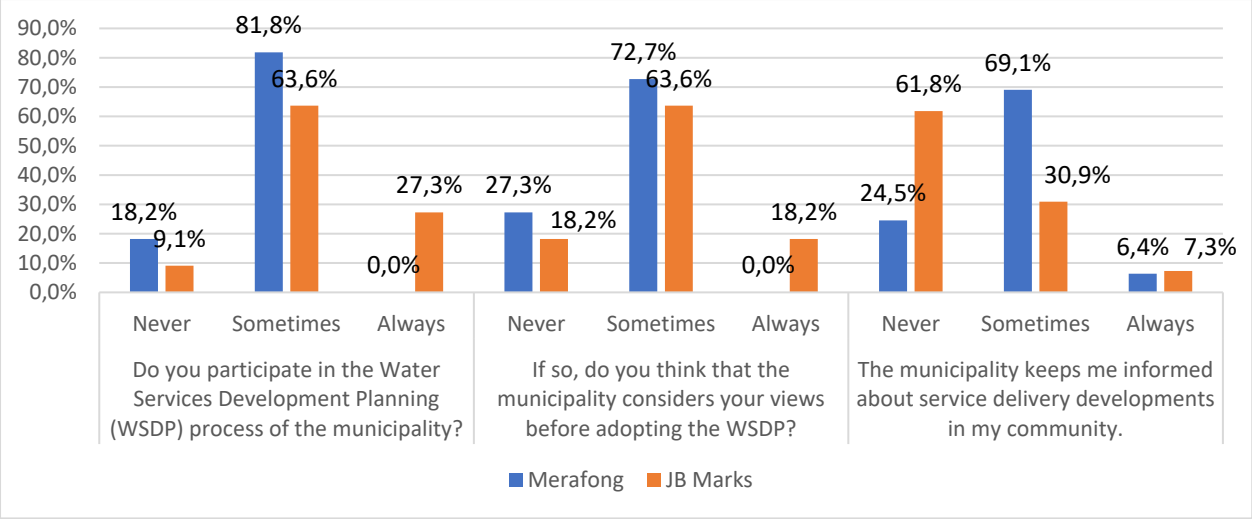



**Figure 6.7: Do you participate in water services development planning processes of your municipality. if so, do you think your municipality considers your views before adopting the WSDP? The municipality keeps me informed about developments in the municipality.**

As presented in Figure 6.6, only 10% of those residing in Merafong LM and 12% in JB Marks LM responded positively to this question. The few who claimed to have knowledge about a WSDP indicated rare participation (81.8% and 63%) and their views were rarely considered before a WSDP was adopted or implemented. Furthermore, a majority of participants (61.8% from JB Marks LM and 69.1% from Merafong LM) claimed their municipalities rarely informed them of service delivery developments in their area. These results show that community participation in municipal water services development planning processes is not happening as it should. This could be attributed to a number of factors, including a lack of knowledge among would-be participants, and it could also mean communities are not interested enough in municipal matters. This calls for municipalities to encourage communities to be part of this process through civic advocacy campaigns that will educate communities about the importance of municipal matters and their active participation.

**8. The municipality attends to service delivery issues within a satisfactory timeframe**

Here, participants' views were tested on whether they were satisfied with the response rate of their respective municipalities regarding service delivery challenges.

Participants were required to indicate the extent to which they agreed or disagreed with the statement. The results are provided in Figure 6.8.

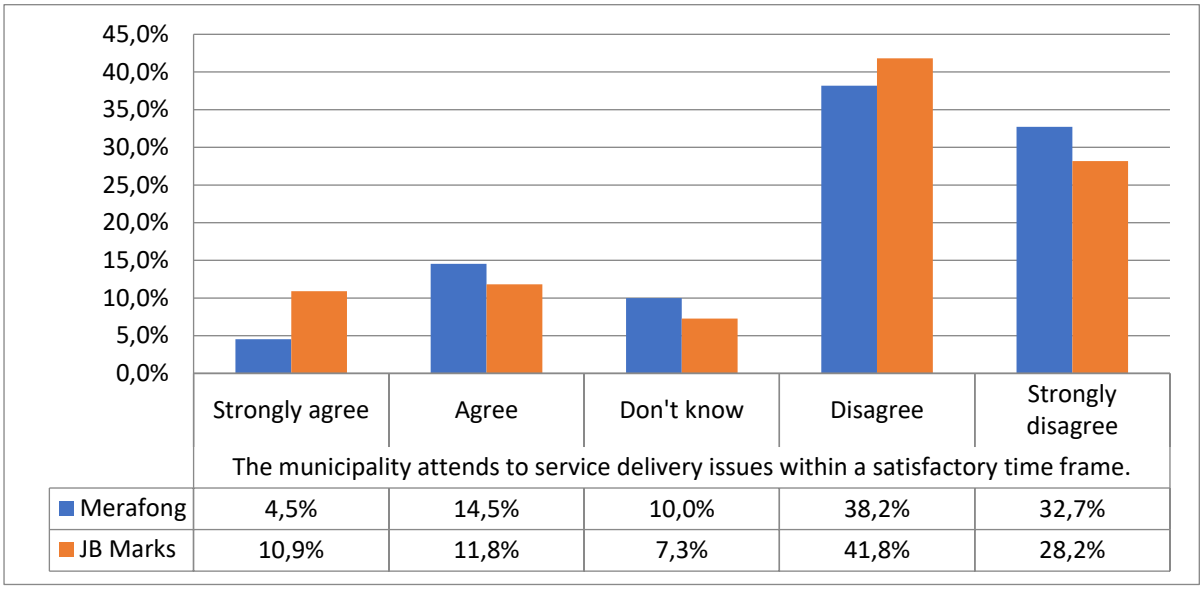



**Figure 6.8: The municipality attends to service delivery issues within a satisfactory timeframe**

It is notable from Figure 6.8 that residents in both municipalities shared the view (70.9% in Merafong LM and 70% in JB Marks LM) that their municipalities did not attend to service delivery issues within a satisfactory timeframe. Residents in both municipalities indicated that burst sewerage and water pipes can leak for a long time without any action from the municipality. This is indicative of a municipality that is not responsive to the needs of the people who voted for it; this sentiment was shared by residents in both municipalities. In addition, residents indicated it can take up to six months before the municipality repairs blocked sewerage pipes.

According to Ledger and Rampedi (2019:2), history and experience have shown that once service delivery infrastructure such as sewerage transport and water reticulation pipelines fall into a state of disrepair, it takes years before adequate funding can be made available to effect repairs. Senior managers in municipalities where there has been a concerted effort to repair the infrastructure after years of neglect (as was the case in Oudtshoorn) estimate that it takes five to seven years to bring a municipality back to sound and operational footing after as little as three years of neglect. Furthermore, during this period of recovery, service delivery remains under pressure

due to infrastructure challenges, lack of financial and other resources (Ledger & Rampedi 2019:2).

**9. The municipal officials know services are needed in my area**

In this section participants responded whether municipal officials know their service needs in their respective area of residence. Participants were asked to indicate the extent to which they agreed or disagreed with the statement. The results are presented in Figure 6.9.

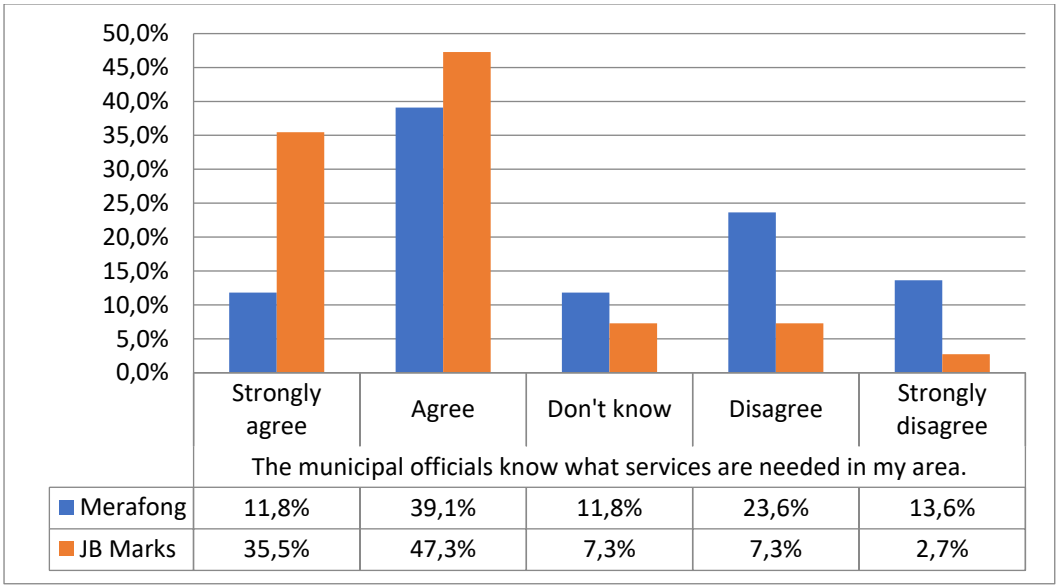



**Figure 6.9: The municipal officials know the services needed in my area**

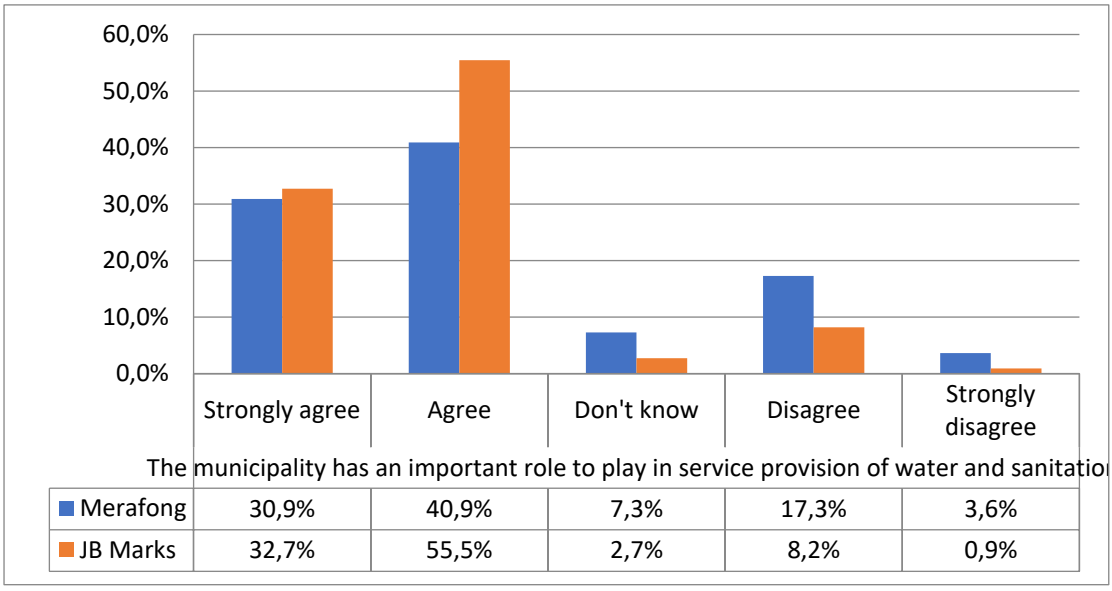
Despite the significant differences in opinion illustrated in Figure 6.9, the overall view was in the affirmative in both cases that municipal officials knew what services were needed where participants reside (50.9% in Merafong LM and 82.8% in JB Marks LM). However, participants in Merafong LM were split with 37.2% disagreeing with the statement, while a few (10% in JB Marks LM) believed municipal officials have no knowledge about service needs in the areas where participants reside. Moreover, 7.3% of the respondents in JB Marks LM and 11.8% in Merafong LM claimed to have no knowledge about what municipal officials know or do not know. As one resident stated:

*"Municipal officials do come in this area and we report but nothing is being done to fix the problem" (Resident Merafong LM 2019).*

According to Smith and de Visser (2008:8), ward committees were established as a mechanism through which communities and local government engage on matters of common interest. Ward committees were established to bridge the gap between communities and municipalities and create a platform through which communities and municipalities can participate in municipal public decision-making processes. In addition, they were established to monitor the performance of municipalities and raise issues of concern, such as water and sewerage pipes, and assist with community campaigns (Smith & de Visser 2008:9). For example, water shortages and paying for municipal services since members of the ward know their local communities and their needs. In addition, ward committees should provide information about municipal operations.

**10. The municipality has an important role to play in service provision of water and sanitation**

This statement sought to solicit participants' views regarding the important role municipalities play in the provision of water and sanitation services. Participants were asked to indicate the extent to which they agreed or disagreed with the statement. The results are presented in Figure 6.10.




| | Strongly agree | Agree | Don't know | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| Merafong | 30,9% | 40,9% | 7,3% | 17,3% | 3,6% |
| JB Marks | 32,7% | 55,5% | 2,7% | 8,2% | 0,9% |

**Figure 6.10: The municipality has an important role to play in service provision of water and sanitation**

The above graph indicates participants' opinions regarding the important role played by their respective municipalities in basic service delivery like water supply and

sanitation infrastructure. It is worth noting that the majority of residents in Merafong LM (70%) and JB Marks LM (88%) recognised the important role played by municipalities in the delivery of water and sanitation services. This is indicative of communities being aware of the importance of the municipality as a custodian of basic service delivery. WSAs (e.g., municipalities responsible to provide water services) are the primary regulators of water services. Moreover, WSAs provide parameters within which water services may be provided. Steyn and Van Heerden (2011:169) concur that WSAs have the ultimate responsibility to ensure water supply and access to sanitation services in their area of jurisdiction. For example, they are responsible for ensuring the effective, efficient and sustainable collection, treatment and discharge of wastewater. They are also required by the *Water Service Act of 1997* and the *National Water Act of 1998* to comply with national standards relating to, amongst others, the construction, functioning and maintenance of WWTWs. WSAs must ensure that all personnel working on the plants are competent and qualified and have all the necessary equipment to discharge their functions as required by legislation.

**11.The municipality gives priority to my basic needs**

This statement tested participants' views on whether their respective municipality gives priority to their basic needs. Participants had to indicate the extent to which they agreed or disagreed with the statement. The results are provided in Figure 6.11.

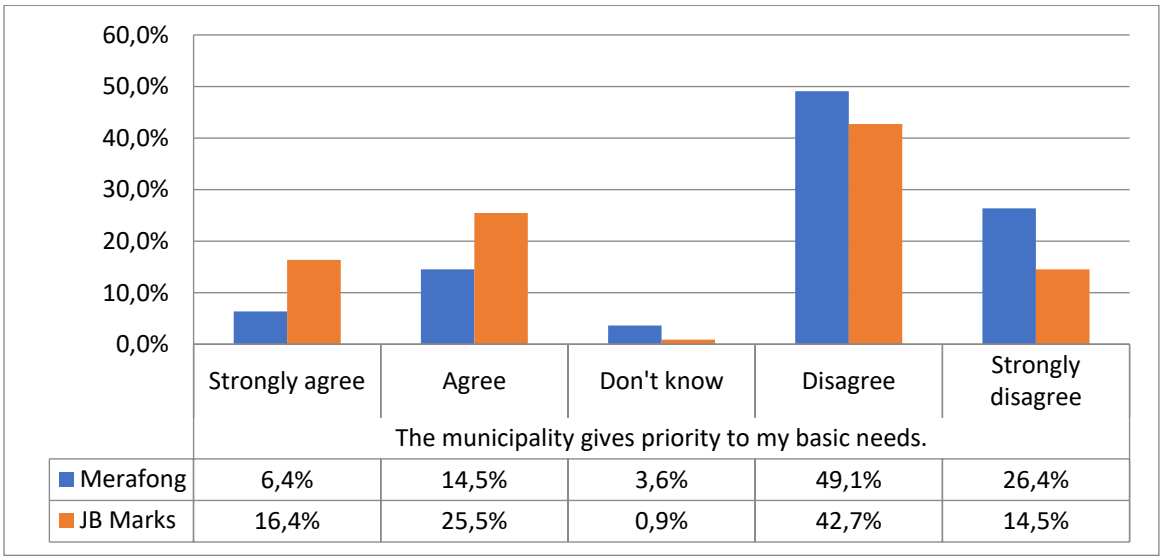



**Figure 6.11: The municipality gives priority to my basic needs**

As indicated in Figure 6.11, there was a significant difference in perception between the residents of the two municipalities on whether their respective municipalities prioritise their basic needs. In Merafong LM, 75% of participants claimed the municipality does not give priority to their basic needs. Residents of JB Marks LM were split over the same issue, with 56% indicating the municipality does not prioritise their needs and 41% felt the municipality gives priority to their needs. The split in opinion could be attributed to the fact that the recently amalgamated municipality faces the challenge of dealing with the neglected Ventersdorp municipal area (Municipal IQ, 2009). As one resident in Ventersdorp put it "*We hoped for better services with the amalgamation of Ventersdorp and Tlokwe, but things have remained the same" (Resident JB Marks LM 20 June 2019)*. Ledger and Rampedi (2019:6) concur that many households do not have access to the most basic services on a reliable basis and, in general, municipalities in South Africa are not responsive to residents' demands. Ironically, municipal support programmes are in place to address these basic service delivery issues, and there is a well-funded range of government departments and agencies, but they seem to have a marginal impact. This is the case despite resources being allocated to these programmes (Ledger & Rampedi 2019:6).

**12. I want my municipality to involve me in decisions about service delivery in my community**

This statement tested the participants' opinions regarding their involvement in decisions about service delivery in their respective communities. Participants were required to indicate the extent of their agreement or disagreement with the statement. Results are provided in Figure 6.12.

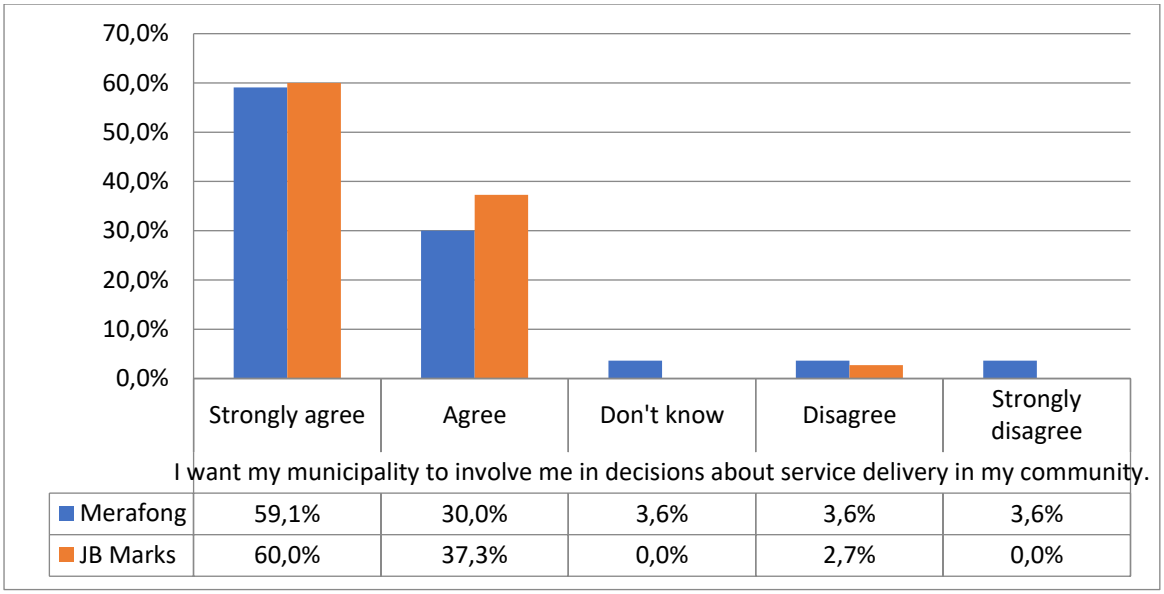



**Figure 6.12: I want my municipality to involve me in decisions about service delivery in my community**

As indicated in Figure 6.12, the majority of participants (89% in Merafong LM and 97% in JB Marks LM) wanted to get involved in decisions taken by their municipality. This is in line with the principle of participatory democracy, which is premised on the ideal that citizenry have the power to make political decisions. Residents indicated that they wanted to be part of decisions that affect their lives.

Municipalities have a duty to ensure their respective communities participate in local government matters, as provided for by section 152(1) of the Constitution. One of the basic principles of a democracy is the need to involve citizens in matters of government. This principle aligns with the prescripts of section 152(e) of the Constitution, which states that it is local government's aims to involve community members in matters of local government. It is therefore important for communities to be informed and participate in public decision-making processes that affect their well-being. This view is also emphasised by Hove *et al.* (2019) who state opportunities should be made available to communities to participate in the affairs of local government. Active involvement in decision-making processes could empower communities so they hold councillors accountable. This will give people a sense of ownership and minimise resistance.

**13. I experience interruptions in sanitation services in my home**

The next statement solicited participants' views regarding their experiences about sanitation service interruptions in their place of residence. Participants were asked to indicate how often they experienced service interruptions, if at all. The results are presented in Figure 6.13.

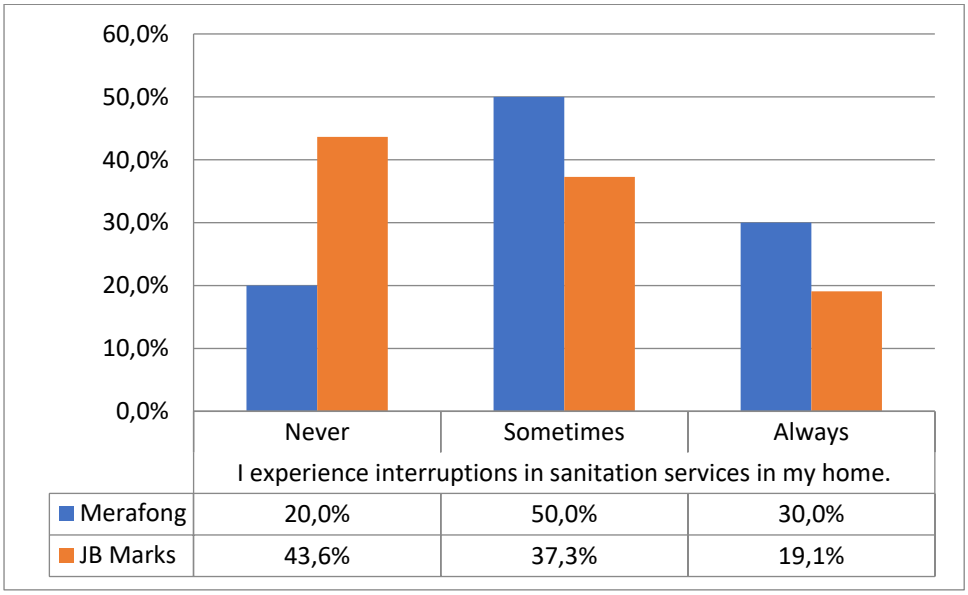



**Figure 6.13: I experience interruptions in sanitation services in my home**

Figure 6.13 shows that 30% of participants in Merafong LM claimed they always experience service interruptions, while only 19.1% of participants in JB Marks LM claimed they always experience interruptions. According to the Stats SA report (2016a:31), residents who reside in informal areas tend to be neglected when it comes to the quality of service they receive. This was a reality for residents who lived in informal settlements in both municipalities. For the 50% (Merafong LM) and 37% (JB Marks LM) who claimed they sometimes experienced interruptions, things are better, while for the 20% (Merafong LM) and 43.6% (JB Marks LM) who claimed to have never experienced any service interruptions, their activities continue as normal. According to the Stats SA Report (2016a:33), nationally, households that experienced water interruptions reported they experienced interruptions for a total of 14 days over the preceding 90-day period.

**14. I experience blocked toilets and pipelines in my home**

This statement tested participants' experiences regarding blocked toilets and pipelines in their homes. Participants were required to indicate how often they experienced blockages of their toilet facilities and pipelines. The results are provided in Figure 6.14.

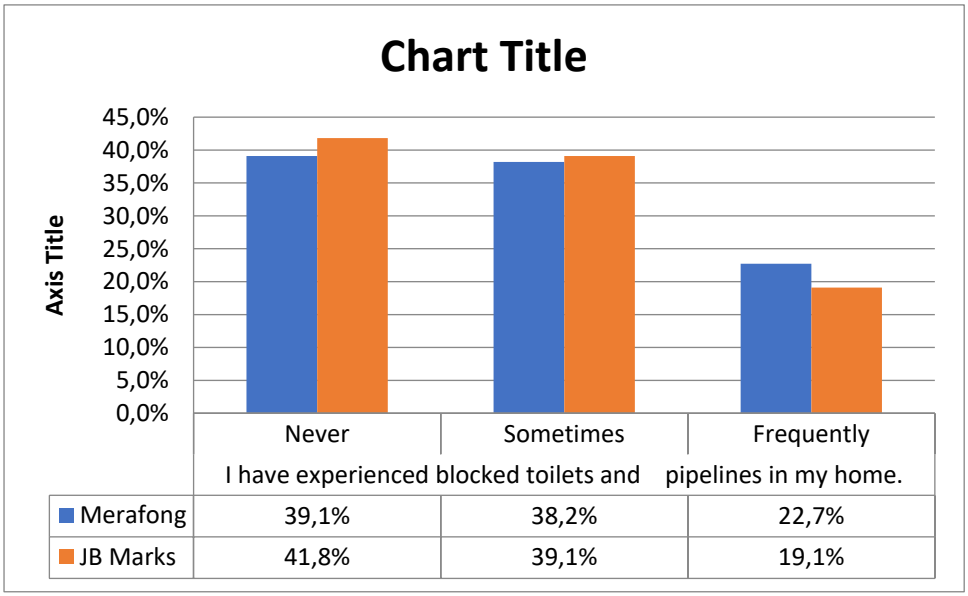



**Figure 6.14: I experience blocked toilets and pipelines in my home**

Figure 6.14 shows a split (38.2% Merafong LM and 39.1% JB Marks LM) in experiences among residents between those who sometimes experienced blocked toilets and those who never (39.1% Merafong LM and 41.8% JB Marks LM) had such an experience. However, a considerable number (22% Merafong LM and 19.1% JB Marks LM) of residents frequently experienced blocked toilets. Although significant improvements can be witnessed in the quality and provision of sanitation services since 1994 to date, people in informal settlements continue to experience poor-quality water and sanitation services. This is confirmed by the Stats SA General Household Survey Report (2018:39), in which it is stated that households in rural areas and those in informal settlements experience significant service interruptions.

**17. What are your main concerns regarding sanitation services in your municipality?**

This question intended to establish participants' concerns regarding sanitation services in their respective municipalities. Participants were asked to raise all their concerns through an open-ended question, to determine some of the reasons for the opinions expressed in response to the closed-ended questions, thereby enriching

some of the views expressed by participants. In total, 179 of the 220 households responded to question 17 and 41; 13 JB Marks LM and 28 Merafong LM participants did not answer this question. It should also be noted that 20 participants indicated they had no concerns with water and sanitation in their municipalities and they were satisfied with service delivery.

**Analysis of the open-ended question**

This section proceeds by explaining the data analysis process for the open-ended question for the household survey questionnaire. According to Mouton (2001:108), the purpose of analysis is to "understand various constitutive elements of data through an inspection of the relationships between concepts, constructs or variables and to see whether there are any patterns or trends that can be identified or isolated to establish themes in the data".

The analysis of data from the open-ended question and open coding of themes related to the purpose of this research as set out in Section 1.4 of this study. Codes are useful in integrating all aspects of similar attributes for them to operate effectively (Robson 1993:377). Themes emerging from the text of the open-ended question were grouped together to create main categories of themes and subcategories of the themes. This process was repeated to a point of saturation when no new codes or themes could be formed. The researcher reached saturation point at 140 questionnaires.

The identified main themes and subthemes were then used as the basis to analyse the data; this was done by applying inductive content analysis with a view of obtaining valid research findings. Through this coding process, the following five main themes were identified: (1) sewer blockages, (2) infrastructure, (3) vandalism, (4) sinkholes, and (5) community involvement. A discussion of the identified themes is provided and supported by evidence in the form of verbatim quotes and literature sources. Finally, a literature control was conducted to re-contextualise the results to existing scholarly literature (Morse & Field 1995:130), demonstrating the usefulness and implications of the findings.

**Theme 1: Sewer blockages**

**Subthemes: Spillage of sewer, burst pipelines, sewer overflows**

With regard to this theme, a number of concerns were raised by participants of both municipalities about the poor delivery of municipal services. Common concerns raised in both cases included the municipalities' delays in attending to frequent sewer network blockages. In support of the views expressed by the participants, Toxopues (2019a: online) argues that South Africa's approach to water service infrastructure maintenance seems largely reactionary as opposed to preventive, raising its costs of repair unnecessarily and reducing the functional lifespan of infrastructure. The author further states that deteriorating infrastructure as a result of ageing and poor maintenance remains one of government's biggest challenges (Toxopeus 2019a: online). Participants expressed concerns over bursting pipes and sewer overflowing along the streets in which they reside across both municipalities. The sewerage overflow during rainfall and the ingress of stormwater was also raised by participants as one of the main issues. This is largely because the overflow ends up in their yards, posing a threat to their health.

In support of the above discussion, the following verbatim quotes were derived from participants who answered the open-ended question of the household survey:

- "*Primarily our issues are with **blockages in the sewer pipelines** in our street. Municipality takes three to four months to fix our sewerage issues*". (extract from the household questionnaire).
- "*They must repair **blocked main holes** in our street*". (extract from household questionnaire).
- "***Sewerage** from **stormwater** passes through our yards*." (extract from household questionnaire).
- "*They must improve **sewerage** tanks in front of our house it **burst** everyday*". (extract from household questionnaire).
- "*We have **sewerage** in our yard and whenever it **blocks,** they take time to fix it and it end up causing diseases and infections".* (extract from household questionnaire).
- "*I would like the municipality to monitor our **sewerage** system*". (extract from household questionnaire).

The above quotes are a clear demonstration of the views expressed by residents of the two municipalities. In addition, these views reflect the frustration of the residents and illustrate the severe and unhealthy conditions residents of the two municipalities had to endure due to the poor state of sanitation services. It is an indictment on the municipalities to improve basic water and sanitation service delivery. The quotes also demonstrate the service delivery backlog experienced by the two municipalities. As indicated in Figure 6.31, both municipalities experienced financial problems, and this has a trickling effect on service delivery as residents wait for months before their service delivery issues are resolved. Equally, residents have the responsibility to ensure that no foreign objects get thrown in the sanitation network, clogging up the system and causing spillages and blockages.

**Theme 2: Infrastructure**

**Subthemes: Safe toilet, open defecation**

With regard to this theme, a number of concerns were raised by residents. For example, the lack of safe toilet facilities in informal settlements in both municipalities was a major concern among the participants. Residents particularly expressed their concern about the unsafe pit latrines. They indicated they would be satisfied if the municipality would install flush toilets in their premises. In JB Marks LM, residents expressed their concern about incomplete infrastructure projects, particularly sewage projects. As a result of these delays, residents indicated they resorted to illegal connections to the main sewer hole in the street.

In line with the views expressed by participants above, Toxopeus (2019b:1) states that major water and sanitation infrastructure projects have been put on hold due to suspected tender irregularities. For example, in Giyani, a water reticulation project was suspended, and four years later residents of the particular area still do not have water. It seems JB Marks LM is not immune to these realities (Mmbadi 2019:109).

In both municipalities, residents who used septic tanks and VIP latrines complained that the responsible municipality did not come to drain the septic tanks on a regular basis. As a result, residents had to resort to other means to relieve themselves. This situation was worsened by the municipal incapacity to employ adequate staff, and

financial constraints to purchase required resources to regularly maintain septic tanks (Merafong LM IDP 2019:163).

According to participants, the bursting of water and sewerage transporting pipes has become a common occurrence in their municipality, or at least in their area. In areas of the municipality where there is infrastructure for flush toilets, the main concern of residents was the water cuts by the municipality. The water cuts affect the use of flush toilets as residents in these areas depend on water to flush toilets. This was a common concern among residents in both municipalities.

Despite South Africa reaching the Millennium Development Goal 6 of increasing access to sanitation, residents of Merafong and JB Marks LMs continued to suffer the indignity of not having access to basic sanitation services. About 8% of households who participated in this research practiced open defecation (see Figure 6.4).

Finally, residents raised health-related concerns about communal toilets, stating that the general condition of the toilets are not suitable since more than 10 households share the same toilet facility.

In support of the above discussion, the following verbatim quotes were derived from participants who completed the open-ended question of the household survey questionnaire:

- "*After heavy rains we can't leave our households because the is always **floods** in front our house".* (extract from household questionnaire).
- "*they must upgrade water and sanitation system because it is old now"* (extract from the household questionnaire).
- *"We would like **flush toilets** installed in our* yards". (extract from the household questionnaire).
- "*I want our municipality to build us **toilets** that use water because our toilets don't flush. We are concerned about our hygiene and kids safety, there has been incidents where a child fell inside of the pit toilet*". (extract from the household questionnaire).**"*infrastructure** needs to be developed and repaired so that we can*

*have a flowing water system. The municipality must implement a way to communicate with residents as to how it can help regarding these issues even if I by means of paying monthly rates from each household".* (extract from the household questionnaire).

- "*municipality must build **toilets** for us. It is not safe for kids because they play carelessly not worrying what will happen to them".* (extract from the household questionnaire).
- *"We want **flushing toilets**; the municipality must change **pit latrine**".* (extract from the household questionnaire).
- *"We use one communal tap where everyone gets water at one point, we also don't have toilets, we are using the **bush system**, so we need toilets*". (extract from the household questionnaire).

**Theme 3: Vandalism of infrastructure**

**Subthemes: Damage, safety, monitoring**

With regard to this theme, participants indicated that their main concern was the vandalism of water and sanitation infrastructure and its impact on service delivery. The residents of Merafong LM indicated that theft and the vandalism of mechanical and electrical equipment at wastewater treatment plants pose a serious environmental risk to the community. This was confirmed by the Merafong LM IDP (2019:162), which indicated one of the WWTWs was decommissioned due to theft and vandalism, which rendered the facility dysfunctional (Merafong IDP 2019:162).

Participants were concerned that the municipality was not doing enough to deal with infrastructure theft and vandalism. Participants expressed the view that the municipality does not monitor the infrastructure network, and securing the network is of critical importance. It should be noted that in JB Marks LM, no concerns were raised by participants regarding the vandalism and theft of vital sanitation infrastructure.

In support of the above discussion, the following verbatim quotes were derived from responses by participants who completed the open-ended question of the household survey questionnaire:

- "*The municipality must monitor sanitation systems". (extract from household questionnaire).*
- *"I am concerned about theft and **vandalism** at the wastewater treatment equipment". (extract from household questionnaire).*
- *"**Cables are stolen** at WWTP in our municipality and create problem for water pressure".* (extract from the household questionnaire).

**Theme 4: Sinkholes**

**Subthemes: Collapse, fractured ground, dolomite**

It should be noted from the onset that comments on this theme were made only by residents of Merafong LM. Participants raised concerns about frequent incidents of sinkholes in their area. Residents further indicated that sinkholes cause damage to water and sanitation infrastructure, i.e., water pipes and sewerage pipes, causing spillage along the street and in their yards. The participants were also concerned about the municipality's response rate once sinkholes formed. They said they had to endure the water cuts and bad odours caused by sewer overflows. They emphasised that these happen most during the rainy season and when there is a leaking water or sewer pipe; they believed this happens because the municipality does not maintain the infrastructure regularly. This view was confirmed by the geohydrological report undertaken by the Department of Water and Sanitation (2017:4), which showed that during rainfall, sinkholes cause fractured ground to collapse. These sinkholes are not filled as soon as possible, triggering more sinkholes.

Lack of funding has been cited as a major impediment for municipalities to respond quickly and repair sinkholes (Merafong IDP 2019:164). The aforementioned report further indicated that although sink holes are a natural phenomenon, there are human factors that contribute to their formation, and such factors should be avoided (Department of Water and Sanitation 2017:4). For example, sinkholes are formed along water or sewer pipelines, suggesting that water pipe leaks trigger their formation. In addition, it was found that water pipelines are made of asbestos material, which is unsuitable for use in a dolomitic area as it easily breaks and causes leaks, ultimately leading to the formation of sinkholes (Department of Water and Sanitation 2017:5).

The ageing infrastructure and its non-dolomitic design is a major contributor to the formation of sinkholes and should therefore be removed and replaced with material more resistant or suitable to dolomitic land (Department of Water and Sanitation 2017:5). In some areas of the municipality, main sewer outlets are completely destroyed and the nearby Wonderfontein Spruit is thus polluted during the rainy season.

In support of the above discussion, the following verbatim quotes were derived from responses by participants who completed the open-ended question of the household survey questionnaire:

- *"After rain our yards and street are flooded with water and not long after the **ground collapse**".* (extract from the household questionnaire).
- *"I am worried about **sink holes** as they **cause damage to sewer and water pipes**".* (extract from the household questionnaire).
- *"**Sinkholes** are a big problem in our area, and we get **water cuts** because of **broken pipes** caused by sinkholes".* (extract from the household questionnaire).
- *"The municipality must do something about **sinkhole** problem in our community".* (extract from the household questionnaire).

**Theme 5: Community involvement**

**Subthemes: Community participation, public decision-making**

One other area of concern among residents of Merafong LM and JB Marks LM was the lack of community participation in public decision-making processes of their respective municipalities. Residents indicated they felt left out and had no voice in the municipality's structures. For instance, they were not informed when their municipality decided to interrupt services. Consequently, when the municipality decides to cut water, it comes as a surprise to them. They were also concerned that when they report service delivery problems to the municipality, no one comes back to give feedback. This finding aligns with Moshodi, Coetzee and Fourie's (2016:6) views that community involvement and participation is one of the key aspects of stakeholder management, particularly in disaster situations. The authors point out that communities around Merafong LM are not represented in structures that deal with disasters in their area.

In addition, communities never participated in risk assessments that occurred over the years in respect of sinkhole formations. The authors also argue that a lack of community participation in efforts to manage disasters in Merafong LM have not been fruitful (Moshodi *et al.,* 2016:4). Community participation is one of the pillars of a democratic state. It is therefore important that communities participate in decisions that affect they daily lives.

In support of the above discussion the following verbatim quotes were derived from responses by participants who completed question (open-ended question) of the household survey questionnaire:

- *"We want to be **involved in the decision making** of the municipality".* (extract from household questionnaire).
- *"The municipality **does not inform us** when they cut water".* (extract from household questionnaire).
- *"We **don't get to know when** services are interrupted".* (extract from household questionnaire).

The next section discusses the responses from municipal officials who participated in the data collection phase. Their views on the nature and extent of the capacity of both municipalities to deliver sanitation services in an effective, efficient, cost-effective and sustainable manner are presented.

## 6.3 ANALYSIS OF SURVEY QUESTIONNAIRE FOR MUNICIPAL OFFICIALS

Apart from making enquiries about the views of households in the two municipalities under study, this research also solicited the views of municipal officials responsible for providing sanitation services in Merafong LM and JB Marks LM. This is critical for the study because municipal officials are custodians of the basic service delivery in these municipalities. In addition to administering the data collection questionnaire, four senior officials were interviewed. As indicated in Section 5.5 of the previous chapter, a total of 14 municipal officials completed the questionnaire. The responses from municipal officials in Merafong and JB Marks LMs follow.

**16. Please indicate the type of residential street in which your workplace is located**

As was the case with the household questionnaire, the intention of this statement was to determine whether stormwater facilities are available in the participants' area of work. This question was answered by 14 participants; results are shown in Figure 6.15.

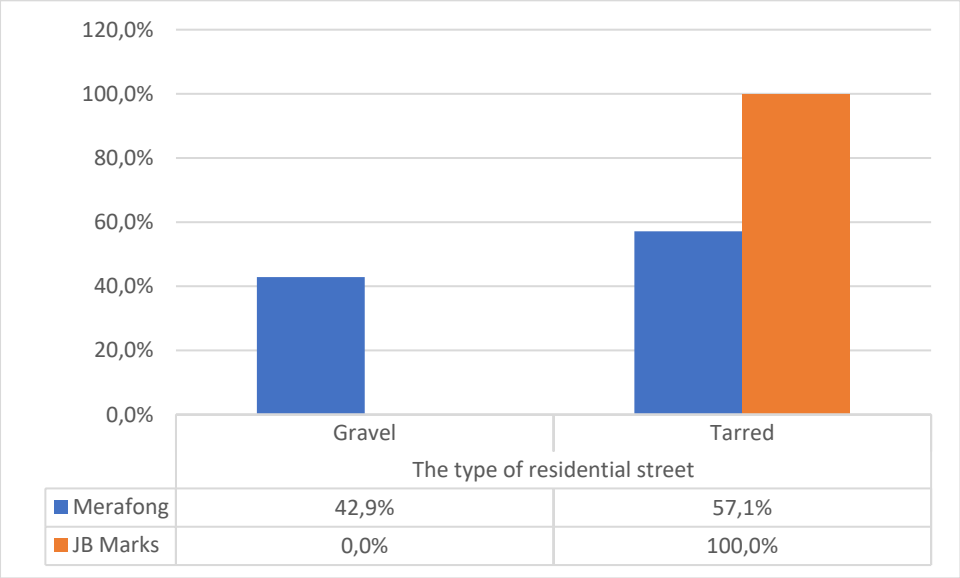



**Figure 6.15: Type of residential street**

Figure 6.15 illustrates municipal officials' views regarding the type of residential street on which they work. The results show that 57.1% of participants in Merafong LM worked where there is a tarred road, while 42.9% indicated there is gravel along the street. In JB Marks LM ,100% of employees worked along a tarred street. This indicates the difference in infrastructure development between the two municipalities. It should also be noted that JB Marks LM had only two WWTWs located within the two towns that make up the municipality (Potchefstroom and Ventersdorp) while Merafong LM (located in Carletonville and Fochville) had five WWTWs scattered throughout the municipal area, with some close to local mines, far away from the two major towns. During the data collection process, the researcher observed that some WWTWs are located on gravel roads on the outskirts of the towns.

**17. Access to water for municipal officials**

This statement intended to determine the source of water for participants. Unlike in the household survey (see Figure 6.2), where residents were asked to indicate the

sources of water in their premises, in this case, participants were asked to indicate the source of water in their place of work. The results are provided in Figure 6.16.

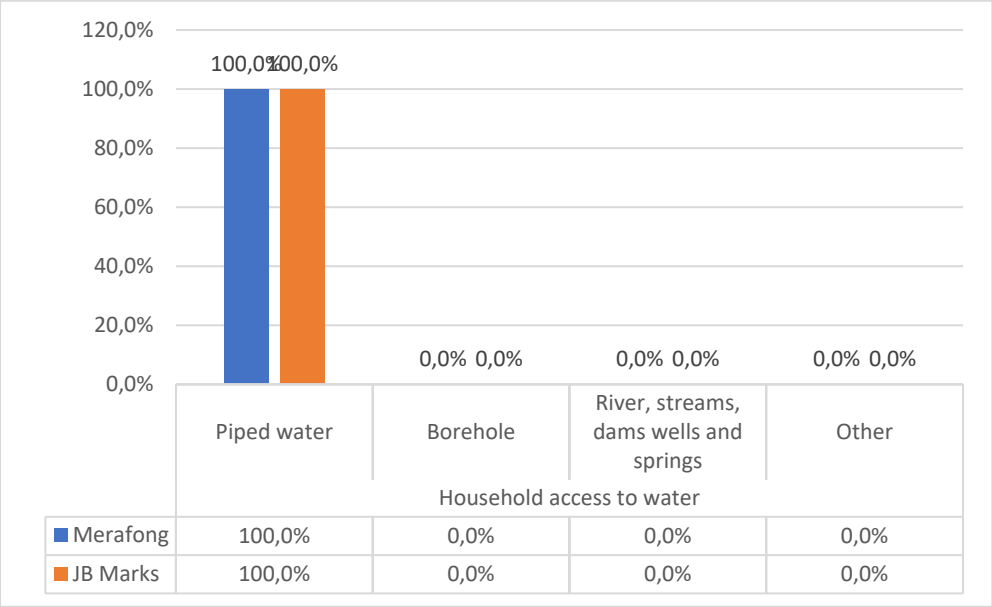



**Figure 6.16: Municipal access to water**

Figure 6.16 shows how municipal officials accessed water in their respective municipal working areas; in both cases, employees accessed water through municipal water reticulation network. This is in line with the national average of 98% access to piped water in South Africa (Statistics South Africa, 2018:41). Both municipalities have made substantial progress in improving access to water, and municipal officials' feedback correlate with households' views on the same issue (see Figure 6.2). However, it should be noted that informal settlements and rural areas within municipalities are still affected by a lack of access to piped water. This is reflected in the Statistics SA Household Survey Report (2018:39), which indicates a backlog of infrastructure in terms of providing water services.

### 18. The type of sanitation/toilet facility

This question sought to determine the type of sanitation facilities used by municipal officials in their respective municipalities. Participants had to choose from listed options what type of facilities they used. The results are provided in Figure 6.17.

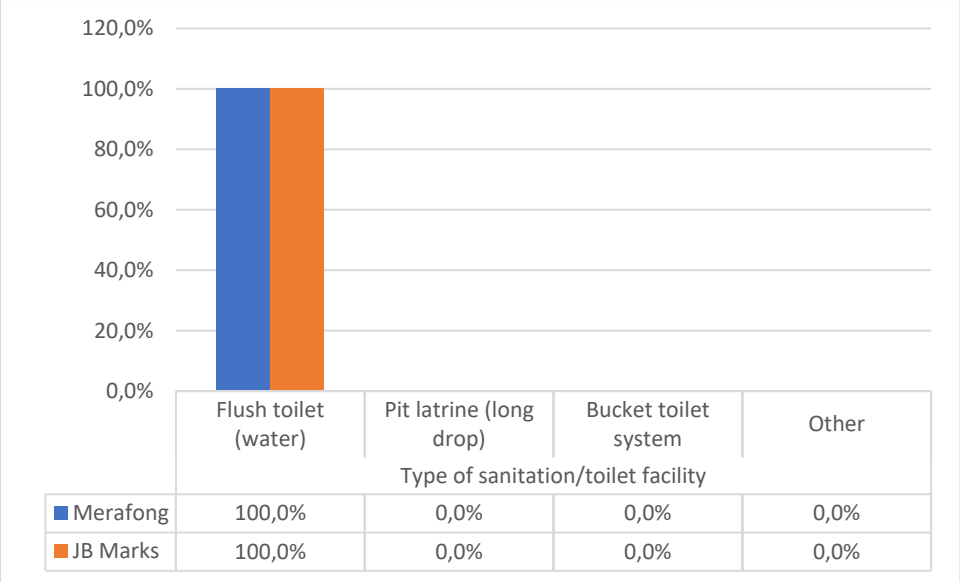



**Figure 6.17: The type of sanitation/toilet facility**

Figure 6.17 indicates the type of sanitation facilities used by municipal officials in their respective places of work. In both municipalities, employees used flush toilets only. The facilities were also observed by the researcher during the data collection process. Some of the offices are located in the central business district, while others are located in the outskirts of the town. This is indicative of the legacy of unequal provision of sanitation facilities between suburbs and townships. According to Ndida, Uzodike and Winnaar (2011:106), the racial inequalities in access to sanitation have their roots in apartheid policies and legislations purposefully designed to achieve unequal development. This phenomenon remains 17 years after the end of apartheid.

**19. I am aware of the Water Services Development Plan of my municipality**

This statement tested municipal officials' knowledge regarding the existence of a WSDP. The participants were required to indicate yes or no in response to the statement. The results are shown in Figure 6.18.

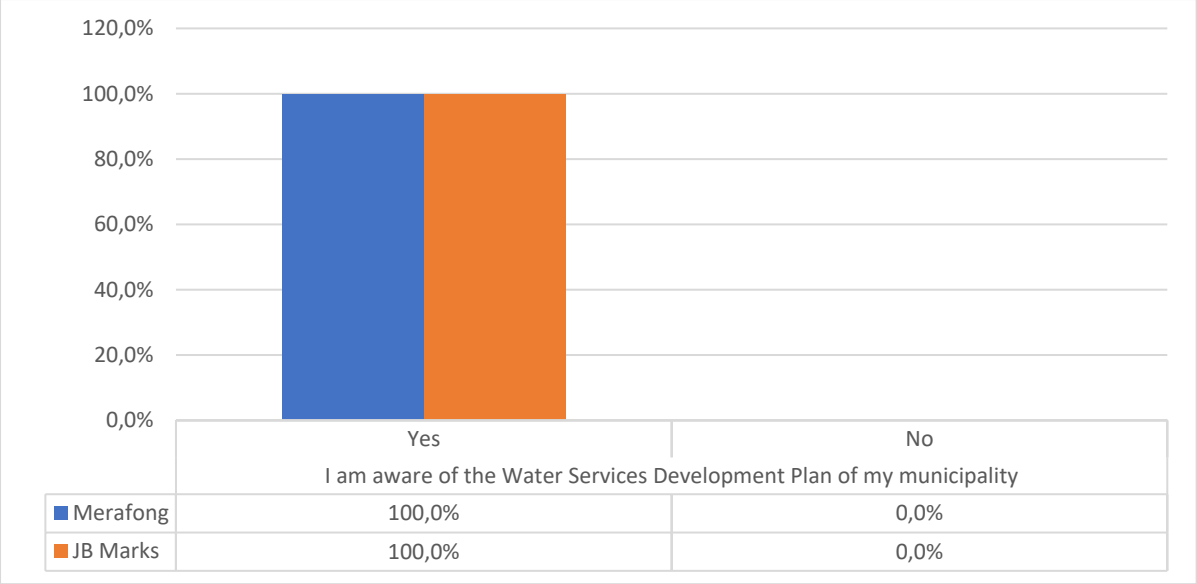



**Figure 6.18: I am aware of the Water Services Development Plan of my municipality**

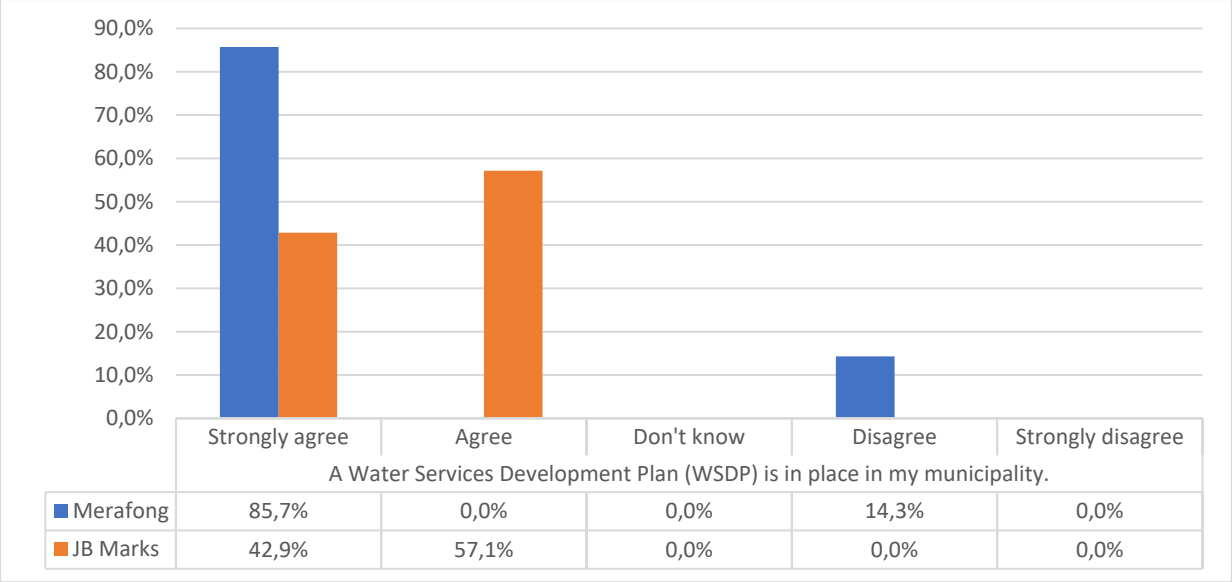
Figure 6.18 indicates municipal employees in both municipalities' level of knowledge about the existence of a Water Service Development plan; 100% in both Merafong LM and JB Marks LM were fully aware of the WSDP and its importance to their work. These results are a positive indication that municipal officials responsible for sanitation services are aware of their responsibilities and legislative requirements.

According to section 12(1) of the *Water Services Act of 1997*, every WSA must prepare and submit both a draft of the WSDP and a summary thereof (Republic of South Africa 1997d). A WSDP is a five-year instrument of planning within the water services sector. The purpose of the Plan is to assist the WSA to carry out its duties effectively (Department of Water & Sanitation, 2017). In addition, drafting the WSDP forms part of the process of preparing an IDP in terms of the *Local Government: Municipal Systems Act 32 of 2000*. It ensures the planning and provision of water services (water supply and sanitation) are addressed in an integrated manner (Department of Water & Sanitation, 2017). This was a positive development for both municipalities.

**20. Water services development plan is in place in my municipality**

This statement sought to determine whether a WSDP was in place in the two municipalities. Participants were required to indicate the extent to which they agreed or disagreed with the statement. It should be noted that this question and the one

before it appears to be the same. However, the previous question intended to determine the existence of the WSDP, while this question focused more on the plan's implementation. On that basis, it was necessary to ask both questions to make the determination. Results are shown in Figure 6.19.




| | Strongly agree | Agree | Don't know | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| | A Water Services Development Plan (WSDP) is in place in my municipality. | | | | |
| Merafong | 85,7% | 0,0% | 0,0% | 14,3% | 0,0% |
| JB Marks | 42,9% | 57,1% | 0,0% | 0,0% | 0,0% |

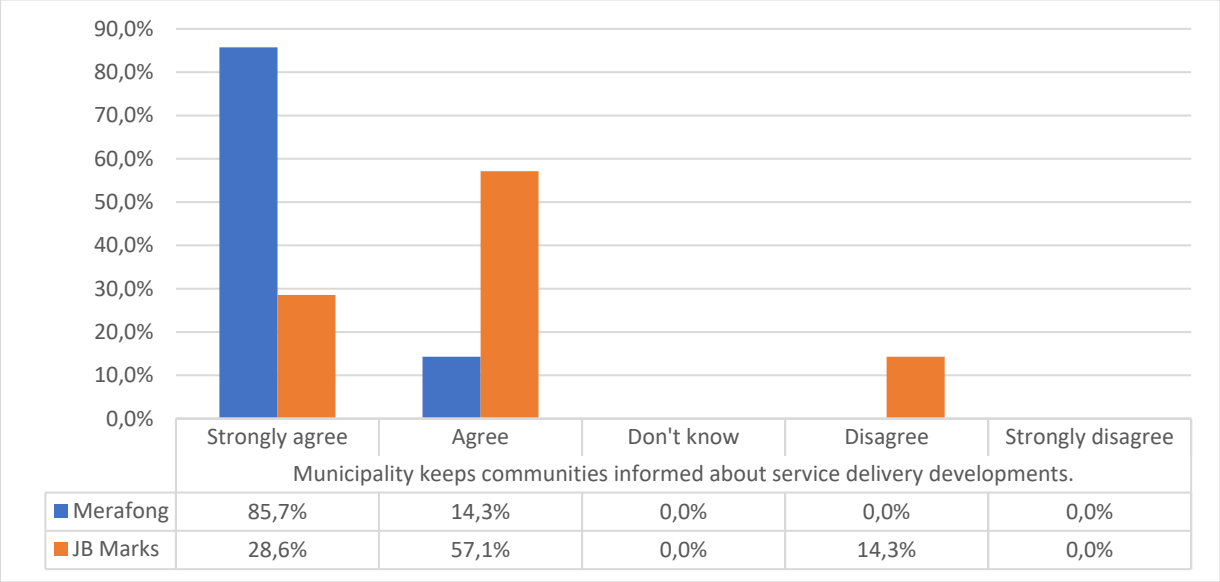
**Figure 6.19: Water services development plan is in place in my municipality**

Figure 6.19 shows that the majority of participants (85.7% in Merafong LM and 100% in JB Marks LM) agreed that a WSDP was in place in their respective municipalities. Although views expressed by the participants show that they knew a WSDP is in place, evidence presented by the senior managers indicated there was no final WSDP in place in their respective municipalities (Interview Senior Manager Merafong 2019). This finding is supported by the Merafong LM IDP 2019-2020, which shows the WSDP of the municipality is currently under review (Merafong LM 2019-2020 IDP 2019; JB Marks LM 2019-2020 IDP 2019). This lack of correlation could be attributed to a lack of knowledge among subordinates in the sanitation department of Merafong LM. This is a very concerning state of affairs as the delivery of water relies on the plan and is required by law.

### 21. Municipality keeps community informed about service delivery developments

This statement tested participants' views on whether their respective municipalities kept communities informed about service delivery developments in their area.

Participants were required to indicate the extent to which they agreed or disagreed with the statement. The results are shown in Figure 6.20.




| | Strongly agree | Agree | Don't know | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| | Municipality keeps communities informed about service delivery developments. | | | | |
| Merafong | 85,7% | 14,3% | 0,0% | 0,0% | 0,0% |
| JB Marks | 28,6% | 57,1% | 0,0% | 14,3% | 0,0% |

**Figure 6.20: Municipality keeps community informed about service delivery developments**

Figure 6.20 shows a majority of participants agreed that their respective municipalities kept their communities informed about the nature and extent of basic service delivery developments in their respective geographical areas. However, the views expressed by the households (see Figure 6.7) of both municipalities on the same question suggest a contradiction between the views of households in the communities and that of municipal officials. This could be attributed to inefficiencies of community-based structures, such as ward committees and the municipality. In addition, municipal officials might not be at liberty to say negative things about their own municipality.

**22. Municipality attends to maintenance issues regarding sanitation services within a satisfactory timeframe**

The next statement sought to determine whether municipalities attend to maintenance complaints within a satisfactory timeframe. The participants were required to indicate the extent to which they agreed or disagreed with the statement. The results are provided in Figure 6.21.

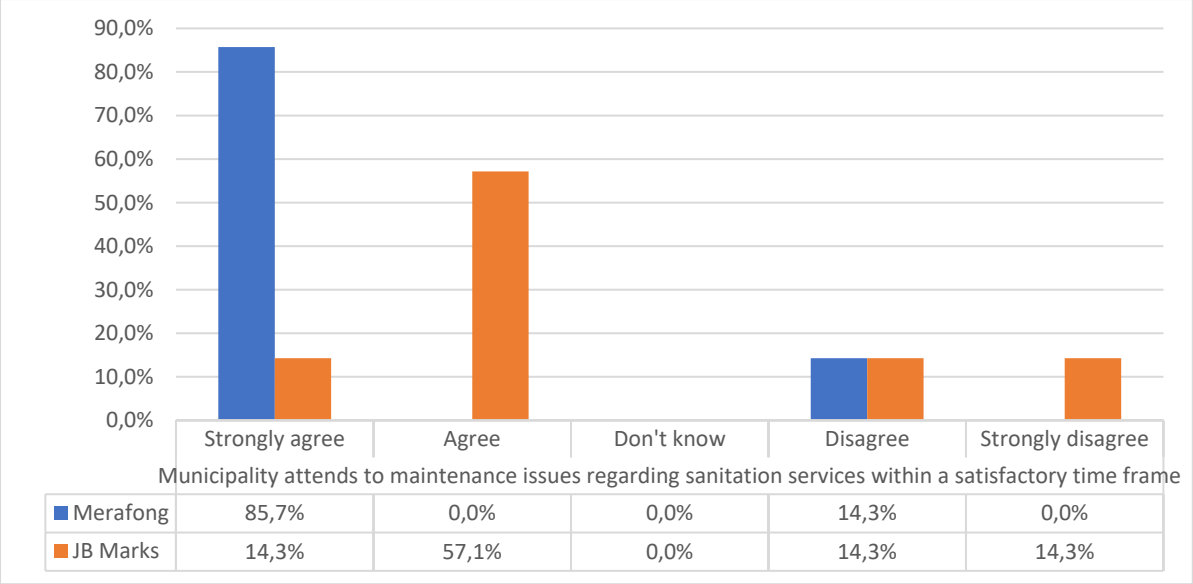



**Figure 6.21: Municipality attends to maintenance issue regarding sanitation services within a satisfactory timeframe**

Figure 6.21 indicates participants' views their respective municipalities' response rate in dealing with maintenance issues. Most participants (85.7% in Merafong LM and 71.4% in JB Marks LM) agreed that their respective municipalities attend to service delivery issues within a satisfactory timeframe. However, 28.6% of the participants in Merafong LM and 14.3% in JB Marks LM had a different point of view. The prevailing sentiment among municipal officials in both municipalities was that the municipality responds within a satisfactory timeframe. However, evidence from the IDPs of both municipalities suggests there are serious challenges in both municipalities that could affect their response rate. For instance, in both cases, staff shortage is a significant concern, and the municipalities have serious cash-flow constraints, which impact on their ability to purchase required equipment to undertake routine maintenance and repairs. Infrastructure vandalism also has a serious bearing on the response rate of the municipalities (JB Marks LM IDP 2019:53-60; Merafong LM IDP 2019:163). In addition, the views expressed by 70% of the household participants (see Figure 6.8) correlate with evidence provided by the Municipal Demarcation Board Report (2018:163), which shows the municipalities are seriously incapacitated and therefore could not respond to complaints within a satisfactory timeframe.

**23. Community members participate in the Water Services Development planning process of the municipality**

The next statement tested participants' views on how often communities of both Merafong and JB Marks LMs participated in the WSDP process of their respective municipalities. Results are provided in Figure 6.22.

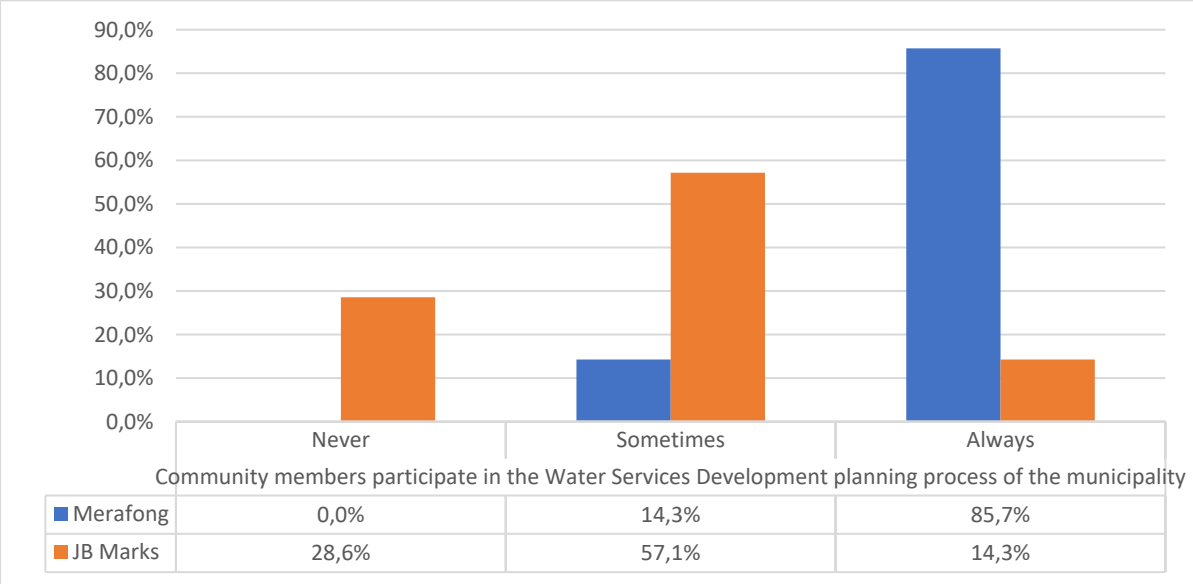



**Figure 6.22: Community members participate in the water services development planning process of the municipality**

Figure 6.22 depicts municipal officials' views on how often communities participated in the municipalities' WSDP process. The results show that in terms of Merafong LM, 85% of the participants indicated active community participation in the water services development planning process, but in JB Marks LM, results indicated marginal participation. This is illustrated by 57.1% of JB Marks LM municipal officials who indicated that community members sometimes participate, 28% who indicated community members never participate in the WSDP planning process, and a minimal 14% said they always participate. This is in contradiction with views of the Merafong LM residents (90%) who claimed they did not know about the WSDP, let alone participate (see Figure 6.6). Similarly, in JB Marks LM, 87% of household participants claimed to have no knowledge of the WSDP of the municipality (see Figure 6.6). The lack of correlation between the views of municipal officials and households could be attributed to limited participation by communities. In addition, municipal officials may not provide correct estimates about community participation.

According to Moshodi *et al.* (2016), the Merafong LM does not consult with communities within the municipality. For instance, the recent sinkhole risk assessment did not receive any input from the community because no participation was sought by the municipality. The JB Marks LM noted in its IDP document that it experienced low levels of participation with the implementation of its IDP (JB Marks LM 2019:177). This result is a clear indication that the JB Marks LM needs to do more to encourage community participation in matters of local government, as provided for in section 152 of the Constitution.

In addition, it is also indicative of the inefficiencies of existing mechanisms, such as ward committees. Effective ward committee systems should be the vehicle through which communities engage with local government (Mbhele 2017:1). Furthermore, section 17(1)(a) of the *Local Government: Municipal Systems Act, 32 of 2000* stipulates that local participation in municipal affairs must take place through political structures, such as ward committees. This Act places emphasis on community participation, consultation and involvement in the activities and functions of municipalities, including the IDPs, performance management systems, preparation of the local budget, and strategic public decisions relating to services.

**24. The sanitation manager of the municipality has the required competencies and qualifications**

The next statement sought to illicit participants' views on whether sanitation managers in their respective municipalities possessed the required competencies and qualifications. Participants were asked to indicate the extent to which they agreed or disagreed with the statement. Results are provided in Figure 6.23.

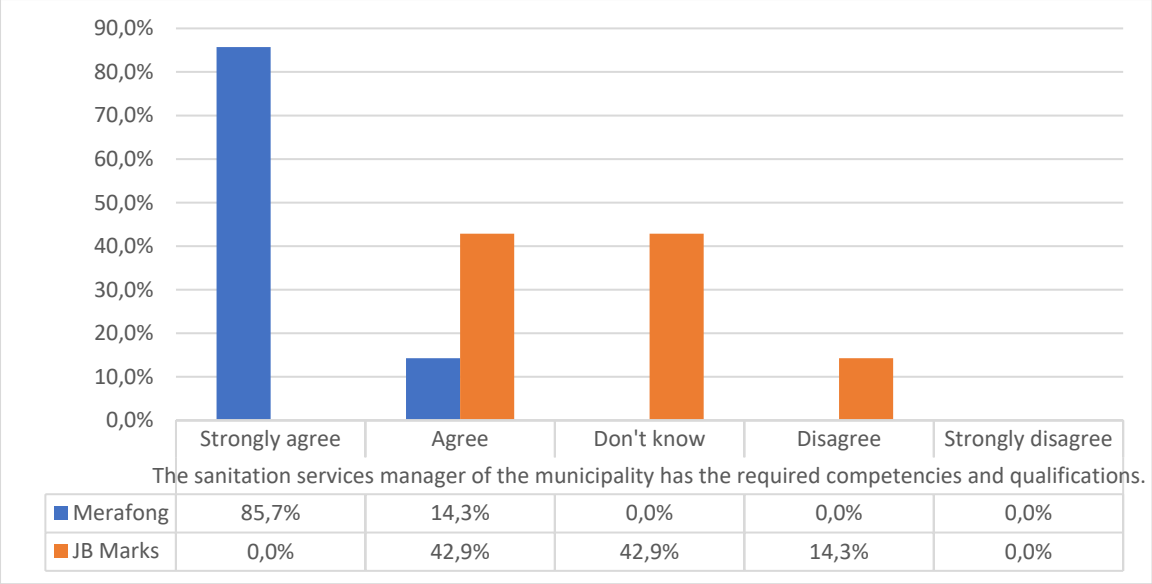



**Figure 6.23: The sanitation manager of the municipality has the required competencies and qualifications**

The statement reflected in Figure 6.23 intended to determine whether the sanitation manager is competent and qualified. All (100%) participants in the Merafong LM believed their sanitation manager had the required competencies and qualifications. In JB Marks LM, there was a split between employees who thought the sanitation manager was qualified and competent, the 42.9% who did not know, and a few who disagreed (14.3%). This indicates that municipal officials had some level of confidence in their managers' competency because they worked together. It is also important to note that participants were not privy to confidential human resources files and therefore could not be certain how qualified their managers were.

The Municipal Strategic Self-Assessment Report (Department of Water and Sanitation, 2018a:13) indicates that less than half of the technical managers in Merafong LM have the requisite skills, qualifications and competencies related to their job description. In JB Marks LM, less than half of the sanitation managers were qualified and competent (Department of Water and Sanitation 2018b:8). It is concerning that not even half of the management staff had the requisite skills and competencies in both municipalities.

**25. Supporting staff have the required competencies and qualifications**

The next statement tested participants' views on whether supporting staff had the required competencies and qualifications. The participants were asked to indicate the extent to which they agreed or disagreed with the statement. The results are provided in Figure 6.24.

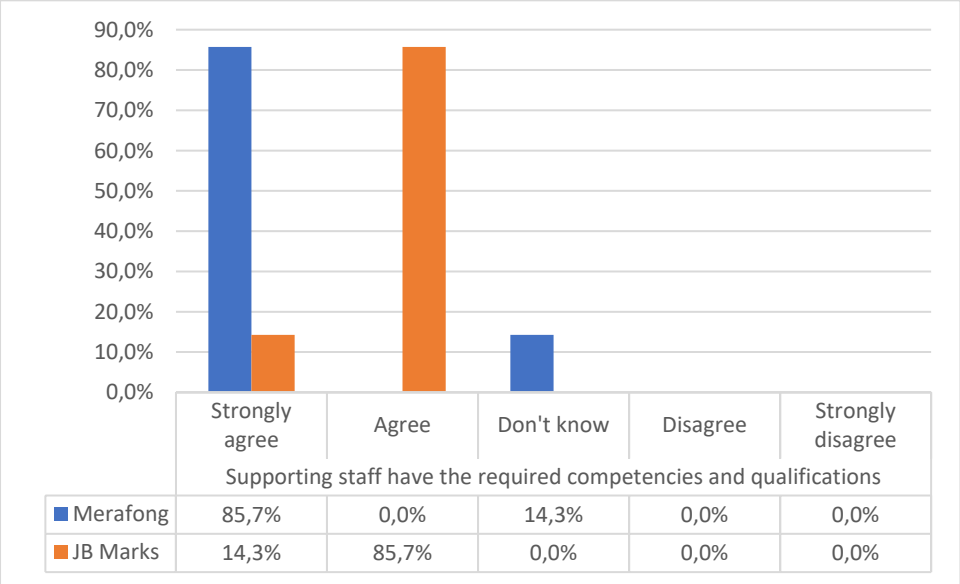



**Figure 6.24: Supporting staff have the required competencies and qualifications**

This statement tried to determine if supporting staff in the sanitation unit of the technical services departments in both municipalities had the required competencies and qualifications. The majority of participants in both municipalities agreed supporting staff had the required qualifications. In contrast with the views of participants, the Municipal Strategic Self-Assessment Report, (2018a:63) reveals that in Merafong LM, only six officials had the required qualifications related to their job description out of a total of 93 employees. In addition, the sanitation division had 104 vacancies (Department of Water and Sanitation, 2018:65). This is in line with a response to the following question answered by the senior managers.

**Interview question: Does the sanitation department have adequate competent and qualified support?**

*"Most of our employees do not have the requisite skills and qualification. We rely on the few who are experienced and qualified. However, we are experiencing a high rate of resignations of experienced employees and they are not replaced. As a result, the*

*current employees have to carry the burden of staff shortage. When we enquire about this in the municipality, we are told the municipality has serious cash flow problems" (Interview senior manager sanitation Merafong LM June 2019).*

*"Majority of employees need training to do their job as they are no qualified people. To make it worse we are having a serious shortage of staff. We only have half of the staff that we should have to run operations smoothly" (Interview supervisor JB Marks LM June 2019).*

**26. Staff regularly attends water services development training**

The statement tested participants' views on whether staff within the water and sanitation departments of their municipalities attended water services training on a regular basis. Participants were required to indicate the extent to which they agreed or disagreed with the statement. The results are shown in Figure 6.25.

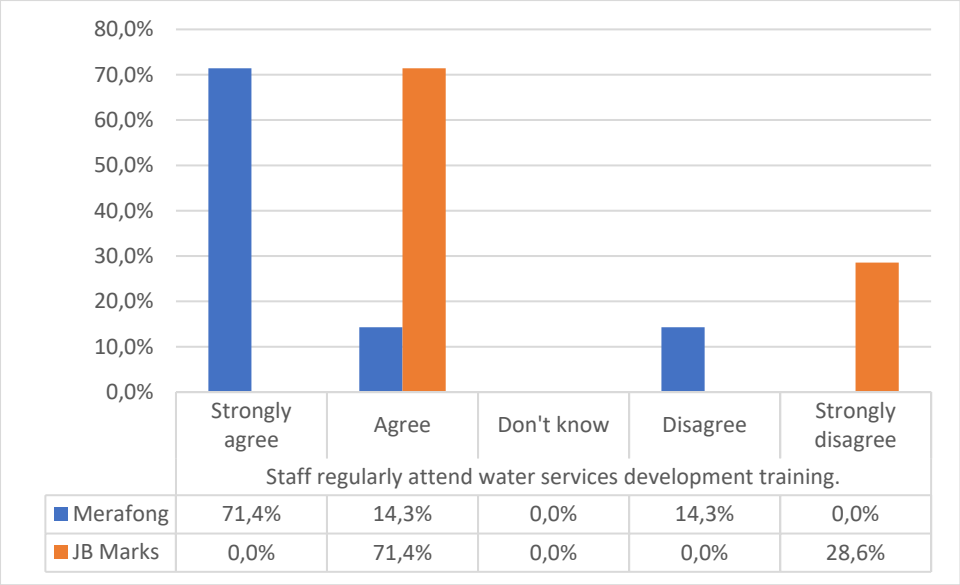



**Figure 6.25: Staff regularly attends water services development training**

The results showed that the majority of employees (6 in Merafong LM and 5 in JB Marks LM) attended water services development training, while one of the participants in Merafong LM and two in JB Marks LM had a different view. In contrast to the views expressed by a majority of municipal officials of Merafong and JB Marks LMs, managers of both municipalities provided the following responses to the question that follows:

**Interview question: Are you aware of any training opportunities afforded by the municipality to officials in your department?**

*"No training opportunities have been provided by the municipality to my knowledge, we are always told that there is a cash flow problem in the municipality" (Interview senior municipal official, Merafong LM, 2019).*

*"Employees are eager to take any training opportunity that is provided by the municipality but so far no training opportunity offered" (Interview senior municipal official, JB Marks LM, 2019).*

The lack of correlation between the views of managers and subordinates might be attributed to a lack of understanding about water services development training.

According to Bos, Gijzen, Hilderink, Moussa, Niessen and De Ruyter (2005:4), the achievement of millennium development goals, which includes access to water and sanitation services in South Africa, is strongly linked to a lack of capacity at local government sphere. Lawless (2017: online) claims a number of capacity training programmes were undertaken in municipalities; however, such programmes were stalled by several factors including, but not limited to, little recognition of engineers' professional judgement, inexperienced management in municipalities, poor data records, and lack of institutional knowledge. The side-lining of engineers in the hiring of technical staff and control of infrastructure budgets has exacerbated the problem (Lawless 2017: online). Kamara *et al*. (2017) cited poor monitoring and evaluation as one of the key challenges for municipal training programmes. In addition, lack of reliable data in municipalities about the number of training initiatives and how municipalities benefitted from such training has been a thorny issue in many respects (Amod & Wall, 2017: online).

**27. Key posts in sanitation management are filled**

This statement sought to determine participants' views and opinions on whether key positions in sanitation management departments in their respective municipalities were filled. Participants were required to indicate the extent to which they agreed or disagreed with the statement. Results are provided in Figure 6.26.

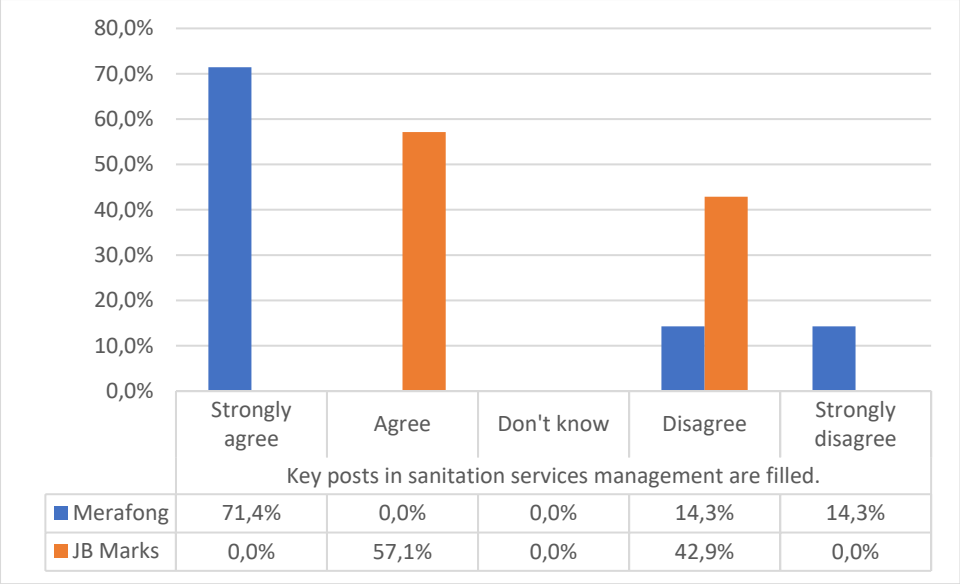


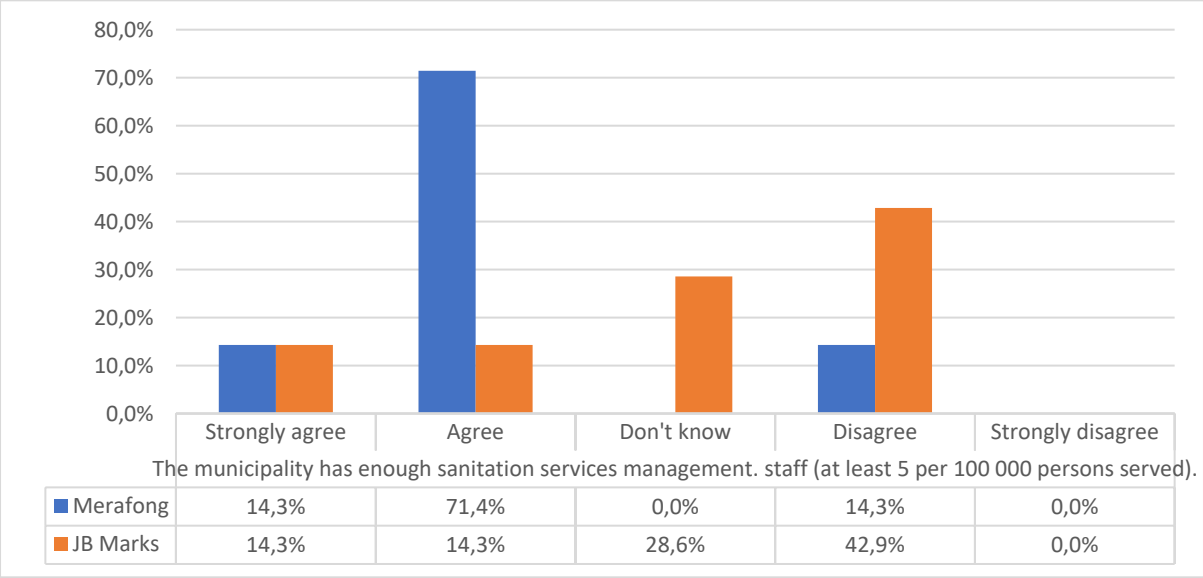

**Figure 6.26: Key posts in sanitation management are filled**

As seen in Figure 6.26, in Merafong LM, 71.4% of municipal officials indicated that key posts in sanitation services management were filled, while 28.6% of participants disagreed with the statement. This result shows that in Merafong LM, key management posts are filled, and no vacancies exist at that level. Contrary to the views expressed by participants, the Municipal Strategic Self-Assessment Report (2018a:44) determined that the total number of section 56 positions that were vacant in the 2016/2017 financial year at Merafong LM accounted for 16.6%, while in the 2017/2018 financial year, the number significantly increased to 100%. This could be attributed to the high number (499 out of 1,325) of resignations in the municipality (Department of Water and Sanitation, 2018a:44). The high vacancy rate in senior management positions signals a serious problem and instability in the municipality's governance. This finding is supported by Amod and Wall's (2017: online) claim that chronic shortages of technical staff in municipalities' water and sanitation directorates pose a serious challenge.

In JB Marks LM, 57% of participants indicated that key posts in sanitation services management were filled, while 42.9% disagreed. This result shows that participants were not certain about the issue. The JB Marks LM IDP reported that key positions in sanitation are filled. The vacancies that exist are in the lower and middle levels of the municipality. For example, there are no qualified planners and planning technicians in the municipality (JB Marks LM IDP 2019).

**28. The municipality has enough sanitation services management staff**

This statement tested participants' views on whether their respective municipalities had an adequate staff complement. Participants were required to indicate the extent to which they agreed or disagreed with the statement. The results are provided in Figure 6.27.




The municipality has enough sanitation services management. staff (at least 5 per 100 000 persons served).

| | Strongly agree | Agree | Don't know | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| Merafong | 14,3% | 71,4% | 0,0% | 14,3% | 0,0% |
| JB Marks | 14,3% | 14,3% | 28,6% | 42,9% | 0,0% |

**Figure 6.27: The municipality has enough sanitation services management staff**

The statement in Figure 6.27 sought to find out whether the municipality had enough sanitation management staff. The results indicate that the majority (85.7%) of employees in Merafong LM agreed their municipality had enough sanitation services management staff, while only 14.3% did not agree. In JB Marks LM, the results paint a different picture. There was a split between those who agreed (28.6%) and those who did not know (28.6%); 42.9% of the employees disagreed.

Contrary to the views expressed by participants above, the Municipal Strategic Self-Assessment Report (2018), undertaken in both municipalities, show that Merafong LM is the worst affected by a high vacancy rate in key senior management positions. Although not in an ideal situation, the JB Marks LM appears to be in a more stable position. For instance, the Municipal Strategic Self- Assessment Report (Department of Water and Sanitation, 2018b:45) shows that only five qualified engineering technologists per 200 000 persons served are employed in the JB Marks LM. This figure is only half of what regulations require. Section 26(e) and (f)(schedule) III of the

*National Water Act of 1998* classify persons to be employed in WWTWs in terms of qualifications and experiences, further stipulating the minimum number of people that should operate such a facility (Kgopo 2013:15). It is clear from the report that both municipalities were in a dire situation regarding staff shortages. What exacerbates this unfortunate state of affairs is that neither municipalities had the money to fund the vacant positions.

The statement below tested participants' views and opinions on whether WWTWs were operated by the appropriate number of staff, as prescribed by Regulation 2834. Participants were required to indicate the extent to which they agreed or disagreed with the statement. The results are provided in Figure 6.28.

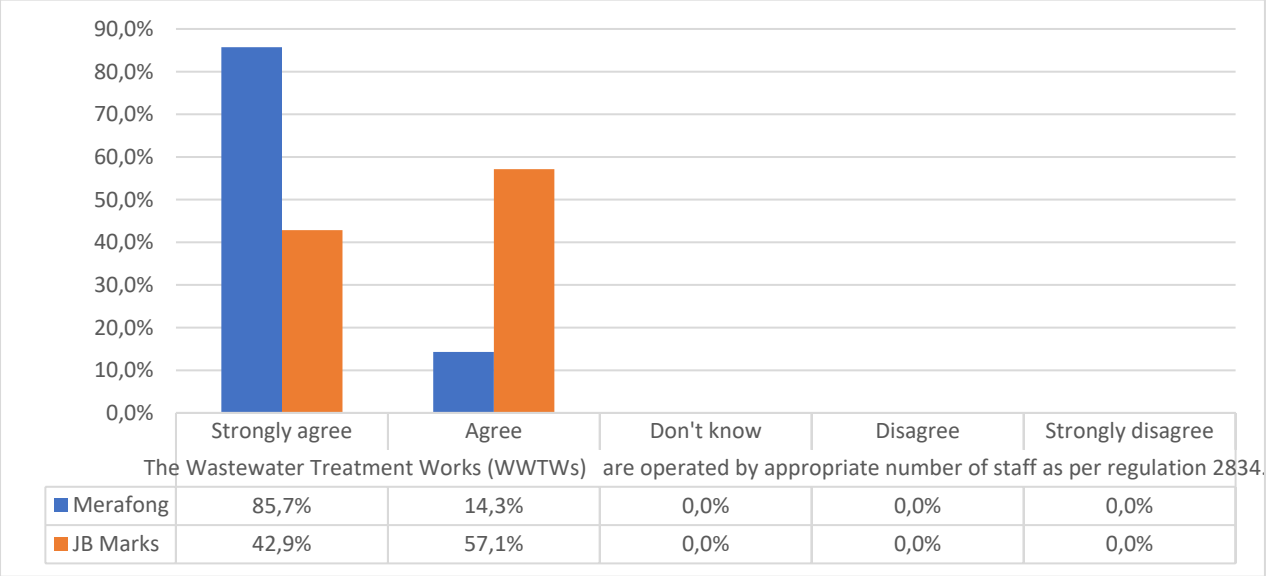



**Figure 6.28: The wastewater treatment works are operated by the appropriate number of staff as per Regulation 2834**

Both participants from Merafong LM and JB Marks LM shared the view (100% of participants in both municipalities) that the number of staff employed as technicians/process controllers within WWTWs was appropriate. The senior managers responded in the following way:

***Interview question: Do you operate with a full staff complement as per Regulation 2834?***

"*In this municipality we only operate with a 50% staff compliment within our five WWTW's" (Interview senior municipal official Merafong LM 2019).*

*"In the Ventersdorp WWTW only one person works in the plant and in Potchefstroom treatment works we have half-staff complement in the WWTW" (Interview with senior municipal official JB Marks LM 2019).*

There is no doubt that additional staff must be hired. The WWTWs are affected by the shortage of staff, like all areas of the sanitation value chain, such as network operations. Regulation 2834 was promulgated in terms of the *National Water Act 54 of 1956.* It sets out the minimum number of persons holding the operator classifications prescribed in Schedule IV who must be employed within a specific class of wastewater works (Kgopo 2013:15). This refers to what is understood as 'process controllers. Sections 26 and 12 (a) of the Act were not repealed and therefore continue to regulate the minimum number and qualifications of process controllers to be employed in WWTWs (Boyd 2004: online). The managers understood the importance of complying with this regulation and how it should be implemented.

**29. The municipality has enough water and sanitation network operation and technical staff**

The statement tested participants' views on whether their respective municipalities had adequate water and sanitation network operation and technical staff. Participants were required to indicate the extent to which they agreed or disagreed with the statement. The results are provided in Figure 6.29.

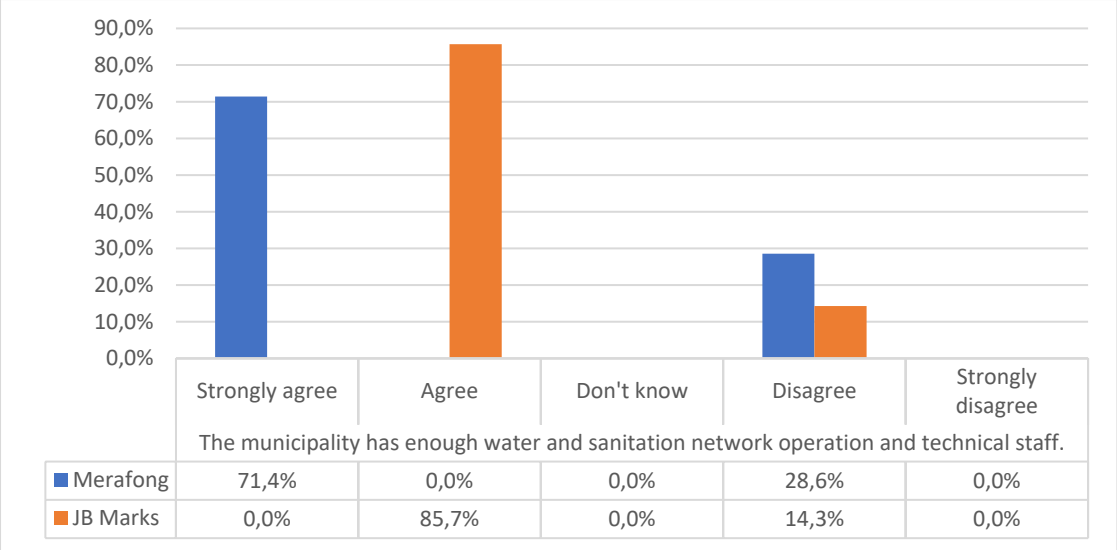



**Figure 6.29: The municipality has enough water and sanitation network operation and technical staff**

The participants' perceptions were that there was adequate staff to deal with operations and technical aspects of water and sanitations services. However, as indicated previously in Figure 6.28, the current staff complement was not adequate to deal with daily operational demands, particularly in Merafong LM, where employees resigned in large numbers and were not replaced because of a lack of funding. Similarly, the JB Marks LM was unable to employ more staff for the same reason.

**Interview question: Does the municipality have adequate water and sanitation network operation and technical staff**

"*As indicated previously we operate at half-staff complement across the network, one employee would do have added responsibilities because of the shortage" (Interview senior municipal official Merafong LM, 2019)*

*.*

"*We have a serious staff shortage in this department, employees are over-burdened" (Interview senior municipal official JB Marks LM, 2019).*

The views expressed by managers of the two municipalities are corroborated by the Municipal Strategic Assessment Report (Department of Water and Sanitation 2018:50). The contradictory responses provided by municipal officials and managers clearly indicate that municipal officials did not provide accurate, reliable and

trustworthy information. Peters and Nieuwenhuyzen (2012) contend that capacity challenges are not the real causes of poor performance in municipalities. The authors argue that high vacancy rates and instabilities in administrative leadership caused by tensions between admin staff and politicians, and low staff morale, are to blame for the poor state of affairs in municipalities (Mafunisa *et al*., 2017: online).

**30. A mentoring and coaching programme is in place where experienced staff train inexperienced staff**

The next statement tested participants' views on the existence of a mentoring and coaching programme in their respective municipalities. The participants were required to indicate the extent to which they agreed or disagreed with the statement. The results are provided in Figure 6.30.

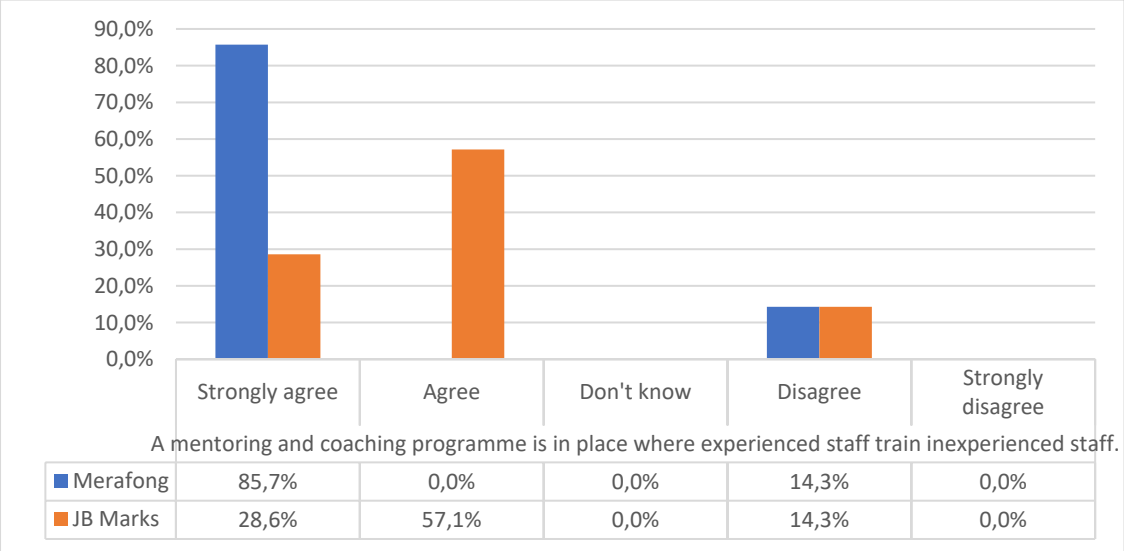



**Figure 6.30: A mentoring and coaching programme is in place where experienced staff train inexperienced staff**

Staff training is central to skills development and success in any organisation. The statement above sought to determine whether staff mentoring, and coaching was in place in both municipalities. The participants' views, as illustrated in Figure 6.30, indicate the existence (85.7% and 85.7% in both municipalities) of a mentoring and coaching programme. However, the evidence provided by the Municipal Strategic Self-Assessment Report (Department of Water and Sanitation 2018) claims the contrary is true. In addition, the Municipal Integrated Development Plans 2019-2020 of both municipalities indicate that no mentoring and coaching programmes were

offered to either municipality (Merafong LM IDP 2019-2020; JB Marks LM IDP 2019-2020). The views expressed in the report are shared by a manager who said:

**Interview question: Does your municipality offer any coaching and Mentoring programmes currently?**

*"There is no formal mentoring or coaching programme currently in place in this municipality because there is no money to fund such programmes" (Interview Merafong LM manager June 2019).*

This is in contrast with the views of participants who claimed that such training exists. "*We need development in extension (location), we need budget for development, we need recruitment, and skills development so that to improve the quality of service in general*" *(Interview JB Marks manager June 2019).*

The views of the managers and others are supported by Prinsloo (2015: online), who states that, in general, skills development is poorly practised within many municipalities. Skills audits and needs analyses are often poorly conducted and, in the event that skills audits are done, skills development interventions are frequently not undertaken in line with these audits. Formal and informal approaches to skills development are not applied, with a general lack in opportunities for employees to practise new competencies, after skills development interventions. In general, the IDP process was found not to feed into the workplace skills plan; there was a strong absence of coherent and agreed procedures for skills development practice in many municipalities.

According to Ntombela *et al.* (2016:705), several WSAs in small towns and rural areas often lack the knowledge required to assess their poor results from the previous year. Furthermore, municipalities lack the capacity to prepare and implement appropriate ratification plans to submit to the regulator (Ntombela *et al.,* 2016:705). This was further confirmed in 2012 when the DWA found most wastewater risk abatement plans being implemented by WSAs were developed without the relevant expertise; they consequently lacked substance (DWA, 2012b). Consequently, responses to poor Green Drop results can be quite inappropriate or inefficient. An example is the

construction of costly and sophisticated WWTWs in deep rural areas where simple oxidation ponds could have been the best option (Prinsloo, 2015: online).

**31. Materials required for daily operational work in sanitation services is provided by the municipality (i.e. chemicals and equipment)**

This statement tested participants' views regarding the availability of materials (chemicals and equipment) required in daily operations in their respective municipalities. Participants were asked to indicate how often such materials were supplied by the municipalities. The results are provided in Figure 6.31.

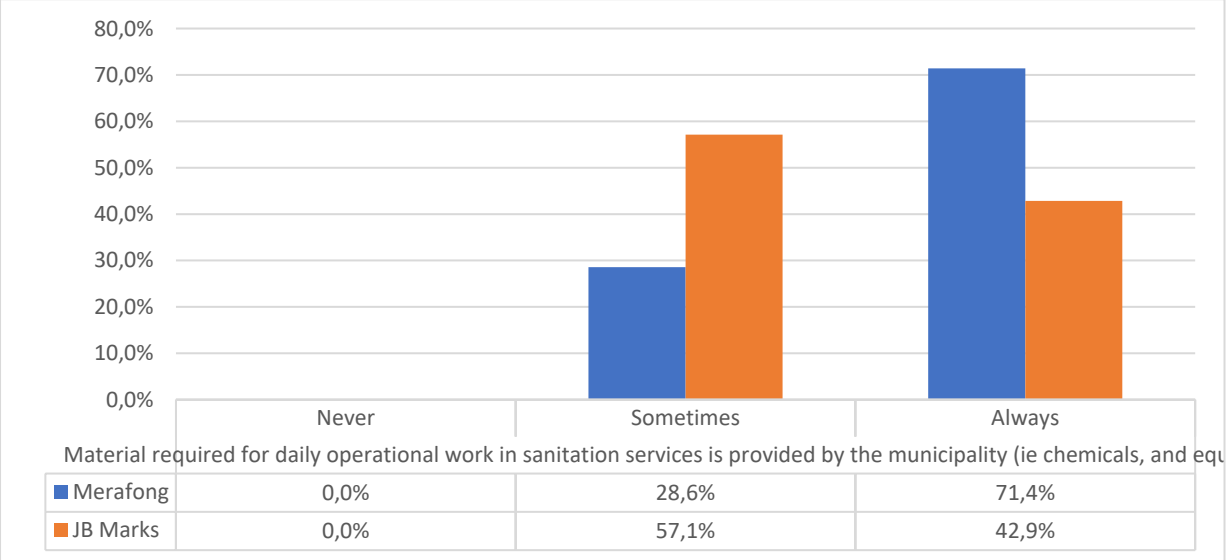



**Figure 6.31: Materials required for daily operational work in sanitation services is provided by the municipality (i.e. chemicals and equipment)**

Most participants in Merafong LM (71.4%) indicated that they always received materials required for daily operations. In JB Marks LM, 57% of participants indicated that they sometimes received such material, and 42.9% claimed materials are always available. In contrast with the views of the employees, senior managers indicated that getting materials is a daily struggle in both municipalities due to financial constraints, to a point where they sometimes use their own money to purchase materials.

**Interview question: Does the municipality provide material required for daily operations in sanitations services (i.e. chemical and equipment)**

*"The municipality has a serious cash-flow problem, and this affected our daily operations to a point where we struggle with materials to do our job" (Interview senior municipal official Merafong LM, 2019)*

*"Funds are not available for purchasing of daily material required for daily operations and we are frustrated by this situation" (Interview senior municipal official JB Marks LM, 2019)*

The Municipal Capacity Assessment Report (Department of Water and Sanitation 2018) reflected that municipalities' daily operations were seriously compromised due to lack of cash-flow. In addition, the most severely affected residents are those who use VIP latrines, which require regular servicing. Unfortunately, the municipality does not have funds to service such areas. This is more prevalent in informal settlements of both municipalities.

Manona and Cloete (2007:72) investigated the impact of socio-economic services such as water and sanitation in improving the quality of life of poor communities in South Africa. They noted that rural communities and residents of informal settlements continue to suffer ill health because of a lack of sanitation infrastructure, unhygienic conditions and poor sanitation practices. The authors also contend that the above factors represented a major challenge on sanitation in rural areas and informal settlements in urban areas. These authors singled out a lack of education on best practices as a contributing factor that has led to poor hygiene and poor sanitation practices.

**32. Annual technical assessment of wastewater-related systems is conducted**

The next statement tested participants' views on whether annual technical assessments of wastewater-related systems were conducted in their respective municipalities. Participants were required to indicate how often the assessment was conducted in their municipalities. Results are provided in Figure 6.32.

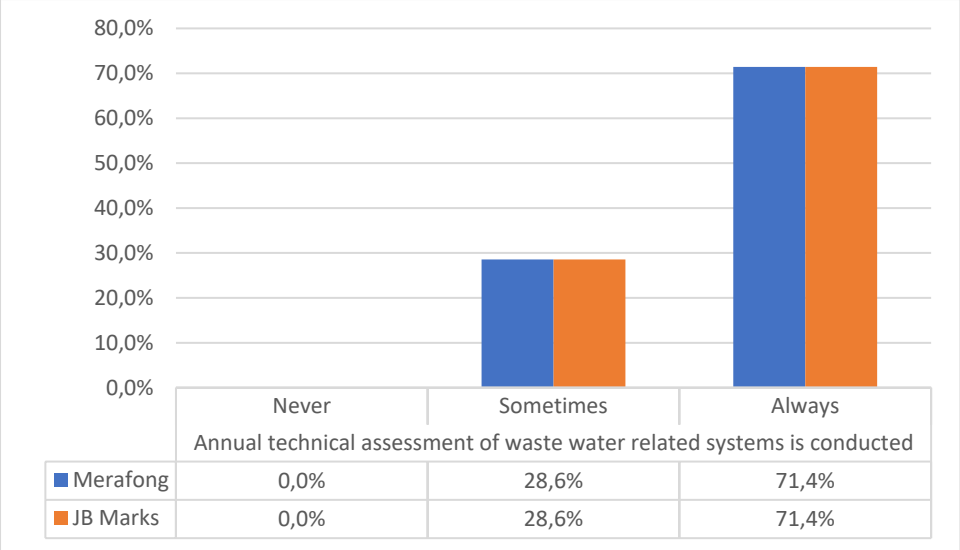



**Figure 6.32: Annual technical assessment of wastewater-related systems is conducted**

According to the *National Water Act of 1998* regulations, municipalities are required to undertake annual technical assessments of wastewater-related systems (Republic of South Africa, 1998). Most of the participants (71.4% n=5) in Merafong LM, and 71.4% in JB Marks LM claimed that the annual technical assessments did take place, with only 28.6% in both municipalities saying it happened sometimes. Contrary to the views expressed by the municipal officials, the senior managers indicated that assessments only happen sometimes and, as a result, it becomes difficult to effectively plan.

**Interview question: How often do you undertake wastewater-related systems assessments?**

*"The assessment only happens sometimes, and this make it difficult to effectively plan" (Interview senior officials Merafong LM, June 2019).*

*"Assessment do not happen as per legal requirement and this is a problem because we can't deal with maintenance problem timeously and it makes things very difficult" (Interview senior officials JB Marks LM, 2019).*

The primary purpose of undertaking these assessments is to identify and prevent maintenance and other technical issues before they arise or get worse. The AG Report (2017:9-10) on water infrastructure has highlighted a lack of internal capacity within

municipalities to undertake these technical assessments and operate and maintain current infrastructure. This lack of proactive assessment has led to the decay of infrastructure, to a state of disrepair.

### 33. The Green Drop status of your municipality

The next statement tested participants' views regarding the Green Drop status of their respective municipalities. Participants were required to indicate their response by means of a rating system. The results are provided in Figure 6.33.

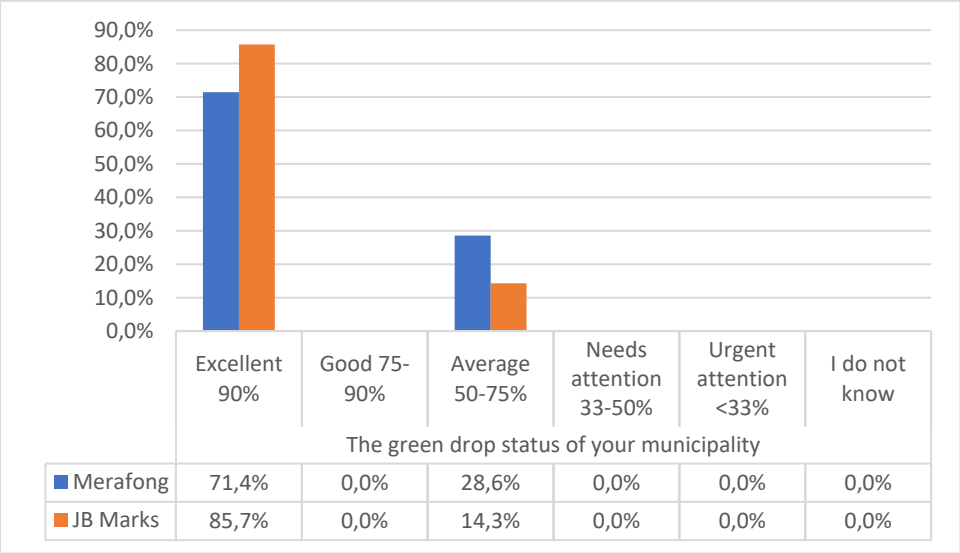



**Figure 6.33: The Green Drop status of your municipality**

In providing measures to determine the condition of wastewater treatment facilities, the Department of Water and Sanitation launched the Green Drop Evaluation Programme in 2008 (Lawless 2017: online). The programme is an incentive-based initiative, which aims to facilitate compliance with regulatory objectives. It tries to ensure that all wastewater discharged to the environment meets the minimum standard necessary to protect human health and the environment. It consists of two elements. The first is an assessment of the entire wastewater value chain in a municipality, including reticulation, pumping, treatment and discharge. The second element, the cumulative risk assessment, specifically focuses on the wastewater treatment function (Ntombela *et al.,* 2016:705).

Figure 6.33 above indicates participants' views regarding the Green Drop status of their respective municipalities. The results (Merafong LM 71.4% and JB Marks LM on

85.7%) show that both municipalities were doing well in the assessment in terms of compliance. However, interviews with managers from both municipalities indicated that since 2013 (last assessment), the two municipalities failed to at least maintain the Green Drop status. This illustrates that participants provided inaccurate information that cannot be relied on. In addition, participants might not be familiar with the current Green Drop status of their municipalities.

**Interview question: What is the Green Drop status of the municipality?**

"*It is difficult to comply because of the state of our infrastructure and lack of funding to undertake daily operations of the municipality, currently the municipality's Green Drop status is at an average of 50% compliance". (Interview senior municipal official Merafong LM 2019).*

"*Since the merger between the erstwhile Tlokwe LM and Ventersdorp LM, funding allocated to Water and Sanitation has been dwindling. In the current financial year (2019 - 2020) it has become worse because the JB Marks local municipality is failing to do basic repairs to ageing infrastructure in its Ikageng Township and maintenance of machinery in the Waste Water Treatment Works located in Potchefstroom and the one in Ventersdorp*" *(Interview senior municipal official JB Marks LM 2019).*

These views are supported by the municipal assessment undertaken by the Municipal Demarcation Board. It indicates that both municipalities are struggling to repair equipment and maintain current infrastructure (Department of Water and Sanitation, 2018:62). According to a study conducted by Tlou Tadima Engineering Consultants, Ventersdorp WWTW is at risk of collapsing because it is running at 90% (2.7 Mega litres per day [Ml/d]) of its design capacity of 3 Ml/d, leaving only 0.3 Ml/d. If no upgrading is undertaken by the municipality, it will soon completely collapse since the infrastructure is ageing and it is not adequately maintained (Tlou Tadima 2019: online).

**20.What are your main concerns regarding sanitation services in your municipality?**

Finally, participants faced the open-ended question: "What are your main concerns regarding sanitation services in your municipality?" This question was intended to establish some of the reasons for opinions expressed in response to the closed-ended

questions, thereby enriching the views expressed in numbers. It is important to note that only five municipal officials completed the open-ended question out of a total of 14 municipal officials.

**Analysis of the results**

According to Mouton (2001:108), the purpose of analysis is to "understand various constitutive elements of data through an inspection of the relationships between concepts, constructs or variables and to see whether there are any patterns or trends that can be identified or isolated to establish themes in the data". The analysis of data from the open-ended questions follows an open coding of themes related to the purpose of this research. Codes are useful in integrating all aspects of similar attributes for them to operate effectively (Robson,1993:377).

As was the case with analysing the open-ended question in the household questionnaire, themes emerging from the text of the open-ended question were grouped together to create main categories of themes and subcategories of the themes. The identified main themes and subthemes were then used as the basis to analyse the data; this was done by applying inductive content analysis with a view of obtaining valid research findings. Through this coding process, three main themes were identified, namely (1) shortage of staff, (2) cash-flow problems, (3) maintenance of infrastructure. The discussion of each theme and supporting subthemes is presented, followed by verbatim quotes that support the discussion.

**Theme 1: Shortage of staff**

**Subthemes: Vacancies and resignations**

Common concerns raised by municipal officials in both cases pertained to a shortage of staff and skills within the sanitation services department of the municipalities, subsequently causing strain on the current staff. They claimed this has led to resignations of experienced senior staff. Senior managers also indicated the municipality's staff shortage is worsening as employees go on early retirement and others resign and are not replaced. What was more concerning to employees was that these resignations happened at a time when only a few staff members had the requisite skills, competencies and qualifications. This view is supported by the Municipal Capacity Assessment Report (Department of Water and Sanitation,

2018:63), which shows that in Merafong LM, only six members out of 93 permanent staff had the required specific qualifications to work in the sanitation services department. What exacerbates the problem is that the sanitation department has a vacancy rate of 104 employees. This number includes employees who work on the WWTWs. Below is a breakdown of vacant positions in Merafong LM:

1x Senior Engineering technician (Fochville area)
1x Foreman (Fochville area)
15x General workers
1x Senior Engineering technician (Carletonville area)
1x Supervisor (Carletonville area)
1x Senior process controller (Khutsong South area)
1x Team leader (Khutsong South area)
2x General Workers (Welverdiend area)
4x General workers (Oberholzer area)
4x General workers (Khutsong South area)
(Merafong LM Integrated Development Plan, 2019:231).

The number of vacancies listed above indicate a chronic shortage of critical staff in the water and sanitation department in Merafong LM. Any delays in filling these vacant positions have dire consequences for municipal service delivery.

In JB Marks LM, participants indicated they are overworked in the Potchefstroom plant and only one municipal official worked at the Ventersdorp WWTW. According to participants, it is an unheard of and untenable situation that a single employee is expected to manage a plant. Moreover, participants indicated that the issue was raised with the municipality, but nothing had been done about it. Participants were told that the municipality does not have money to hire more staff. The state of the plant made participants more concerned because the plant its running at capacity. It needs urgent upgrades to keep up with demand.

The JB Marks LM Annual Report (2019:52) highlights the seriousness of staff shortages in water and sanitation departments. The report shows that 41% of funded posts at various levels in water and sanitation departments were vacant at the

municipality (JB Marks LM, 2019:52). This is a serious challenge because current employees are over-utilised to compensate for vacant post (JB Marks Local Municipality Annual Report 2019:52). According to the Parliamentary Overview Report on municipalities under administration (2020:12), a key challenge of municipalities in the North West, which includes JB Marks LM, is their inability to attract and retain skilled staff. This has resulted in a reliance on private consultants. The report indicated that persistent use of private consultants has not provided any fruitful outcomes due to irregularities in their appointments. In addition, the appointed consultants are not given proper documents and their work is not effectively monitored (Republic of South Africa 2020:12). Another challenge with the use of consultants is the lack of skills transfer from consultants to municipal officials.

In support of the above discussion, the following verbatim quotes were derived from participants who completed the open-ended question of the municipal officials' questionnaire:

- "***Not enough staff to do the work,*** *up to so far the* ***municipality don't have money,*** *we don't receive tools on time".* (verbatim extract from municipal officials questionnaire).
- "***shortage of staff is worsening,*** *resulting in over utilisation of current staff and backlog in task to be performed".* (verbatim extract from municipal officials questionnaire).
- "***The municipality staff not enough****".* (verbatim extract from municipal officials questionnaire).

The second main theme and subthemes that emerged from their responses are discussed next.

**Theme 2: Cash-flow problems**

**Subthemes: Lack of funds and financial problems**

The main concerns raised by municipal officials regarding this theme was that both municipalities faced a serious cash-flow problem that affected the maintenance and repair of wastewater treatment systems. In other words, scheduled or routine

maintenance of wastewater infrastructure cannot be carried out as per regulations. Participants indicated in JB Marks LM the machinery used to receive, hold and treat wastewater is no longer functional, and untreated wastewater spilled into the Mooi River. In Merafong LM's case, participants claimed they received the required materials (i.e., chemicals) very late and this affected the quality of effluent discharged into the Wonderfontein Spruit downstream, which feeds into the Mooi River; the primary source of drinking water for the JB Marks LM through Boskop Dam (Merafong LM IDP 2019).

The issue of cash-flow in Merafong LM is a major challenge for both the residents and the municipality. This finding is supported by the Auditor-General Consolidated Report on local government audit outcomes (2019:56-57), which indicate cash management controls in the municipality are lacking. These weak cash management controls include lack of regular bank reconciliations.

In addition, municipal funds that were invested by the municipality in the Venda Building Society mutual bank created gaps and financial constraints for the municipality as funds had to be redirected and projects halted (Auditor-General, 2019:57). For example, construction of an infrastructure project in Merafong LM could not be completed. As a result, the National Treasury decided to reduce unconditional grant allocations to the municipality. This act led to further financial decline as the municipality could not meet its financial obligations (Auditor-General, 2019:57). For example, no funds were available for fuel for municipal trucks that service septic tanks and VIP latrines in various informal settlements. Basic tools of the trade could not be purchased because there is no cash-flow. Broken water and sewer pumps cannot be repaired. This situation is exacerbated by inadequate staff to perform all these tasks (Merafong LM IDP 2019:163).

In support of the above discussion, the following verbatim quotes were derived from participants who completed the open-ended question of the municipal officials' questionnaire:

- "*Municipality has **cash flow problems;** this has resulted in inability to do routine maintenance*". (verbatim extract from municipal questionnaire).

- "*Municipality **does not have money** for materials to clean the lagoon".* (verbatim extract from municipal questionnaire).
- "*The municipality **has no money;** we **don't receive tools on time**".* (verbatim extract from municipal questionnaire).
- "*The municipality is under administration due to **financial problems**. This affect the rate at which we do maintenance".* (verbatim extract from municipal questionnaire).

The third main theme and subthemes that emerged from responses are discussed below.

**Theme 3: Maintenance of infrastructure**

**Subthemes: Wastewater process equipment, maintenance, pipes, manholes**

Participants of both municipalities raised concerns about ageing infrastructure networks. These include pumps, ponds, wastewater process equipment and bulk sewer pipes. For example, participants claimed that due to ageing infrastructure, they experienced frequent breakdowns of wastewater process equipment. In addition, participants indicated the large process machines used in wastewater treatment plants require capital budgets in order to be effectively maintained and the municipalities are not making these funds available. When senior managers make enquires, they are told the municipality has no funds to undertake large-scale maintenance.

The frequent blockages of sewer pipelines in Ikageng Township outside Potchefstroom was another major concern for participants in JB Marks LM. They maintained the ageing infrastructure is the reason for the frequent blockages. Their primary concern was that the blockages cause spillages of untreated or substandard effluent into the Mooi River. This has far-reaching consequences for the well-being of the people of JB Marks LM. To deal with spillages, manholes and sewer pipelines in Ikageng Township have to be replaced.

Over and above the issue of poor maintenance of infrastructure, the municipal officials wanted to be trained so that they are better equipped to do their jobs. The JB Marks Annual Report (2019:40) confirms the aforementioned challenges. For instance, the report refers to drain blockages, lack of knowledgeable personnel, limited funding

(both capital and operational) and ageing infrastructure as the main challenges facing the JB Marks LM.

The issues raised by participants regarding ageing infrastructure and poor maintenance is confirmed by the Merafong Local Municipality IDP (2019:162). It shows that sanitation infrastructure in the Merafong LM is in a state of disrepair and substantial budgets are required to undertake full-scale maintenance. In addition, the Merafong Local Municipality IDP (2019:162) indicates the municipality is facing a far more complex challenge in relation to their WWTWs; namely vandalism and equipment theft. This has forced the municipality to decommission some WWTWs and a lot of burden has now been placed on the remaining operating WWTWs (Merafong Local Municipality IDP 2019:162).

The bulk sewer capacity in Merafong LM has been reduced because of sludge settling in pipes. This is largely due to poor maintenance and dolomitic formations. In Khutsong North WWTWs, raw sewer drains directly into the Wonderfontein Spruit as a result of vandalised bulk sewer lines crossing the Wonderfontein WWTWs. Wedela WWTWs were decommissioned since 2015 due to poor maintenance of equipment (Merafong LM IDP 2019:162). This led to 1.8Ml raw sewage draining into the Vaal River system through the Klipdrift Dam. Likewise, the Kokosi pump station was decommissioned due to poor maintenance, theft and vandalism, and this has led to a drainage of 0.5Ml raw sewerage into Loop Spruit. Sewage is also back ponding from the pump station into ext. 99, ext. 1 and ext. 6 of the Kokosi Township outside Fochville (Merafong LM IDP 2019:162). The Khutsong South WWTW was decommissioned in 2015 as a result of poor maintenance, theft and vandalism of electrical and mechanical equipment. This has led to a drainage of 4.5Ml raw sewage into the Wonderfontein Spruit system towards Mooi River (Merafong LM IDP 2019:162).

The above discussion highlights the crisis that Merafong and JB Marks LMs are facing due to poor maintenance of water and sanitation infrastructure. For Merafong LM, the situation is more dire and complex as the municipality has to deal with replacing old infrastructure and managing sinkhole formations, which has severely damaged water, sanitation and other important infrastructure.

In support of the above discussion the following verbatim quotes were derived from participants who completed the open-ended question of the municipal officials' questionnaire:

- *"**Scheduled maintenance** is not done"*. (verbatim extract from municipal questionnaire).
- "*Most of the plant equipment is **aging**, increasing the **breakdowns** in process equipment which require **capital budget for maintenance***". (verbatim extract from municipal questionnaire).
- "*The no funds to procure necessary resources required for repair and **maintenance** of the **wastewater treatment systems***". (verbatim extract from municipal questionnaire).
- "*Too many blockages because of **poor maintenance**".* (verbatim extract from municipal questionnaire).

## 6.4 CONCLUSION

This chapter provided a detailed account of the results of data collected through the households and municipal officials' questionnaires. The results presented in this chapter pointed to the nature and extent of administrative capacity and financial challenges faced by Merafong and JB Marks LMs in the delivery of sustainable sanitation services. Although the results of the data analysis from the municipal officials' questionnaire contradicted findings of the households' questionnaire, interviews with senior officials in the two municipalities, official municipal documents and reports by the Municipal Demarcation Board and the Department of Water and Sanitation assisted the researcher in corroborating the research findings. It is clear from the evidence provided by various official reports, interview responses from managers and supervisor in both municipalities that the feedback provided by the majority of municipal officials are unreliable and untrustworthy. Only a few municipal officials' information could be corroborated with official records and interviews by senior managers.

Over the last three years, both municipalities have faced serious financial difficulties and JB Marks LM has been placed under administration; a clear indication of the extent of the problems in these municipalities (Merafong Annual unaudited report 2019:27). Both municipalities experience a serious challenge of a deteriorating state of water supply- and sanitation infrastructure, which has been neglected over the years. Although residents in the two municipalities acknowledged and recognised the role played by the respective municipalities, they felt they are not part of the municipalities' public decision-making processes. This is illustrated by the views of residents who stated they had no knowledge of the WSDPs of their municipality (see Figure 6.7). Furthermore, residents of both municipalities shared the sentiment that the municipality takes time to respond to their service delivery issues and no communication is forthcoming from the municipality (see Figure 6.8).

As proven by municipal official records, i.e. IDPs, both municipalities face a shortage of skilled personnel and funding to recruit more staff. Furthermore, it was proven through municipal records and information received from managers that critical planning and maintenance activities, such as technical assessments cannot be done, and a shortage of chemicals at WWTW is a daily struggle. The next chapter discusses the findings of this research, presents the conclusions reached, and makes recommendations.

# CHAPTER SEVEN
# FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

## 7.1 INTRODUCTION

The previous chapter presented a detailed data analysis and interpretation of the results of this research. This chapter discusses the research findings. Conclusions are drawn and recommendations for policy review, practical intervention and proposals for future research are made.

## 7.2 OVERVIEW OF CHAPTERS

**Chapter 1** provided a justification for the research, informed by a preliminary background discussion drawing from international and national literature on the management of sanitation resources. To deal with the identified research problem (to determine shortcomings, if any, in delivery of sanitation services in two selected municipalities), the researcher drafted research questions, research objectives, employed a research design and methodology, and engaged in data collection methods, populations and sampling, data analysis and delimitation of the research.

**Chapter 2 –** the chapter proceeded with a synopsis of the history and development of sanitation. This was followed by a literature review on sanitation drawing from various fields of study, namely Public Administration, Environmental Studies, Geological Studies, Geology-hydrology and Engineering Studies. Broad social, philosophical and theoretical perspectives on sanitation were presented in this chapter. The chapter concluded by providing a detailed account of political perspectives on water and sanitation.

**Chapter 3** proceeded with a discussion of the state of access to sanitation services in South Africa. This was followed by a discussion on funding mechanisms for sanitation services in South African municipalities. Human resource capacity challenges with sanitation in municipalities were explored. In addition, the chapter explored infrastructure investment for water services. The chapter also interrogated the current

state, maintenance and operation of sanitation infrastructure in South African municipalities. Municipal infrastructure planning received attention in this chapter. A brief discussion on sanitation technologies in South Africa was also presented, and the performance of WWTWs was scrutinised. The issue of capacity-building in municipalities was discussed at length in this chapter. This chapter concluded by exploring institutional arrangements for sanitation in South Africa.

**Chapter 4 –** the legislative frameworks and policies that guide the provision and implementation of sanitation services in South Africa were reviewed in this chapter. These frameworks include legislation and policies that have a bearing on sanitation services, namely the *Water Services Act 108 of 1997, National Water Act 107 of 1998, National Environmental Management Act, DoRA* and the Constitution of the Republic of South Africa, 1996. Various policies on water and sanitation services were discussed in the chapter, including the White Paper on Water Supply and Sanitation (1994), White Paper on Basic Household Sanitation (2001), Strategic Framework for Water Services (2003) and Sanitation Policy (2016).

**Chapter 5 –** the broad philosophical perspectives on which this research is based set the tone for this chapter. The chapter presented the research design, population, sampling, and data collection instruments. This chapter reflected on the case study method followed in this research. As case studies allow for multiple data collection and analysis methods, this research followed a mixed-method approach, including quantitative and qualitative research designs. This chapter also explained the data collection and analysis methods used in this research. Strategies for ensuring the trustworthiness and reliability of the study were presented, and the limitations of this study were explained. This chapter concluded by explaining ethical considerations.

**Chapter 6** presented and discussed the empirical findings of this research. The presentation of findings followed the order of research questions rather closely. This chapter constituted an empirical part of this study and provided details regarding respondents' views and perceptions of the study's objectives. The research findings were then subjected to interrogation by the existing body of knowledge on sanitation management.

**Chapter 7 –** a synthesis of the study is undertaken. Conclusions are also drawn based on the findings, and recommendations are made for possible future research arising from this research.

## 7.3 SUMMARY OF FINDINGS

In this section, key findings of the research are summarised, as set out in Chapter One. In line with objective one, **to provide core theoretical foundations and classifications that can be used to analyse the history and development of sanitation**, the following findings were attained:

The literature review (see Section 2.3) illustrated that it is important for any research endeavour to recognise sanitation is a multi-disciplinary subject. Although this research is located in the field of Public Administration, in order to understand and comprehensively address sanitation challenges, it was necessary for the researcher to incorporate and explore literature from various fields. For instance, in Public Administration, the importance of meaningful public participation in the delivery of public services and the significance of recognising gender limits in the provision of facilities is fundamental. In gender and environmental studies, the provision and installation of sanitation facilities go beyond the physical structure into a realm where toilets have a deeper cultural meaning; thus, the cultural and political sensitivities that comes with it should be carefully considered. In addition, the installation of sanitation facilities has also become spaces where religion, class and race are contested. To acknowledge the character of toilets as contested spaces does not disregard financial, technical and other constraints in the provision of sanitation services but emphasises the success or failure of sanitation projects do not rely on these issues alone, but rather on an assortment of factors.

Furthermore, the natural sciences literature, such as Hydrology and Geo-hydrology, suggest that the successful implementation of a sanitation project must consider hydrological conditions such as the groundwater table, the nature of unsaturated zones and hydraulic loads in the installation of dry sanitation facilities, particularly in rural areas. Municipalities must factor in this important consideration during the planning of sanitation projects. Literature suggests that although Civil Engineering studies have

come up with solutions to sanitation challenges, the sustainability of these solutions depends largely on social acceptability among the communities that use them. Nawab *et al*. (2006) suggested that cultural practices and user preference be incorporated in decisions about the type of sanitation facilities to ensure social acceptability.

The delivery of sanitation services occurs within a particular ideological context, and it is thus imperative to incorporate this consideration. To this end, two broad ideological approaches, namely neoliberalism and the direct state provision of public services, were identified and explored in this study. Neoliberalism has been touted as a solution to service delivery challenges in the public sector. Proponents of neoliberalism have argued the involvement of the private sector will bring about stability, efficiency, and government will be able to broaden the tax base, creating more revenue in the national fiscus (Bakazi 2005). Such a move will remove the burden of managing facilities from the state. As discussed in Section 2.4.4, state entities will generate a lot of money by privatising public institutions, like South African Airways, DENEL and Eskom, which in the recent past cost the taxpayer substantial bailouts.

On the contrary, those in favour of direct state provision of public services argue there is no evidence supporting the view that privatisation has cut costs and improved public service delivery (Greenberg 2006). This author argues that, in fact, the opposite is true. For instance, public sector institutions have become weakened, and the principles of accountability and social justice have by and large been eroded as a consequence of private sector involvement. This is evident in the cost of water services in municipalities where the private sector provides public services. In government institutions where the private sector is involved, the cost of services has increased substantially, thereby excluding the poor and marginalised communities who cannot afford to pay. In addition, the privatisation of public services has created a dual service system where the private sector provides services regarded as high quality. In contrast, public sector institutions provide services deemed “inferior”. A good example is services provided by private hospitals versus public hospitals. It is critical that public sector decision-makers factor these perspectives in when deciding how public services should be delivered, by whom, and who benefits.

Moreover, municipalities' inability to spend allocated funds for service delivery has emerged from literature as a serious impediment to development. For instance, municipalities only spent 15% of allocated funds for water and sanitation services in a financial year. As discussed in Section 3.6.1, this failure to spend allocated funds is captured in the JB Marks Annual Report (2019:52). It shows that in the 2019/20 financial year, R33 million was budgeted for water services, but only R8 million was spent, leaving 18 million unspent. Meanwhile, the municipality is facing challenges of ageing infrastructure, poor maintenance and a shortage of staff (JB Marks LM Annual report 2019:52). The Merafong LM allocated only 4% of its budget for repairs and maintenance. Due to this limited and inadequate allocation, water services repairs and maintenance were performed on an emergency basis, and maintenance plans could not be implemented (Merafong Annual Unaudited Report 2019:27) (see Section 3.6.1). The National Treasury Budget Review Report (South African National Treasury 2018:71) has revealed that underspending is most common in rural municipalities; poor planning and high staff turnover are the major contributing factors to this sad state of affairs.

In line with objective two, **to establish how sanitation resources are managed in JB Marks and Merafong LM,** the following findings were extracted:

The literature review confirmed municipalities in South Africa face enormous difficulties in managing sanitation resources. The study's findings revealed that both Merafong and JB Marks LMs are in financial distress. This situation has negatively impacted their ability to provide basic services to their respective communities as mandated by the Constitution and the *Local Government: Municipal Systems Act of 2000.*

The study's results show that in Merafong LM, key positions in sanitation management are vacant; this is contrary to the views expressed by participants who claimed all key positions in sanitation management were filled. The Municipal Strategic Self-Assessment Report (2018:44) also confirms that in Merafong LM, 56 positions have been vacant since 2016/2017, and this number has substantially increased for the 2019/20 financial year, as indicated in the Merafong Local Municipality IDP of 2019. This high vacancy rate in Merafong LM could be attributed to many factors, including the high staff turnover at the senior management level (see Figure 6.26). It could also

be attributed to the municipality's inability to recruit or replace staff due to financial difficulties. The situation in JB Marks LM is more stable as most senior management positions were filled, as confirmed by the JB Marks Annual Report (2019:186).

This research also showed the Merafong LM does not have enough sanitation services management staff. This is despite contradicting views expressed by municipal officials who indicated there is enough sanitation management staff per 100,000 persons served. Management includes engineering technicians, team leaders and senior process controllers. The Municipal Strategic Self-Assessment Report (2018a:45) confirms vacancies in Merafong LM. The situation in JB Marks LM is more manageable, with at least the minimum number of staff employed. The Municipal Strategic Self-Assessment (2018) indicates that although the staff is not enough, at least the minimum number is employed, i.e., 5 per 200,000 persons served (see Figure 6.27).

A well-managed and maintained WWTW is central to the effective and efficient management of water and sanitation resources. In this regard, the findings of this research revealed WWTWs of both municipalities are not operated by the appropriate number of staff as required by Regulation 2834 of the *National Water Act of 1998*, despite the contradicting views expressed by participants. The findings were confirmed by senior management staff, who indicated WWTWs are operated by 50% of the required number of staff. Regulation 2834 determines the number of operators and their qualifications working in various classes of water care (see Figure 6.28).

Efficiently managed sanitation systems require that all components of the system work in tandem. To this end, full deployment of resources, which includes a full complement of qualified staff, is required. In this regard, the findings of this research revealed that both Merafong and JB Marks LMs did not have adequate water and sanitation network operation and technical staff. The findings alluded to above were corroborated by senior municipal managers who indicated that they operate with half the staff across the network. This network includes staff dealing with plumbing, burst pipes, and other network staff. This finding was confirmed by municipal officials' responses to the questionnaire and interviews with senior managers of the two municipalities (see Figure 6.29). The staff shortage has put a lot of stress on the current employees due

to added responsibilities. This situation was exacerbated by the municipalities' inability to recruit new people. The Recent Municipal Strategic Self-Assessment Report (2018) clearly demonstrates the severity of the staff shortage problem.

Findings revealed that no water service development training opportunities were offered to employees who worked in the municipalities' sanitation and technical departments. This was confirmed by senior staff of the two municipalities during their interview sessions with the researcher (see Figure 6.25). In addition, the findings of this research established that, in Merafong and JB Marks LMs, no formal or informal mentoring and coaching programmes are implemented (see Figure 6.30). Essentially, employees do not have opportunities to improve their skills. According to Lawless (2017: online), training programmes' failure is attributed to the marginalisation of experienced technical professionals in the municipalities' recruitment processes and lack of recognition of the contribution of technical professionals such as engineers.

Managers' competency and qualifications are critical in successfully executing tasks, particularly tasks that require some technical knowledge. To this end, the research results revealed municipal officials in both cases had some level of confidence in the competency, skill and qualification of sanitation managers. This can be attributed to the working relations and interactions between employees and managers. However, the MuSSA Report (2018a:8) shows that less than half of managers in the technical department have the requisite skill, competencies and qualifications (see Figure 6.23). Equally important, supporting staff should be qualified and competent in their line of work. This study determined that a majority of supporting staff do not have the required qualifications and competencies. The finding was corroborated by interview responses from managers in Merafong LM, who indicated that most of their staff are not qualified and do not have the requisite skills to do the job. The managers further indicated that they rely on a few experienced and qualified employees, and the high rate of resignations is making matters worse (see Figure 6.24). The Municipal Strategic Self-Assessment Report (2018a:65) confirms that only six out of 93 officials are qualified to do their job. This is a serious challenge that needs urgent attention. The JB Marks LM is experiencing the same challenge of unqualified employees, as confirmed by senior managers who indicated that their staff require training as they are not qualified for their positions.

The research revealed that the materials and equipment required for operational work are not always available, and it has become a struggle for sanitation employees, negatively affecting their work. This finding was confirmed by managers in the sanitation departments who, in both cases, indicated that financial constraints mean they do not have the required materials and equipment (see Figure 6.31).

An important finding of this research is that an annual technical assessment of water-related systems does not happen as required by law. Although the majority of municipal officials claimed it always occurs, evidence proved the contrary. For example, managers indicated that assessments only happen sometimes; this affects their planning, and it becomes difficult to deal with maintenance issues before they arise. These assessments are critical undertakings because they assist in identifying potential maintenance issues (see Figure 6.32). As part of measures to determine the condition of WWTW facilities, Green Drop assessments are undertaken by the Department of Water and Sanitation. However, the research findings show that since 2013 (last assessment), neither municipality has maintained their good Green Drop status and are therefore not compliant. This was confirmed by managers who indicated that compliance is difficult due to ageing infrastructure and a lack of funding. Results show that both municipalities are failing to perform repairs and maintain infrastructure. The situation is worse in the JB Marks LM because the Ventersdorp WWTW needs to be upgraded as it is running at 90% of its capacity (see Figure 6.33).

Another important finding of this research is that Merafong LM residents use septic tanks and VIP latrines that are not regularly serviced. This has forced residents to find alternative means of relieving themselves. Also, in the JB Marks LM, residents in informal settlements are not provided with adequate sanitation facilities. For example, ten households share a toilet, exposing users to health risks. The situation is worse for those with no toilet at all; these account for about 8% of the JB Marks households who participated in this research (see Figure 6.5). For residents in formal settlements of the JB Marks LM, a further challenge is water cuts as they cannot use their toilet facilities. This was confirmed by residents who answered the open-ended question, which explored their concerns regarding water and sanitation services in their municipalities. Despite these challenges, significant progress has been made in providing residents access to piped water. Most residents in both cases had access to piped water, with

the exception of those in informal settlements. This is in line with the national average of 89% of households having access to piped water, irrespective of whether it is in the street or their yard. There have thus been substantial increases in the number of households who have access to piped water (Statistics South Africa 2016d:14).

The findings of this research also revealed a common despondency among residents in relation to whether municipalities prioritise their basic needs (see Figure 6.11). This finding is supported by Ledger and Rampedi (2019:6), who agree that municipalities in South Africa are typically not responsive to the demands of their residents.

In line with objective three, **to review legislation governing sanitation services in a municipality**, the following findings were attained:

Adequate sanitation facilities and other related infrastructure that collect and treat sewage ensure human dignity and good health. In this regard, this research revealed sanitation-related systems in the two case studies are ageing and cannot cope with daily operational demands. The sanitation infrastructure of the two municipalities is at risk of failure largely because of continued neglect of maintenance and poor engineering capacity.

For instance, in Ventersdorp (JB Marks LM), the only WWTW in the small town is running at 90% of its design capacity of 3 megalitres per day; it will soon collapse if not upgraded (Tlou Tadima Engineering Consultants 2018: online). In Merafong LM, untreated raw sewage from the Kokosi pump station, Wedela WWTW, and Khutsong South WWTW drains directly into the Wonderfontein Spruit and has severely contaminated and compromised natural down-streams (Merafong LM IDP 2019:162). In addition, collapsed sewer infrastructure in Khutsong has caused the back ponding of sewage in the underground infrastructure, primarily because of dolomite and poor maintenance. As a result, residential areas of Khutsong North are flooded with sewage, exposing residents to ill health (Merafong IDP 2020:162). The researcher witnessed the sewage spillage during data collection (fieldwork observation). Ledger and Rampedi (2016:6) argue that it can take up to seven years to return a municipality to sound financial footing. During this time, the municipality remains under severe pressure due to financial and other resource constraints.

According to the household survey, it had become a common occurrence for the municipality to take considerable time in responding to service delivery matters such as burst pipes and other disruptions. Municipal officials are aware of these concerns as they are reported but, due to financial constraints, are unable to respond speedily and effectively (see open-ended household survey question). Service interruptions that occur in both municipalities are likely to continue because of neglected infrastructure or incomplete infrastructure projects in the case of JB Marks LM.

This research showed that both municipalities had made good progress in providing residents with piped water. As shown in Figure 6.2, over 90% of residents had access to piped water; this is a positive and encouraging development. It is also in line with Statistics South Africa's (2017:85) report, which claims access to piped water has increased from 4.2 million households in 2006 to 13.9 million households in 2017.

The research findings illustrate that in both cases, significant progress has been made in providing communities access to adequate sanitation facilities. As shown in Figure 6.4, over 68.2% of participants in JB Marks LM and 93.6% in Merafong LM had access to flush toilets. Notwithstanding the above, the research revealed that over 8% of residents in JB Marks LM engaged in open defecation, with 22% using pit latrines without ventilation (long drop) due to lack of facilities or incomplete sewer infrastructure projects. This is indicative of a municipality in serious financial distress. Frequent sewerage blockages indicate severe underlying structural problems within the network. In addition, there is a lack of safe toilet facilities in informal settlements in Merafong LM where it was reported that children have fallen into pit latrines. The municipality has taken no action to remedy this situation and residents had to find ways of dealing with the danger of pit latrines.

The findings that emanated from the open-ended question on the household survey show that Merafong LM experienced a complex and unique problem with regard to sanitation service delivery and infrastructure. Over and above the challenges of poor infrastructure maintenance, the municipality and residents face sinkhole formations due to dolomitic challenges in their area. For instance, residents indicated that, as a result of sinkholes, sewerage pipes burst and cause spillages along the street where they live. According to residents, sinkhole formations occur mostly when there is

leaking underground water or sewerage pipes. Geological assessments have also been undertaken, and they show that Khutsong Township is located in a highly dolomitic and fragile area. The report recommended that residents be moved to safer areas. The report has also indicated that water and sewerage pipes in the area were made of asbestos, which is unsuitable for dolomitic areas because of its fragile nature. This has led to the complete destruction of sewer networks, causing pollution to the Wonderfontein Spruit (Department of Water and Sanitation 2017:5).

The vandalism and theft of infrastructure was another important finding arising from this research. Participants who completed the open-ended household survey questionnaire indicated that vandalism and theft of electrical equipment rendered WWTWs in Merafong LM unable to curb environmental and health risks. This situation led to the decommissioning of some of the WWTWs, and participants said they felt the municipality is not doing enough to safeguard the infrastructure network. The theft and vandalism of infrastructure have been highlighted as a serious concern by the municipality (Merafong LM IDP 2019:162).

In line with objective four, **to determine the nature of infrastructure in the JB Marks and Merafong LM**, the following findings emerged:

The challenges facing municipalities in both cases range from administrative incapacity, poor planning, lack of accountability, poor financial management, and lack of public participation in the affairs of the municipalities (Merafong LM IDP 2020:163; JB Marks LM Annual Report 2019:51). As indicated in Figure 6.12 of the household survey, the majority (89% Merafong LM and 97% in JB Marks LM) of residents wanted to participate in the decision-making processes (this includes making inputs on WSDP) of their respective municipalities. However, it appeared community-based structures that should drive public participation, such as ward committees, are too weak to make any significant impact on policy matters within the municipalities. This was emphasised by the rare participation among residents in the household survey (see Figure 6.7). As envisaged in section 152 of the Constitution, it is the municipality's duty to ensure active and meaningful citizen participation in the affairs of local government. Literature sources consulted in Section 2.3.1 of this research affirmed a lack of public participation is a typical flaw of participatory democracy in South Africa.

Another key finding of this research is that there is a chronic shortage of senior staff in the water and sanitation departments of both municipalities, particularly Merafong LM; JB Marks LM had severe shortages in the middle- and lower levels of the municipality. This caused instability in the governance of the municipalities. Research undertaken by Amod and Wall (2017: online) show that a shortage of senior staff in municipalities is a national problem and urgent action needs to be taken to address the situation. Moreover, in both municipalities, population growth has had a negative effect on the municipality's ability to provide adequate sanitation services. Free basic sanitation service continues to exclude the most vulnerable because they are not connected to the municipal sanitation network.

The literature review highlighted the poor state of water and sanitation services in municipalities in South Africa. Municipalities' inability to spend funds allocated to deliver basic services such as water and sanitation is also a key finding in this research (see Section 3.6.1). Literature similarly revealed that poor governance, lack of capacity and accountability appears to be at the centre of the challenges facing municipalities in South Africa. For instance, poor planning and lack of prioritising basic services and the diversion of dedicated water service funds have worsened the problems. Municipalities' underspending is attributed to poor coordination across the three spheres of government responsible for water and sanitation services (Peters & van Nieuwenhuyzen 2012). Efforts by CoGTA to remedy this situation has fallen short in many respects. For instance, capacity-building interventions, such as the MISA, was designed to provide technical assistance to municipalities but failed to bring about any substantial improvements (Lawless 2017: online).

Moreover, other mentoring and coaching programmes envisaged by CoGTA and the Department of Water and Sanitation to train young engineers did not materialise (Peters & van Nieuwenhuyzen 2012). Despite incentives provided by the national government, the state of WWTWs continues to deteriorate, with funding prioritised for new infrastructure at the expense of upgrading existing infrastructure. In fact, infrastructure spending appears only to receive attention when there is an emergency. The high turnover of engineering professionals in technical directorates/units of municipalities across South Africa has also not been addressed by the government.

As discussed in Section 3.11.3 of this thesis, clear guidance regarding the roles of national sector departments responsible for functions and services delivered at the local government level is absent. Similarly, coordinating departments – such as the CoGTA or National Treasury – require clarification of the role they are expected to play in overseeing the grant system. The ambiguity of these roles has led to unnecessary duplication of processes (even duplication of grants in instances such as the Municipal Water Infrastructure Grant), and distorted accountability. Clarity over the role a sector department is expected to play in overseeing and supporting grant implementation, and the role a coordinating department is expected to play in managing, allocating and evaluating grants and the grant system, could reduce intergovernmental friction and improve the coordination of MIGs in the future (see Section 3.3).

In line with objective five **to determine challenges and constraints in the management of adequate sanitation services in the JB Marks and Merafong LM**, the following findings are presented:

The provision of sanitation services is stipulated in the *Water Services Act 108 of 1997* and the *National Water Act of 1998*. Schedule 4 Part B and schedule 5 part B of the Constitution stipulates municipalities' functions, which include sanitation services. The *Water Services Act 108 of 1997* states WSAs are required to facilitate the provision and the right of access to sanitation and must take reasonable measures to realise this object within their limited resources. However, the Act does not provide clarity on what those measures are. It falls short in defining the content of what could be considered "access to basic sanitation".

The findings of this research point to inconsistencies in the definition of basic sanitation in the *Water Services Act* and subsequent regulations. In addition, inconsistencies in the enforcement of norms and standards between rural and urban areas are also noted in the research. For example, more emphasis is placed on building infrastructure in urban areas at the expense of rural areas. This situation creates confusion and misalignment in the local government's duty regarding sanitation services. It should further be noted that in terms of schedule 4 part B of the Constitution, no reference is made to "toilets"; instead, the Constitution refers to domestic wastewater and disposal systems.

The findings of this research illustrated that resource availability had become a determining factor in terms of the level of service provided by a municipality, despite provisions in the *Local Government: Municipal Systems Act* (section 4(2)(d)), which stipulates a municipality has a duty to provide equitable services. Attention has also been drawn to the administrative incapacity of the Departments of Water and Sanitation as well as Environmental Affairs to monitor and manage municipalities' compliance. For instance, monitoring non-compliance, particularly concerning the discharge of effluent to rivers and lakes, is critical in ensuring the natural environment is protected.

The efficient management of WWTWs and water services are vital in protecting the ecosystem and environment in general, which can only be achieved through good environmental practices. Intergovernmental relations and cooperation by public institutions, communities and all three spheres of government are fundamental. The efficient management of funds allocated through the *DoRA* is critical in ensuring and improving the delivery of basic services, including water and sanitation services. Moreover, the National Treasury plays an important role in monitoring municipalities' funding allocation and spending. Smith (2009) notes that municipalities choose to provide services in-house, even when the capacity to do so is lacking. The issue of the environment's sustainability is also fundamental in water services provision. The Department of Water and Sanitation acknowledges in the preamble of the National Sanitation Standard programme that there are insufficient regulations at all spheres of government relating to sanitation.

In line with objective six, **to describe and explain the research design and methodology applied in determining the shortcomings of the JB Marks and Merafong LM to deliver sanitation services**, the following findings were made:

As indicated in Chapter Five (see Section 5.3), the researcher followed a mixed-method research approach embedded in a case study. The main theme of the study was to determine whether there are shortcomings in the delivery of sanitation services in the JB Marks and Merafong LMs. Two questionnaires were thus administered in this research. One questionnaire was used to elicit residents' views, and the other was used to illicit municipal officials' views. As discussed in Chapter Five, before the actual

data collection could occur, the researcher undertook a pilot study to review the research instruments. The results of the pilot test were explained in detail in Section 5.8.4 of this study.

Pragmatism was adopted as the philosophical basis upon which this research was based. The methodology chapter explained the researcher's rationale for using mixed-method research, and more specifically, how both sets of quantitative and qualitative data were collected and analysed by the researcher. Ethical considerations and processes were followed and adhered to in this research. The researcher is hopeful that the guarantees provided in this research concerning trustworthiness, validity, and reliability are sufficient to the reader.

The researcher relied on household and municipal official surveys, policies, legislation and official documents as primary sources of data collection for this research endeavour. These sources were augmented by interviews with four senior municipal officials responsible for water and sanitation services at the sampled municipalities. The researcher had an opportunity of interviewing some of the residents (household survey) of both municipalities, and results were integrated into the analysis and interpretation of the graphs (see Figure 6.3, Figure 6.8 and Figure 6.11). Furthermore, the researcher made observations to validate arguments presented by senior municipal officials. The researcher also had the opportunity to inspect the quality and functionality of the equipment and machinery of the WWTWs of the two municipalities. Finally, the methodology used in this study assisted the researcher in concluding that participants' responses should not be relied on as the only truth in this research journey. It is imperative for researchers to verify and authenticate information received from participants in order to arrive at accurate and reliable conclusions in their research endeavours.

## 7.4 RECOMMENDATIONS

The recommendations made in this thesis are based on the findings derived from the data collected on the Merafong and JB Marks LMs and literature review. Based on the interpretation of the study's findings, the following recommendation can be made:

As discussed in Chapter Two, public participation is a cornerstone of any democratic system; it is a principle enshrined in the Constitution. The research findings established that public participation in Merafong and JB Marks LMs had been weakened because structures that should drive this process are not functioning optimally. These structures include ward committees. Residents claimed they do not meaningfully participate in the decision-making processes of the municipality and do not feel that their inputs are considered by the municipality; particularly on matters that relate to water services development planning. This calls for both municipalities to strengthen community participation structures and ensure they are functional and active. Local government must ensure community participation is encouraged in all facets of community and municipal life. Both municipalities should ensure that information regarding developments in the community reaches all wards of the municipalities. To this end, this study recommends that Wonderfontein Spruit and Mooi River Forums and local media platforms, such as community radio stations and local newspaper outlets, should be used to inform the community about municipal affairs.

Funding shortfalls and underspending on maintaining the sanitation infrastructure appears to be a major contributing factor to the maintenance backlog experienced by the municipalities. Both municipalities should mobilise resources to deal with this problem as a matter of urgency. To this end, it is proposed that such funding should be ring-fenced to ensure it serves its intended purpose. Moreover, the research findings pointed to a chronic lack of capacity in both cases. Capacity-building initiatives must be undertaken to assist the municipalities in fulfilling their constitutional mandate of providing basic services, as envisaged in section 152 of the Constitution. Capacity-building initiatives should include introducing mentoring and coaching programmes to train engineers, process controllers and plumbers. Municipalities should consider rehiring retired engineers and other officials on a contractual basis to fulfil this role. Retired engineers could come in handy due to the wealth of experience they possess. JB Marks and Merafong LMs should undertake a recruitment drive to fill vacant posts. This should include recruiting more staff for WWTWs in Ventersdorp in the JB Marks LM. It is critical that appointments are based on qualification, competency and experience. This will help establish the necessary governance stability that appears to be lacking in sanitation departments of the municipalities. Talent management and retention programmes must be introduced to ensure the municipality is able to keep its

talent for the sustainable provision of services. This will address the high staff turnover experienced by the Merafong LM. As part of capacity-building initiatives, the municipalities should also consider providing training opportunities for the current employees; this should be done in line with the needs of individual municipalities. The Municipal Demarcation Board Report of 2018 revealed that important municipal functions, such as developing a WSDP, has been outsourced to private consultants who have no vested interest in the well-being of the municipality and will not undertake this process with the necessary caution and dedication. It is therefore recommended that internal municipal officials deal with such an important undertaking or function.

It is clear from the study's findings that neither municipality can fulfil its functions, including maintaining the water services infrastructure. For instance, non-compliance with the *National Water Act of 1998* regarding effluent discharge into the Wonderfontein Spruit, which feeds into the Boskop Dam (the main source of water for JB Marks LM) is a serious concern. The researcher proposes that a monitoring unit be established to ensure compliance with regulations. This is a national function, and the Department of Water and Sanitation could potentially establish a team to provide close monitoring.

Capital expenditure undertaken by the municipality should prioritise repairing existing infrastructure where possible instead of building new infrastructure from scratch. Sanitation departments in both municipalities know their financial needs better than political office bearers. It is recommended that one of the sanitation managers in each municipality be part of the committee that deals with budget allocations.

The sanitation infrastructure in both municipalities is in a state of disrepair. Both municipalities should urgently mobilise resources to rebuild infrastructure and upgrade their WWTWs and other critical infrastructure. The WWTWs in Ventersdorp should be urgently upgraded to increase their capacity; the Gauteng Infrastructure Financing Agency could be approached to assist in this regard. The Merafong LM should do a feasibility study to consider the possibility of reducing the number of WWTWs and converting the smaller WWTWs, such as Wedela, to an oxidation-dam process on a permanent basis. Currently, the municipality has three WWTWs that service the northern part of Merafong; merging these three could help reduce the cost and the

associated risk for the municipality. In addition, the municipality should employ security services to safeguard the water services network against vandalism and theft. With regard to sinkholes' destruction of water service infrastructure, the municipality should follow the recommendations of various geological reports undertaken in the area, which state that the municipality should move residents to safer areas. In the interim, the municipality should ensure that underground pipe leaks are attended to speedily to avoid the formation of sinkholes.

The contradictory responses provided to the municipal officials' survey questionnaire has put the integrity of the data into question and has demonstrated that data collected from interviews and questionnaires are not always reliable. Ultimately, conclusions cannot be drawn from such untrustworthy information. More importantly, this research has proven that official documents and records are a critical resource for any research endeavour dealing with service delivery issues in public institutions. Therefore, it is vital that researchers triangulate such data with other reliable sources of information to arrive at accurate conclusions.

## 7.5 PROPOSAL FOR FURTHER RESEARCH

In light of the findings presented in this research, the following proposal for further research can be made:

- The Statistics South Africa Household Survey of 2017 reported that 83% of South Africans have access to some form of sanitation facilities. However, limited research has been undertaken to determine the functionality of these facilities. Future research can explore this area.
- Residents' perceptions regarding the use of dry sanitation technologies could be explored by future studies.
- Municipalities' non-compliance with effluent discharge regulations is one research area that could be interrogated in depth.

## 7.6 CONCLUSION

It is clear from the research findings that municipalities in South Africa deal with enormous challenges in providing and managing sanitation services. Among others, municipalities grapple with a lack of human and financial capacity and an inability to spend allocated funds. As a result of these challenges, municipalities have incurred severe maintenance and infrastructure backlogs. This situation calls for drastic changes in the way municipalities are managed. The Merafong and JB Marks LMs is a good example and demonstration of the extent to which sanitation resources are poorly managed across provincial lines. Solutions may not only lie in providing more funds, but it is critical that political authorities show a willingness to improve the situation. The research findings illustrated that poor governance in Merafong LM negatively impacts JB Marks LM. Therefore, service coordination among both municipalities and provinces is central in resolving this matter.

Evidence emanating from this research has proven that public resources meant for public sanitation services in the two cases are poorly managed, and this is a major shortcoming identified by this research. This research has also proven that the two municipalities' inability to fully utilise allocated budgets to deliver services to communities is a major impediment to the efficient delivery and development of adequate water and sanitation services. A diversion of resources meant for sanitation services has compromised the delivery of water and sanitation services in Merafong LM. The research has also proven that human resource capacity is lacking due to a critical shortage of personnel in both cases. Whether this thesis has answered the main question is left in the hands of the reader.

The chapter has provided an overview of the entire study. This was followed by a discussion of the findings derived from data analyses and interpretations. Recommendations were ultimately made for policy review based on the research findings. Lastly, proposals for future research were articulated in this chapter.

# LIST OF SOURCES


Aborisade, F. 2006. *Labour and socio-economic rights development and Nigeria's commercialization and privatization policy: A descriptive appraisal.* Preliminary Research Report Submitted to Centre for Civil Society, School of Development Studies, University of KwaZulu-Natal, South Africa.

Ahmed, S.A. & Ali, M. 2004. Partnerships for solid waste management in developing Countries: Linking Theories to Realities. *Habitat International,* 28(3):467-479.

Akwensioge, M. 2012. *The influence of anthropogenic nitrate on groundwater quality in the Thaba Nchu Area*. Unpublished Masters Dissertation, University of the Free State.

Alamy.com. 2017. Conventional pit latrine. Alamy, 20 July 2019. Available at alamy.com. Available at www.alamay.com/stock-photo-toilet.html. [Accessed 20 April 2018].

Algotsson, E., Murombo, T., Davis, M. & Poole, M. 2009. *Water Supply and Sanitation in South Africa. Environmental Rights and Municipal Accountability*. Pretoria: Lawyers for Human Rights & Development Bank of South Africa. Available at https://cer.org.za/wp-content/uploads/2011/11/LHR-DBSA_Water_Report.pdf. [Accessed 15 April 2017].

Amoatey, P. & Bani, R. 2011. *Wastewater Management. In: Einschlag, F.S.G. (eds). 2011. Wastewater: Evaluation and Management. Intech open Series.* Available at intechopen.com/publish. [Accessed 23 January 2021].

Ambe, C.M. & Negash, M. 2008. *Financing challenges for water and sanitation services: The case of South Africa's local governments and municipalities*. Available at: SSRN http://ssrn.com/abstract=1315624. [Accessed 27 December 2018].

Amod, S. & Wall, K. 2017. *SAICE Infrastructure report Card for South Africa. SAICE. Midrand: South Africa.* Available at https://saice.org.za/wp-content/uploads/2017/09/SAICE-IRC-2017.pdf.[Accessed on 24 April 2020].

Anderson, G. 2004. *Fundamentals of research.* 2nd edition. London: Routledge Falmer.

Andre, C., Batifoulier, P. & Jansen-Ferreira, M. 2016. Health care privatization processes in Europe: Theoretical justifications and empirical classification. *International Social Security Review*, 69(1):3-23.

Argent, L. 2018. Designed *to divide: Public toilets in Cape Town,1880-40.* Unpublished Masters Dissertation, University of Cape Town.

Auditor-General of South Africa. 2017. *Auditing to Build Public Confidence.* Pretoria: Office of the Auditor-General.

Auditor-General of South Africa. 2018. *Report of the Auditor General to the Joint Committee of Inquiry into the Functioning of the Department of Water and Sanitation.* Available at https://www.corruptionwatch.org.za. [Accessed 20 November 2019].

Auditor-General of South Africa. 2019. *Consolidated General Report on the Audit Outcomes of Local Government.* Pretoria: Office of the Auditor-General. Available at: http://www.agsa.co.za/Documents/Auditreports/MFMAgeneralreportsnational.aspx. [Accessed 20 November 2019].

Babbie, E. 2003. *The Practice of Social Research.* 7th edition. Belmont: Wadsworth Publishing.

Babbie, E. & Mouton, J. 2001. *The Practice of Social Research.* 10th edition. Cape Town: Oxford University Press.

Badenhorst-Weiss, J.A & Ambe, I.M. 2011. Improving Service Delivery Through Outsourcing. *Journal of Contemporary Management,* 8:453-472.

Bakazi, A.B. 2005. *Investigation into the Impact of Privatisation of Public Utilities on the Affordability of and Access to Basic Services to Poor Households in Developing Countries: Lesson for Rwanda.* Unpublished Master Dissertation, University of the Western Cape.

Bayliss, K. & Kessler, T. 2006. *Can privatization and commercialization of public services help achieve the MDGs? An assessment*. UNDP Poverty Centre Working Paper 22. New York: UNDP.

Bekink, B. 2006. *Principles of South African local government law.* Durban: LexisNexis.

Belinskij, A. & Kotze, L.J. 2016. Obligation arising from the right to water and sanitation in Finland and South Africa. *Elsevier Aquatic Procedia*, 6:30-38. Available at http://www.sciencedirect.com. [Accessed 19 January 2019].

Bester, J.W. & Austin, L.M. 2015. *Design, construction, operation and maintenance of ventilated improved Pit toilets in South Africa*. Water Research Commission. Pretoria.

Bhagwan, J. 2018. *Failed sanitation at schools violates children's rights. BizCommunity article, 12 April 2018.* Available at https//: www.bizcommunity.com/article/196/604/175832.html. [Accessed 20 November 2019].

Bless, C. & Achola, P. 1990. *Fundamental of social research Methods. An African perspective*. Lusaka. Government Printer.

Bond, P. & Dugard, J. 2007. Water, Human rights and social conflict: South African experiences. *Law, Social Justice & Global Development Journal,* 1:3-21.

Bond, P. 2014. *The political economy of water management: Neoliberalism and social resistance in South Africa*. University of KwaZulu-Natal: Durban.

Bos, J.J., Gijzen, H.J., Hilderink, H.B.M., Moussa, M., Niessen, L.W. & De Ruyter, E.D. 2005. *Health benefits versus costs of water supply and sanitation*. Erasmus University. The Netherlands. Available at https://www.researchgate.net/publications. [Accessed 20 March 2019].

Boyd, L.A. 2004. *Development of regulations for water care works and process personnel.* Proceedings of 2004 Biennial Conference. Water Institute of Southern Africa. Available at https://wisa.org.za. [Accessed 14 November 2021].

Bowen, G.A. 2009. Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2):27-40.

Bryman, A. 2001. *Social research methods.* New York: Oxford University Press.

Busari, O. & Jackson, B. 2006.Reinforcing water and sanitation sector reform in South Africa. *Water Policy,* 8:303-312. Available at http://idx.doi.org/102166/wp.2006.038

Businesstech. 2017. Telkom sale still being considered to fund SAA. Businesstech, 02 October 2017. Available at Businesstech.co.za/news/telecommunications/ 202220/Telkom-sale-still-being-considered-to-fund-saa. [Accessed 20March 2019].

Cardno, C. 2018. Policy document analysis: A practical educational leadership tool and a qualitative research method. *Educational Administration Theory and Practice,* 24(4):623-640.

Castro, J. E. 2008.Neoliberal water and sanitation policies as a failed development strategy: lessons from developing countries. *Progress in Development Studies Journal,* 8(1):63-83.

Chauke, S. 2017. *Basic service delivery challenges with regards to water and sanitation in Gauteng Province: A case of city of Johannesburg and city of Tshwane metropolitan municipalities.* Unpublished Masters Dissertation, University of South Africa.

Chirwa, D.M. 2004. Water privatisation and socio-economic rights in South Africa. *Law, Democracy and Development Journal*, 8(2):181-206.

City of Cape Town (MM). 2008*. 2008/09 Integrated Development Plan Review*. Cape Town: City of Cape Town MM.

Craythorne, D.L. 2003. *Municipal administration handbook.* 5th edition. Cape Town: Juta & Co. Ltd.

Creswell, J.W. 2009. *Research design: qualitative, quantitative and mixed methods Approaches*. 3rd edition. Los Angeles: Sage.

Creswell, J.W. 2013. *Qualitative enquiry and research design: choosing among five approaches.* Thousand Oaks, CA: Sage.

Creswell, J.W. & Plano Clark, V.L. 2011. *Designing and conducting mixed methods research.* 2nd edition. Thousand Oaks, CA: Sage.

Crous, M. 2002. *Service delivery in the South African public service: Implementation of the Batho Pele principles by Statistics South Africa.* Unpublished Masters Dissertation, University of Pretoria.

Department of Cooperative Governance and Traditional Affairs Strategic Plan & Budget*.* 2009. *Presentation to the Parliamentary Portfolio Committee on Water and Sanitation*. Available at http://www.pmg.org.za/report/20090630-department-co-operative-governance-and-traditional-affairs-strategic-[Accessed 15 July 2018].

Department of Cooperative Governance and Traditional Affairs. 2009. State of Local Government in South Africa. *Overview Report: National State of Local GovernmentAssessments.Availableat http://www.pmg.org.za/files/docs/091017tas.pdf [Accessed on 15 July 2018].*

Department of Cooperative Governance and Traditional Affairs KwaZulu Natal. 2018. *KZN COGTA Lead the Way Country Wide in Municipal Capacity Building.* Available at www.kzncogta.gov.za-lead-the-way-country-wide-in-municipal-capacity-building/# Sep 2018. [Accessed on 15 December 2019].

Department of Human Settlements. 2015. Design and Implementation Evaluation of the Urban Settlements Development Grant Report. Pretoria.

Department of Water Affairs and Forestry. 2003a. *A Protocol to Manage the Potential of Groundwater Contamination from On-Site Sanitation*. Pretoria: Government Printers.

Department of Water Affairs and Forestry. 2003b. *Strategic Framework for Water Services.* Pretoria: Government Printers.

Department of Water Affairs and Forestry. 2004. *National Water Resource Strategy.* Pretoria: Government Printers.

Department of Water Affairs. 2012a*. National Sanitation Policy.* Pretoria: Government Printers.

Department of Water Affairs. 2012b. *Report on the Status of Sanitation in South Africa. Sanitation Services - Quality of Sanitation in South Africa*. Pretoria: Government Printers.

Department of Water Affairs. 2013. *Green Drop Executive Summary. Municipal.* Pretoria: Government Printers.

Department of Water Affairs. 2014. *Blue Drop Report*. Pretoria: Government Printers.

Department of Water and Sanitation. 2015*. Strategic Overview of the Water Sector in South Africa*. Government Printer: Pretoria.

Department of Water and Sanitation. 2016. *National Sanitation Policy*. Pretoria: Government Printers.

Department of Water and Sanitation. 2017. *Annual Performance Plan Vote 36 for the fiscal year 2017-18 to 2019-20.* Pretoria: Government Printers.

Department of Water and Sanitation. 2018a.*Survey of Water Services Vulnerabilities. Municipal Strategic Self-Assessment Mussa: Merafong Local Municipality*. Pretoria: Government Printers. Available at www.dws.gov.za. [Accessed 24 November 2019].

Department of Water and Sanitation. 2018b. *Survey of Water Services Vulnerabilities. Municipal Strategic Self-Assessment Mussa: JB Marks Local Municipality*. Pretoria: Government Printers. Available at www.dws.gov.za. [Accessed 19 October 2019].

Department of Water and Sanitation. 2018c. *National Water and Sanitation Master Plan*. Pretoria: Government Printers.

De Vos, A.S., Strydom, H., Fouche, C.B. & Delport, C.S.L. 2005. *Research at the grass roots for the social sciences and human service professions*. 3rd edition. Pretoria: JL Van Schaik Publishers.

Dickin, S., Dagerskog, L., Jimenez, A., Andersson, K. & Savadogo, K. 2018. Understanding sustained use of ecological sanitation in rural Burkina Faso. *Science of Total Environment Journal,* 613-614(1):140-148.

Dugard, J. 2016. *The right to sanitation in South Africa.* Foundation for human rights: Johannesburg.

Dugard, J., Langford, M. & Anderson, E. 2017. Determining progress on access to water and sanitation *In:* M Langford & AFS Russell (eds), *The human right to water: theory, practice and prospects.* Cambridge University Press.

Du Plessis, A.A. 2015. The "brown" environmental agenda and the constitutional duties of local government in South Africa: A conceptual introduction. *Potchefstroom Electronic Law Journal*, 18(5):1846-1880. doi: 104314/pelj. v18i5.20.

Dzwairo, B., Hoko, Z., Love, D. & Guzha, E. 2006. Assessment *of the impacts of pit latrine on ground water quality in rural areas: A case study of Marondera district, Zimbabwe*. *Physics and Chemistry of the Earth Journal*, 31(15):779-788.

Ekka, R. 2014. *Research methodology and data analysis in humanities & social sciences.* New Delhi: Laxmi Book Publications.

Esrey, S.A., Gough, J., Rapaport, D., Sawyer, R., Simpson-Hebert, M., Vargas, J. & Winlad, U. 1998. Ecological sanitation. Sweden: Department for Natural Resources and the Environment.

Feldman, A. 1991. Formations of violence: The narrative of the body and political terror in Northern Ireland. Chicago: University of Chicago Press.

Financial and Fiscal Commission (FFC). 2014. *Submission for the Division of Revenue, 2014/2015*. Midrand: FFC.

Financial and Fiscal Commission (FFC). 2015. *Submission for the Division of Revenue, 2015/2016*. Midrand: FFC.

Fox, W. & Meyer, I. 1995. *Public administration dictionary*. Cape Town: Juta & Co.

Fuggle, R.F. & Rabie, M.A. 2009. *Environmental management in South Africa*. Cape Town: Juta & Co, Ltd.

Gaes, G.G. 2019. Current status of prison privatization research on American prisons and jails. *Criminal and Public Policy*, 18(2):209-505. Available at https//doi:1011111/1745-9133.12428. [Accessed 10 December 2019].

Goldin, J.A. 2010. Water policy in South Africa: Trust and knowledge as obstacles to reform. *Review of Radical Political Economics,* 42(2):195-212. Available at http://www.journals.sagepub.com/doi/abs/10.1177. [Accessed 10 February 2018].

Goodman, J.B. & Loveman, G.W. 1991. Does privatisation serve interest of the poor? *Harvard Busines Review*, 69(2):6-29,34-36. Available at https://hbr.org/1991/11/does-privatization-serve-the-public-interest. [Accessed 30 September 2020].

Greenberg, S. 2006. The state, privatisation and the public sector in South Africa. Southern African people solidarity network and alternative information and development centre: Harare and Cape Town. Available from: https://www.researchgate.net/publication/274379112. [Accessed 14 October 2020].

Gumede, V. 2019. South Africa's journey towards a democratic developmental state. *Africanus: Journal of Development Studies,* 49(2):23.

Hanyane, B.R. & Nkgabe, B.D. 2012. Second take on the open toilets: The case of Rammolutsi Township in Viljoenskroon in the Free State. *Journal of Public Administration*, 1(2):728-745.

Hanyane, B.R., Nkgabe, B.D. & Lekonyane, B.C. 2012. "Open Toilets Politics" at local government level in South Africa: A qualitative Study of Khayelitsha. *Journal of African and Asian Local Government Studies*,1(2):44–67.

Harvey, D. 2005. *A brief history of neoliberalism.* New York: Oxford University Press.

Harvey, E. 2007. *The commodification of water in Soweto and its implications for social justice.* Unpublished Doctoral Thesis, University of Witwatersrand.

Henry, S. 2015. *Framework for water law reform*. Cambridge University Press: United Kingdom.

Hodge, G.A. 2018.International review of performance. New York: Routledge. Available at http://doi.10.4324/9780429498822. [Accessed to 19 February 2020].

Hove, H., D'Ambruoso, L., Mabetha, D., Van der Merwe, M., Byass, P., Kahn, K., Khosa, S., Witter, S. & Twine, S. 2019. Water is life: Developing community participation for clean water in rural South Africa. *British Medical Journal Global Health,* 4(3):1377. Available at https://www.researchgate.net/publication/333696996. [Accessed 05 October 2020].

Hutchinson, W. (No Date). *The sanitation evolution: The innovation of sewers and indoor plumbing in the 19th and 20th centuries.* Available at:

http://www.ayotte.com/files/Sanitation_Revolution.pdf. [Accessed January 25 2020].

Jackson, S. & Robins, S. 2018.Making sense of the politics of sanitation in Cape Town. *Social Dynamics*, 44(1):69-87.

JB Marks Local Municipality (LM). 2017. *Integrated Development Plan, 2017-2022*. Potchefstroom: JB Marks LM.

JB Marks Local Municipality (LM). 2019. *Integrated Development Plan Review, 2019-2020*. Potchefstroom: JB Marks LM.

JB Marks Local Municipality (LM). 2019*. 2019/2020 Annual Report*. Potchefstroom: JB Marks LM.

Kamara, R.D., Leonard, S. & Haines, R. 2017. Enhancing the capabilities of municipalities for local economic development through skills training. *Socio-Economic Challenges*, 1(4):35-44. Available at https:// doi:10.21272sec. [Accessed 22 August 2020].

Kanuka, H. & Anderson, T. 2007. Ethical issues in qualitative e-learning research. *International Journal of Qualitative Methods*, 6(2):20-39.

Kasala, S., Burra, M. & Mwankenja, T. 2016. Access to improved sanitation in informal settlements: The case of Dar es Salaam City, Tanzania. *Current Urban Studies*, 4(1):23-35. Available at https://doi: 10.4236/cus.2016.41003 [Accessed 19 July 2020].

Kgopo, M.M. 2013. *Regulation of wastewater treatment plants in the Ba-Phalaborwa Municipality.* Unpublished Master's Dissertation, North-West University.

Kobel, D. & Del Mistro, R. 2015. Valuing the non-user benefits of improving water and sanitation in informal settlements: A study of Cape Town. *Urban Water Journal,* 12(3):248-261. Available at http:// doi.org/10.1080/1573062X.2013.847463. [Accessed 20 September 2016].

Koma, S.B. 2010. The State of local government in South Africa: Issue, trends and options. *Journal of Public Administration*, 45(1.1):111-120.

Kubheka, T. 2019. "*Water dept to unveil 'master plan' for water crisis". Eyewitness News, 28 October 2019*. Available at https//www.ewn.co.za. [Accessed 30 December 2019].

Kumar, R. 2014. *Research methodology: A step by step guide for beginners*. 4th edition. London: Sage.

Langford, M., Bartram J. & Roaf, V. (in press). The human right to sanitation In Langford M. & Russell A. (Eds.). 2017. *The Right to Water: Theory, practice and prospects*. Cambridge: Cambridge University Press.

Laporte, D. 1978. History of shit. In: Robins, S. 2014. Poo Wars as Matter out of Place: Toilets for Africa in Cape Town*. Anthropology Today,* 30(1):1-3.

Lawless, A. 2017. Numbers and needs in local government – where are we now. Numbers and Needs. Civil Engineering, pp 15-26. *Civil Engineering = Siviele Ingenieurswese.* 2017, (1):55-61. Available at https://journals.co.za/content/journal/civeng_v25_n1_jan_feb_2017. [Accessed 15 April 2020].

Lawless, A. 2005. Numbers and needs in local government. Addressing Civil Engineering -The critical profession for service delivery. Midrand. SAICE.

Laws, S. 2003. Research for development. A practical guide. London: Sage Publications.

Layne, J. 2000. An overview of the privatisation debate, optimum. *The Journal of Public Management*, 30(2):20-25.

Ledger, T. & Rampedi, M. 2019. Mind the Gap. Section 139 Interventions in theory and in practice. Public Affairs Research Institute. [Online] www.pari.org.za. [Accessed on 28 October 2019].

Limberg, X. 2021. City's Water and sanitation teams Clear 122 000 sewer blockages. Cape Town. Available at https://ecid.org.za. [Accessed 03 March 2021].

Loots, L.J. 2004. Equity and the local Government equitable share in South Africa. In: 10 years of the FFC: Consolidation for Greater Equity Financial and Fiscal Commission: Cape Town.

Lorentz, S., Wickham, B. & Still, D. 2015. Investigation into pollution from on-site dry sanitation systems. WRC Report No.2115/1/15: Water Research Commission. Pretoria.

Maake, K.R. 2017. Causes of unspent municipal infrastructure grant in the Capricorn District Municipality: A Case of Two Selected Municipalities. Unpublished Masters Dissertation, University of Limpopo.

Mabuza, E. 2019. Sewage pushes e-coli levels in Vaal to dangerous Levels. Timeslive.co.za, 18 October 2019. Available at https://www.timeslive.co.za/news/south-africa/2019-10-18-sewage-pushes-ecoli-

levels-in-vaal-to-dangerous-levels-environmental-group-says/. [Accessed10 November 2019].

Madi, T.C. 2016. Service delivery & equitable distribution of water and sanitation services in the Newcastle Local Municipality. Unpublished Master's Dissertation. University of the Free State.

Mafikeng Mail. n.d. *Cope Decries amalgamation of Ventersdorp, Tlokwe Municipalities*. Available at https://www.northwestnewspapers.co.za/mafikengmail/community/blogs/letters/98-cope-decries-ama. [Accessed 29 June 2017].

Mafunisa, M.J., Ramabulana, R.T., Hlaele, N.G.& Nekwakwani, T.P. 2017. Skills Transfer in Municipalities in South Africa. Report Commissioned by LGSETA. Availableathttps://cdn.lgseta.co.za/resources/research_and_reports/LED%20STRATEGIES%20RESEARCH%20PROJECT.pdf. [Accessed 17 February 2019].

Magdahl, J.E. 2012. *From privatisation to corporatisation. Exploring the strategic shift in neoliberal policy on urban waters services*, Oslo: The Association for International Water Studies.

Mahabir, J. & Mabena, N. 2015. Identifying the funding constraints in municipal capital investments report. Financial and Fiscal Commission. Midrand: FFC. Available at: www.ffc.co.za. [Accessed 23 April 2019].

Maharaj, N. 2012. Governance and service delivery: A case study of sanitation in Inanda, Durban. Unpublished Doctoral Thesis, University of KwaZulu-Natal.

Manona, W. & Cloete, F. 2007. Impact of basic health Services on the quality of life in poor communities: An empirical assessment. *Journal of Public Administration*, 42(1):64-79.

Maphanzi, N., Raga, K., Taylor, J.D. & Mayekiso, T. 2013. Public Participation. A South African Local Government Perspective. *African Journal of Public Affairs*, 6(2):56-67.

Marais, L., Matebesi, Z., Mthombeni, M., Botes, L. & Van Rooyen, D. 2008. Municipal unrest in the Free State (South Africa): A new form of social movement*? Politeia,* 27(2):51- 69.

Maree, G. 2016. In land Water. In: Van Weele, G. Loybser, J. Govender, S. & Freeman, M. 2nd South Africa Environment Outlook. A report on the state of the environment. Pretoria: Department of Environmental Affairs. 132-154.

Marobela, M. 2008. New public management and the corporatization of the public sector in peripheral capitalist countries. *International Journal of Social Economics,* 35(6):423-434.

Maserumule, M.H. 2017. Administering national government. In Landsberg, C & Graham, S. 2017. Government and politics in South Africa: Coming of Age. Pretoria: Van Schaik.

Masindi, V. & Dunker, L. 2016. The state of water and sanitation in South Africa. CSIR Built Environment. Pretoria.

Mathekganye, J., van Heerden, L. & Ukwandu, D. 2019. The nexus between water, neoliberalism and sustainable development in post-apartheid South Africa. *African Journal of Public Affairs,* 11(3):41-58.

Morse, J.M. & Field, P.A. 1995. *Qualitative research methods for health professionals.* 2nd edition. London: Sage.

Moshodi, T., Coetzee, C. & Fourie, K. 2016. Inadequate stakeholder management and its effect on a coherent sinkhole risk management strategy: The case of the Merafong Local Municipality, South Africa. *Jamba: Journal of Disaster Risk Studies,* 8(6):1-8.

Mbhele, Z. 2017. *Assessing the ward committee system: The case of greater Kokstad Municipality.* Unpublished Master's Dissertation, University of Stellenbosch.

McDonald, D.A. & Pape, J. 2002. Cost recovery and the crisis of service delivery in South Africa. Cape Town: HSRC.

McDonald, D. & Ruiters, G. 2005. *The age of commodity: Water privatization in Southern Africa.* Earthscan: London.

McDonald, D.A. 2016. *Making Public in a Privatised World: The struggle for essential Services*. London: Zed books ltd.

McMillan, J.M. & Schumacher, S. 2001. *Research in education: A conceptual introduction*. New York: Addison Wesley Longman Inc. University Press.

Mensah, J. & Sabater, A. 2019.Managing environmental sanitation in the catchment Area of Benya Lagoon, Ghana: Education, regulation or infrastructure management as a matter of strategic priority? *Cogent Social Sciences,* 5(1), DOI: 10.1080/23311886.2019.1709347. [Accessed 10 December 2020].

Mepaiyeda, S., Madi, K., Gwavava, O. & Baiyegunhi, C. 2020. *Geological and* geophysical assessment of groundwater contamination at the round hill landfill

site, Berlin, Eastern Cape, South Africa. *Open Geosciences*, 11(10):549-557. Available at DOI. 10.1016/j.heliyon. 2020.e04249.

Merafong Local Municipality (LM). 2018. *Integrated Development Plan Review, 2018-2019*. Carletonville: Merafong LM.

Merafong Local Municipality (LM). 2019. *Integrated Development Plan Review, 2019-2020*. Carletonville: Merafong LM.

Merafong Local Municipality (LM). 2019. *2018/19 Unaudited Annual Report.* Carletonville: Merafong LM.

Mercille, J. & Murphy E. 2017. What is privatization? A political economy framework. *Journal of Environment and Planning,* 49(5):1040-1059.

Meissner, R., Stuart-Hill, S. & Nakhooda, Z. 2017. The establishment of catchment management agencies in South Africa with reference to the Flussbebietsgemeinschaft Elbe: Some Practical considerations. Water Research Commission: Pretoria. Available at http//wwwspringer.com/content/pdf/10.1007%2f978-3-319-43350-9.pdf. [Accessed 20 March 2019].

Mitchell, S.A., de Wit, M.P., Blignaut, J.N. & Crookes, D. 2014. *Wastewater treatment plants: The financing mechanisms associated with achieving Green Drop rating.* Water Research Commission. Pretoria. Available at http://www.wrc.org.za/wp-content/uploads/mdocs/2085-1-14.pdf. [Accessed 15 February 2020].

Mjoli, N., Sykes, G. & Jooste, T. 2009. *Towards the realization of free basic sanitation: Evaluation, Review and Recommendations*. Water Research Commission: Pretoria. Available at http://www.wrc.org.za/wp-content/uploads/mdocs/TT%20422-09%20Water%20Policy.pdf. [Accessed September 2019].

Mjoli, N.P. 2015. *A framework for Sanitation governance in South African municipalities.* Water Research Commission: Pretoria.

Mmbadi, E. 2019. *Water security in rural Limpopo in a changing climate: A study of Greater-Giyani Local Municipality, South Africa*. Unpublished Master's Dissertation, University of Venda.

Moilwa, N. & Wilkinson, M. 2004. *Implementation of successful sanitation projects in rural areas in South Africa: lessons learnt from Vhembe district of the Limpopo*

*Province. Proceeding of the 2004 Biennial Conference*. Water Institute of Southern Africa: Pretoria.

Monbiot, G. 2016. Neoliberalism – The ideology at the root of all our problems. *The Guardian Newspaper*. 15 April 2016. Available at https://www.theguardian.com/books/2016/apr/15/neoliberalism-ideology-problem-george-monbiot.[Accessed on 14 September 2019].

Monteiro, A. 2019. Vaal sewage crisis Left hanging due to lack of funds. News24.com. Available at https://www.news24.com/fin24/Economy/South-Africa/vaal-sewage-crisis-left-hanging-due-to-lack-of-funds-20191011. [Accessed 10 November 2019].

Morgan, N., Chipkin, I., Menly-Gilber, S., Tshimomola, G., Menon, S. & Skosana, D. 2015. Hollowing out the local state: Managerialism and skills in the water sector. Public Affairs Research Institute (PARI). Johannesburg. Available at http: pari.org.za/wp-content/uploads/2017/05/PARI-waterreportweb-1.pdf. [Accessed on 27 December 2020].

Mouton, J.1996. *Understanding social research*. Pretoria: Van Schaik Publishers.

Mpehle, Z. 2012. Are service delivery protests justifiable in the democratic South Africa? *Journal of Public Administration,* 47(1.1):213-227.

Mulaudzi, M. 2020. Are the ingredients of a developmental state applicable to South Africa? *Strategic Review for Southern Africa*, 42(1):149-164.

Muller, H. & Kleynhans, J. 2017. The status quo of the Lesotho Highlands Water Project Phase II. OUTA. Johannesburg. Available at http://OUTA_LHWPII_Report_2017(1)pdf.9. [Accessed 01 July 2020].

Muller, M. 2002. The national water and sanitation programme in South Africa: Turning the “right to water” into reality. water and sanitation program: Nairobi.

Musa, C.T. 2014.Perception of informal settlements residents on water supply and sanitation: The case of Boiketlong in Emfuleni Local Municipality. Unpublished Master’s Dissertation, North-West University.

Municipal IQ. 2009. *The Intricacies of Re-demarcation*. Briefing #161, 8 October 2009. Johannesburg: Municipal IQ.

Municipal Demarcation Board (MDB). 2018. *Municipal Capacity Report.* Pretoria: MDB.

Municipalities.co.za. 2021. *Maps of Merafong and JB Marks local municipalities*. Available at municipalities.co.za/sources. [Accessed 20 January 2021]

Mutamba, J. & Busari, O. 2014. Strategic coordination for sustainable investment in infrastructure. Trans-Caledon National Authority. *Journal of Geoscience and Environment Protection,* 2(5):79-86.

Mutarubukwa, F.B. & Musomba, N.A. 2018. Outsourcing of the delivery of non-core services in Tanzania public service institutions: A case of the President's Office-Public Service Management. *Journal of Arts, Science and Commerce*, IX (3):58-70. Available at http//dx.doi.org/10.18843rwjasc/v9i3/07. [Accessed 23 August 2020].

Munzhedzi, P.H. 2020. An evaluation of the application of the new public management principles in the South African municipalities. *Journal of Public Affairs,* 1(21):1-8.

Mwebe, H. 2004. *The impact of privatisation on socio economic rights and services in Africa: The case of water privatisation in South Africa*. Unpublished Master's Dissertation, University of Pretoria.

Naegele, J. 2004. What is wrong with full-fledged water privatization. *Journal of Law & Social Challenges,* 6:99-130. Available at https://heinonline.org/HOL. [Accessed 30 July 2015].

Nansubuga, I., Banadda, N., Verstraete, W. & Rabaey, K. 2016. A review of sustainable sanitation systems in Africa. *Reviews in Environmental Science and Biotechnology,* 15(3):465-478. Available at https://doi.org/10.1007/s11157-016-9400. [Accessed on 30 July 2019].

Narsiah, S. 2002. Neoliberalism and privatization in South Africa. *Geo-Science Journal*, 57(2):29-38. Available at https://www.jstor.org/stable/41147695.

National Treasury. 2014. *Budget Review. South Africa.* Pretoria: Government Printers.

National Treasury. 2015. *Budget Review. South Africa*. Pretoria: Government Printers.

National Treasury. 2018. *Water Services Review Report.* Pretoria: Government Printers.

National Treasury. 2019a. *Budget Review. South Africa*. Pretoria: Government Printers.

National Treasury. 2019b. *Water Services Review Report.* Pretoria: Government Printers.

Nawab, B., Ingrid, I.L.P., Esser, K.B. & Jenssen, P.D. 2006. Cultural preferences in designing ecological sanitation systems in North West Frontier Province, Pakistan. *Journal of Environmental Psychology*, 26(3):236–246.

Ncube, M. & Monnakgotla, J. 2016. Amalgamation of South Africa's rural municipalities: Is it a good idea? *Commonwealth Journal of Local Governance*, 19(1):75-95.

Ndida, C., Uzodike, N.O. & Winaard, L. 2011. Population, health systems and innovation. *Africanus,* 46 (1.1).

Neuman, W.l. 2014. *Social research methods: quantitative and qualitative approaches*. 7th edition. London: Pearson.

Njoh, A.J. 2016. *Urban planning & public health in Africa: Historical, theoretical & vertical dimensions of a continent's water and sanitation problematic*. Abingdon: Routledge.

Nkuna, N. 2011.Realising developmental local government in a developmental State. *Journal of Public Administration*, 46(1):622-630.

Ntombela, C., Funke, N., Meissner, R., Steyn, M. & Masanagane, W. 2016. A critical Look at South Africa's Green Drop Programme. Water South Africa (4) http://dx.doi.org/10.4314.wsa.v42i4.21. [Accessed 20 March 2019].

Nzwei, O.I. & Kuye, J.O. 2007. The Developmental state and conceptual Interpolations: A comparative policy-targeting for South Africa within the global context. *Journal of Public Administration*, 42(3):197-200.

Odendaal, N. 2019. DWS Launches the water and sanitation master plan. Engineering News, 28 November 2019. https://www.engineeringnews.co.za/article/dws-launches-national-water-master-plan-2019-11-28. [Accessed 15 Feb 2020].

Orner, K.D., Naughton, C. & Stenstrom, T.A. 2018. Pit Toilets (Latrines). Jiménez-Cisneros, (eds) Global Water Pathogen Project. http://www.waterpathogens.org *(pdf) global water pathogen project part four.* [Accessed 10 April 2021].

Palmer Development Group, 2005. Strategic and operational review of conditional Grants. Woodmead, South Africa: The business trust and Department of Public Works.

Pan, S.M., Armitage, S. & Van Ryneveld, M.B. 2018. Assessing equity: A way to improve sanitation service delivery in South African informal settlements*. Journal of Water, Sanitation & Hygiene for development.* Available at https://doi.org/10.2166/washdev.2018.166. [Accessed 20 December 2018].

Pauw, J.C. 1999. The concept Public Administration, *in Reflective Public Administration: Views from the South*, edited by JS Wessels & JC Pauw. Cape Town: Oxford University Press 9-25.

Penner, B. 2010. Flush with inequality: Sanitation in South Africa. *Places Journal.* https://www.placesjournal.org/article/flush-with-inequality-sanitation-in-south-africa-20may 2015africa/. [Accessed 15 April 2015].

Parliamentary Monitoring Group. 2015. Capacity Building in Local Government: Department, SALGA & SETA Briefing: Municipal Managers & Section 56 Managers Appointment: Implementation of Regulation Progress Report. https://pmg.org.za/committee-meeting/21050/. [Accessed 15 January 2019].

Peters, S. & Van Nieuwenhuyzen, H. 2012. Understanding the dynamics of the capacity challenge at local government level. Technical Report: 2013/14 *Submission for the Division of Revenue.* Pretoria. CSIR.

Phaswana-Mafunya, N. & Shukla, N. 2005. Factors that could motivate people to adopt safe Hygienic practices in the Eastern Cape Province, South Africa. *African Health Sciences Journal*, 5(1):21-28.

Pillay, S. & Atkinsete, A. 2019. *World toilet day: Catalysing a new sanitation paradigm for South Africa*. www.bizcommunity.com/article/196/701/198041. [Accessed 15 June 2020].

Plano-Clark, V.L. & Creswell, J.W. 2008. *Mixed Methods Reader*. California: Sage.

Powell, D. 2012. Imperfect Transition-Local Government Reform in South Africa1994-2012.Sanmedia Metro: Pretoria.

Prinsloo, E. 2015. *The true state of the nation's Green Drop Report*. Available at https://www.afriforum.co.za/true-state-nationsgreen-drop-report-afriforum. [Accessed 26 September 2016].

Petre, M. & Rugg, G. 2010. The unwritten rules of PHD research open up study skills. Berkshire: University Press.

Rahman, S. 2016. The advantages and disadvantages of using qualitative and quantitative approaches and methods in language "testing and assessment" research: *Journal of Education and Learning,* 6(1):7-69. https://eric.ed.gov/?id=EJ1120221. [Accessed 10 October 2019].

Rao, G.M. & Khumalo, B. 2004. *Sharing the cake: A Review of Provincial Equitable Share Formula in South Africa. In: 10 Years of the FFC: Consolidation for Greater Equity. Financial and Fiscal Commission*, Cape Town, South Africa, 10 – 12 August 2004, FFC, Cape Town, 1 – 32.

Ratchliff, D. n.d. *Methods of data analysis in qualitative research*. Available at: http://www.psychsoma.co.za/files/15methods.pdf. [Accessed 01 May 2015].

Reddy, Y. & Siqalaba, Z. 2018. *NRW and wastewater financing in South Africa: Market Size, Barriers and Opportunities for SWPN South Africa*. PwC Services South Africa. https://www.euchamber.co.za/wp-content/uploads/2020/03/Barriers-to-water-reuse-Final-Report-20200113.pdf. [Accessed 15 Feb 2019].

Republic of South Africa. 1956. *National Water Act, 54 of 1956. Pretoria: Government Printers.*

Republic of South Africa. 1994. White *Paper on Water Supply and Sanitation*. Pretoria: Government Printers.

Republic of South Africa. 1996. *Constitution of the Republic of South Africa.* Pretoria: Government Printers.

Republic of South Africa. 1997b. *National Housing Act, 107 of* 1997. Pretoria: Government Printers.

Republic of South Africa. 1997c*. White Paper on National Water Policy of South Africa.* Pretoria: Government Printers.

Republic of South Africa. 1997d. Water *Service Act, 108 of 1997*. Pretoria: Government

Republic of South Africa. 1998a. Local *Government: Municipal Structures Act, No 117 of 1998*. Pretoria: Government Printers.

Republic of South Africa. 1998b. National *Water Act, 36 of 1998*. Pretoria: Government Printers.

Republic of South Africa. 1998c. White *Paper on Local Government*. Pretoria: Government Printers.

Republic of South Africa. 1998d. *National Environment Management Act, 107 of* 1998. Pretoria: Government Printers.

Republic of South Africa. 1999. Local Government: Public Finance Management Act, Act 1 of 1999. Pretoria: Government Printers.

Republic of South Africa. 2000. *Local Government: Municipal Systems Act, 32 of 2000*. Pretoria: Government Printers.

Republic of South Africa. 2001. *White Paper on Basic Household Sanitation*. Pretoria: Government Printers.

Republic of South Africa. 2003b. *Local Government: Municipal Finance Management Act 56 of 2003*. Pretoria: Government Printers.

Republic of South Africa. 2017. *Division of Revenue Bill.* Pretoria: Government Printers.

Republic of South Africa. 2020. Overview of Municipalities Under Section 139 Intervention as it Relates to Service Delivery. Cape Town. Available at www.parliament.gov.za. [Accessed 15 January 2021].

Robb, G. 2020. Competition without Privatization? South Africa's Experience of the Corporatisation of State-owned Enterprises. NERSA. Pretoria. Available at https://nersa.org.za/wp-content/uploads/bsk-pdf-manager/2020/10/Competition-without-privatisation-South-Africas-experience-of-the-corporatisation-of-the-state_owned-enterprises_GRobb.pdf [Accessed 19 June 2020].

Robins, S. 2013. "How poo became a political issue". IOL News, 3rd July. Available at iolnews/dailynews/opinion/how-poo-became- a- political- issue -1541126. [Accessed 24 December 2014].

Robins, S. 2014. Poo wars as matter out of place: Toilets for Africa in Cape Town. *Anthropology Today*, 30(1):1-3.

Robson, C. 1993. *Real world research: A resource for social scientists and practitioners-researchers*. Oxford: Blackwell.

Robson I.H. 2006. *The Assignment of responsibilities for the performance of public functions to levels or spheres of government in South Africa*. Unpublished Doctoral Thesis, University of South Africa.

Roux, N.L. & Nyamukachi, P.M. 2005. A Reform model for the improvement of Municipal Service Delivery in South Africa. *Journal of Public Administration*, 40:(4.1):687-705.

SABC TELEVISION NEWS Bulletin. 2019.

SAHRC. 2014. South Africa Human Rights Commission. Report on the Right to Access Sufficient Water and Decent Sanitation in South Africa. Braamfontein.

SAHRC. 2018. South Africa Human Rights Commission. Water and Sanitation Research Brief: Monitoring the Implementation of the Commission's Recommendations from its 2014 Report on Access to Water and Sanitation. Braamfontein.

Salkind, N.J. 2006. *Exploring Research*, 6th ed. Prince-Hall, Upper Saddle.

SALGA. South African Local Government Association. 2008. *A Strategic Agenda for the development of a National Sanitation Policy Framework in South Africa.* Concept Paper. Pretoria: SALGA. Available at www.salga.org.za [Accessed on 23 January 2016].

SALGA. South African Local Government Association.2015. SALGA Annual Report 2014/15.Pretoria: SALGA. Available at www.salga.org.za [Accessed 21 October 2017].

SALGA. South African Local Government Association. 2017. Financial Sustainability of Local Government and Fiscal Equity. Pretoria: SALGA. Available at www.salga.org.za. [Accessed 20 September 2019].

Saunders, M., Lewis, P. & Thornhill, A. 2012. *Research methods for business Students*. 6th edition. London: Pearson.

Save the Vaal Environment. 2019. Vaal River Pollution. Available at www.save.org.za. [Accessed 22 November 2019].

Schladweiler, J. Undated. Tracking down the roots chronology. Available at: http://www.sewerhistory.org/chronos/early_roots.htm. [Accessed 19 March 2019].

Seymour, Z.A., Cloete, E., McCurdy, M., Olson, M. & Hughes, J. 2021. Understanding values of sanitation users: Examining preferences and behaviours for sanitation systems. *Journal of Water, Sanitation and Hygiene for Development*, 11(2):195-207.

Sindane, N.2013.The Western Cape battle of poo rages on.Politicsnewshub.com 07 August 2013. Available at Politicsnewshub.com/western cape battle of poo rages on. [20 December 2019].

Sinharoy, S.S., Pittluck, R. & Clasen, T. 2019. *Review of drivers and barriers of water and sanitation Policies for urban informal settlements in low-income and middle-income Countries*. Utilitiespolicy. Available at https://doi.org/10.1016/j.jup.2019. 100957. [Accessed 20 April 2020].

Smith, L. 2004. The murky waters of the second wave of neoliberalism: Corporatization as a service delivery model in Cape Town. *Geoforum*, 35(3):375-393.Available at http.//.wwwscundirect.com. [Accessed 15 June 2015].

Smith, L. 2009. *Municipal compliance with water services policy: A challenge for water security.* Development planning division. Working Paper Series No.10, DBSA: Midrand. Available at https:// www.dbsa.org/sittes/default/files/medi/documents. [Accessed 10 October 2019].

Smith, T. & de Visser, J. 2008. The Role of ward committees in enhancing participatory local governance and development in South Africa: Evidence from six ward Committee case studies. Dullar Omar Institute for Constitutional Law, Governance and Human Rights. University of the Western Cape.

Socio Economic Rights Institute of South Africa. 2018. Informal settlements and human rights in South Africa. Available at https://ohchr.org/Documents/Issues/Housing/InformalSettlements/SERI.pdf. [Accessed 23 April 2019].

Spronk, S. 2010. *Water and sanitation utilities in the global south: Recentering the debate on efficiency, Review of Radical Political Economics*, 42(2):156-174 Available at http://www.sagepub.com/content/early/2010/0428/04866134103 68389. [Accessed 20 April 2015].

Statistics South Africa. 2016a.*The State of Basic Service Delivery in South Africa: In depth Analysis of Community Survey*. Pretoria: Statistics South Africa.

Statistics South Africa. 2016b. *Non-Financial Census of Municipalities for the Year Ended 30 June 2015*. Pretoria: Statistics South Africa.

Statistics South Africa. 2016c. *Community Survey, 2016*. Pretoria: Statistics South Africa.

Statistics South Africa. 2016d. *General Household Survey, 2016*. Pretoria: Statistics South Africa.

Statistics South Africa. 2017. *Status of Sanitation in South Africa*. Pretoria: Statistics South Africa.

Statistics South Africa. 2018.*General Household Survey, 2018*. Pretoria: Statistics South Africa.

Statistics South Africa. 2019.*General Household Survey, 2019*. Pretoria: Statistics South Africa.

Stephenson, D. & Barta, B. 2005. Report on impacts of stormwater and groundwater ingress on municipal sanitation services. Water Research Commission. Pretoria: Government Printers.

Stewart, C.2014. *Toilets at last - Perceptions of the users of 'porta-potty' toilets in Jim se bos informal settlement in Phillip, Cape Town*. Unpublished Master's Dissertation, University of Witwatersrand.

Steyn, S. & Van Heerden, M. 2011. Public private partnerships as solutions to service delivery problems. *Administratio Publica*,19(3):167-182.

Stone, S. 2019. "Lindiwe Sisulu faces backlash over R900billion water master plan". News24.com, 20 December 2019. Available at www.news24.com. [Accessed 20 December 2020].

Sutherland, C., Hordijk, M., Lewis, B., Meyer, C. & Buthelezi, S. 2014. Water and sanitation provision in eThekwini Municipality: A spatially differentiated approach. *Environment and Urbanization*, 26(2):1–20. Available at http://eau.sagepub.com/cgi/doi/10.1177/0956247814544871. [Accessed 26 September 2014].

Taing, L. 2015. Implementing sanitation for informal settlements: Conflicting rationalities in South Africa. Unpublished Doctoral thesis. University of Cape Town.

Taing, L. 2019. Policy Implementation considerations for basic services: A South African urban sanitation case. *Water South Africa*, 45(4):536-546.

Tashakkori, A. & Teddlie, C. 2010. *Handbook of mixed methods in social and behavioural research.* London: Sage.

Tavakol, M. & Dennick, R. 2011. Making Sense of Cronbach's alpha. *International Journal of Medical Education*, 2:53-55. doi: 10.5116/ijme.4dfb.8dfd.

Teddlie, C. & Yu, F. 2007. Mixed Methods Sampling: A Typology with Examples. *Journal of Mixed Methods Research,* 1(1):77-100.

Templehoff, J.W.N. 2012. From Makhaza to Rammolutsi: Reflections on South Africa's Toilet Election of 2011. *Historia,* 57(1):82-102.

The Citizen. 2018. "Hundreds of VIP toilets to be installed in Joburg informal settlements". The Citizen, 28 June 2018. Available at https//www.citizen.co.za. [19 September 2019].

Thornhill, C. 2012. Improving local government transformation of public administration. *Journal of Public Administration*, 43(2).

Thornhill, C. & Oosthuizen, M. 2017. The grant system of financing the South African local government sphere: Can sustainable local government be promoted? *Journal of Local Economic Policy*, 32(5):433-450.

Thornhill, C. 2008. The transformed local government system: some lessons. *Journal of Public Administration*, 43(3.2):492-511.

Tilley, E., Zurbrügg, C. & Lüthi, C. 2010. "A flow stream approach for sustainable sanitation systems", In: *Social Perspectives on the Sanitation Challenge*, ed. B, Vliet, G. Spaargaren, P. Oosterveer P, Dordrecht, Netherlands: Springer.

Times live. 2021. Water crisis in Maluti-A-Phofung Municipality. Times live.com, 23 September 2021. Available at www.timeslive.co.za.[Accessed 20 November 2021].

Tissington, K., Dettmann, M., Langford, M. & Conteh, S. 2008. Water services fault Lines: An Assessment of South Africa's Water and Sanitation Provision Across 15 Municipalities. Publisher: Centre for Applied Legal Studies (CALS), Norwegian Centre.

Tissington, K. 2011. Basic Sanitation in South Africa: A guide to legislation, Policy and Practice. Socio-Economic Rights Institute of South Africa. HSRC: Pretoria.

Tissington, K. 2013.Targeting the Poor? An Analysis of Free Basic Services (FBS) and Municipal Indigent Policies in South Africa. Socio-Economic Rights Institute of South Africa. HSRC: Pretoria.

Tjebana, M.P. & Rachidi, M.F. 2018. *Challenges faced by Sekhukhune District Municipality in Limpopo Province in Terms of Spending Municipal Infrastructure Grant Funds.* IPADA Proceedings of the 3rd Annual International Conference on Public Administration and Development Alternatives 04 - 06 July 2018, Stellenbosch University, Saldahna Bay, South Africa.

Tlou Tadima Housing Development Projects. 2018.Engineeering Services investigations over the farms Elandskuil 205IP and 206 IP NW 405 in Ventersdorp, North West Province Report. (Online) Available at www.sahris.sahra.org.za. [Accessed 07 November 2019].

Toxopeus, M. 2019a. The State of Sanitation and Wastewater Treatment Services in South Africa. Helen Suzman Foundation. (Online). Available at hsf.org.za/publications.hsf-briefs/the-state-of-sanitation-and-wastewater-treatment-services-in-South-Africa. [Accessed 29 November 2019].

Toxopeus, M. 2019b. Understanding Water Issues and Challenges (II): Municipalities and the Delivery of Water Services. Politics web. [Online] Available at https://politicsweb.co.za/opinion/understanding-water-issues-and-challenges-ii. [Accessed 03 December 2019].

Toxopeus, M. 2020. Intergovernmental Fiscal Relations in the Water Sector-Assessing Oversight and Accountability Measures. Politics web. [Online] Available at https://www.politicsweb.co.za/opinion/intergovernmental-fiscal-relations-in-the-water-sector. [Accessed 29 November 2020].

Trollip, K. & Van Vuuren, L. 2016. *Knowledge for Impact: Research for Successful Service Delivery at the Local Government Level*. Water Research Commission: Pretoria.

Tsheola, J.P. & Sebola, M.P. 2012. Post-apartheid public service delivery and the dilemmas of state capitalism in South Africa, 1996-2009. *Journal of Public Administration,* 47(1.1):228-250.

McNamara, A., Manuel, F., Ragbhuir, S. & Naidoo, D. 2015. Water and sanitation: municipal water and sanitation infrastructure report. Infrastructure Dialogue. [Online]Availableathttps://www.infastructuredialogue.co.za/wpcontent/uploads/2015/07/SANC-Infrastructure-Dialogues-2014-15 WEB-2.pdf. [Accessed 17 March 2020].

Tabaijuka, A.K. 2013. Water and sanitation in the world's Cities: Local action for global goals. United Nations Human Settlements for Programmes. London: Earthscan Publications.Availableathttps://mirror.unhabitat.org/documents/media_centre/wwf18.pdf. [Accessed 17 March 2020].

UN-Habitat 2017. Assessment Report on Water and Sanitation. United Nations Human Settlements Programme. London: Earthscan Publications. Available at https://www.un.org/pga/71/wp-ontent/uploads/sites/40/2015/08/UN_Habitat-Assessment-Report.pdf. [Accessed 27 March 2020].

UNICEF. 2019. Water, Sanitation and Hygiene Assessment Report, New York: United Nations.

Van der Mescht, J. & Van Jaarsveld, M. Addressing Operations and Maintenance Challenges in Smaller Municipalities. Available at http://www.infrastructurene.ws/wp-ontent/uploads/sites/4/2016/04/Addressing-operations-and-maintenance-challenges-in-smaller-municipalities-Johan-van-der-Van der Meschtt-Vela-VKE.pdf [Accessed 5 April 2019].

Van der Waldt, G. 2006. Managing local government performance: Key considerations and challenges. *Journal of Public Administration*, 41(2).

Van der Waldt, M. 2011. The concept "beneficial" use in South African water law reform. Unpublished Doctoral Thesis, North-West University.

Van Ryneveld, M.B. & Fourie, A.B. 1997. A strategy for evaluating the environmental impact of onsite sanitation systems. Department of Civil Engineering, University of the Witwatersrand. *Water South Africa*, (23):4.

Van Ryneveld, M.B., Fourie, A.B. & Palmer, I.H. 2016. *Movement of contaminants in the unsaturated zone of the subsurface from a low flush on-site sanitation system in Ivory Park*, Johannesburg. Available at http://dx.doi.org/10.4314/wsa.v42i4.01. [Accessed on 20 September 2020].

Van Teijlingen, E.R. & Hundley, V. 2001. The importance of pilot studies. *Social Research UPDATE, Issue 35.*

Van Zyl, N.L. 2017. Outlining a right of access to sanitation in South African law. Unpublished Master's Dissertation, University of Cape Town.

Viviers, J.C. 2006. Development of an impact assessment methodology and decision-making tool to assist in the evaluation of site suitability for on-site sanitation system. Unpublished Doctoral Thesis, North West University.

Voorn, B., Van Genugten, M.L. & Van Thiel, S. 2019.Reintepreting re-municipalization: finding equilibrium. *Journal of Economic Policy Reform,* 24(3):305-318. Available at https//doi.org/10.1080/17487870.2019.1701455. [Accessed 20 September 2020].

Voulvoulis, N. 2012. Water and Sanitation Provision in a Low Carbon Society: The Need for a Systems Approach. *Journal of Renewable and Sustainable Energy*, 4(4).

Water Research Commission. 2009. Review of Regulatory Aspects of the Water Services Sector. Pretoria: Government Printers.

Water Research Commission. 2010. *Report on State of Wastewater Treatment Plants*. Pretoria: Government Printers.

Wikan, V.S. 2015. What is "neoliberalism, and how does it relate to Globalization? E-international relations. Available at https://www.e-ir.info/2015/03/21/what-isneoliberalism-and-how-does-it-relate-to-globalization/. [Accessed 20 March 2019].

Wilkinson, D. & Birmingham, P. 2003. *Using research instruments. A guide for Researchers.* New York: Routledge.

Wilkinson, M. & Duncker, L. 2014. Towards the use of sanitation subsidies: A guide. Water Research Commission: Pretoria. Available at www.wrc.org.za. [Accessed 20 March 2020].

Wilkinson, R. 2017. One regional water utility for the Eastern Cape. Engineering News. Available at http:/www.engineeringnews.co.za/one-regional-water-utility-for-the-eastern-cape-2017. [Accessed December 2017].

Wilson, J.A. 2018. Neoliberalism. New York: Routledge. Available at https://doi.org/1043249781315623085. [Accessed 15 November 2019].

Winter, K. 2019. SA's new water and sanitation master plan. Available at http//.www.news.uct.ac.za. [Accessed May 2020].

World Health Organisation. 2017. Progress on drinking water, sanitation and hygiene update and SDG Baseline Report. United Nations: New York. Available at https://www.who.int/water_sanitation_health/publications/jmp-2017/en/. [Accessed 24 April 2019].

Yin, R.K. 2009. *Case study, Research design and methods.* 4th edition. New York: Sage publications.

# ANNEXURE A: PARTICIPANT INFORMATION SHEET

Date …….

Title: Public Resources for public sanitation: The cases of Merafong and JB Marks local Municipalities

**Dear Prospective Participant**

My name is Paul Motsoeneng, and I am doing research and supervised by Prof Eric Nealer an academic in the Department of Public Administration and Management towards a doctoral degree at the University of South Africa. We are inviting you to participate in a study entitled. Public Resources for Public sanitation: The cases of Merafong and JB Marks local Municipalities

**WHAT IS THE PURPOSE OF THE STUDY?**

I am conducting this research to find out about the shortcomings in the delivery of sanitation services in the Merafong and JB Marks local Municipalities.

**WHY AM I BEING INVITED TO PARTICIPATE?**

You were chosen to participate in this study because you are a resident in your municipality.

**WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?**

The study involves questionnaires. The nature of information required from the questionnaire is related to water and sanitation services. It will take up to 15 minutes to complete the questionnaire.

**CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?**

Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a written consent form. You are free to withdraw at any

time and without giving a reason. However, you should note *that it will not be possible to withdraw once they have submitted the questionnaire.*

**WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?**

There are no direct or indirect benefits for participation in this study.

**ARE THEIR ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?**

There are no possible or reasonably foreseeable risks of harm or side-effects to the potential participants. Include any risk that may come from others identifying the person's participation in the research.

**WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?**

*Information will be strictly kept confidential in a password protected computer.* You have the right to insist that your name will not be recorded anywhere and that no one, apart from the researcher and identified members of the research team, will know about your involvement in this research OR your name will not be recorded anywhere, and no one will be able to connect you to the answers you give. Your answers will be given a code number, or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings.

Your answers may be reviewed by people responsible for making sure that research is done properly, including the transcriber, external coder, and members of the Research Ethics Review Committee. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

Your anonymous data may be used for other purposes, such as a research report, journal articles and/or conference proceedings. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report.

**HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?**

Hard copies of your answers will be stored by the researcher for a period of five years in a locked cupboard/filing cabinet *at the University of South Africa* for future research

or academic purposes; electronic information will be stored on a password protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. Indicate how information will be destroyed if necessary hard copies will be shredded and/or electronic copies will be permanently deleted from the hard drive of the computer through the use of a relevant software programme.

**WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?**

No payment will be offered to participants in this study.

**HAS THE STUDY RECEIVED ETHICS APPROVAL?**

This study has received written approval from the Research Ethics Review Committee of the *Department of Public Administration and Management,* Unisa. A copy of the approval letter can be obtained from the researcher if you so wish.

**HOW WILL I BE INFORMED OF THE FINDINGS/RESULTS OF THE RESEARCH?**

If you would like to be informed of the final research findings, please contact Mr RP Motsoeneng on 012 429 6312/072 3366929.Should you have concerns about the way in which the research has been conducted, you may contact Mr. Motsoeneng on 012 429 6312 or motsorp@unisa.ac.za.

**Declaration by participant**

By signing below, I …….. agree to take part in a research study entitled: **Public resources for public sanitation: The cases of Merafong and JB Marks local Municipalities**

Signed at (*place*) .....…….…… on (*date*) ……...……. 2019.

.....

**Signature of participant**

**Declaration by investigator**

Signed at (*place*) .....…….. on (*date*) ……...…….. 2019.

.....

**Signature of investigator**

# ANNEXURE B: QUESTIONNAIRE MUNICIPAL OFFICIALS

**TITLE:**

**PUBLIC RESOURCES FOR PUBLIC SANITATION SERVICES: THE CASES OF MERAFONG AND JB MARKS LOCAL MUNICIPALITIES**

**GUIDELINES TO PARTICIPANTS**

This research is aimed at determining shortcomings in the delivery of sanitation services at the afore-mentioned municipality. There is no RIGHT or WRONG answers and your honest, anonymous opinion will be appreciated.

**This questionnaire is to be completed by Municipal officials**

**Municipality Name**

……

**Town Name**

……

## SECTION 1 SANITATION SERVICES INFRASTRUCTURE

**1. Please indicate the type of residential street at your work place by ticking on the appropriate box below (trying to determine the availability of stormwater and sanitation provisioning along the street)**

| | |
|---|---|
| Gravel | 1 |
| Tarred | 2 |

**2. Please indicate access to water at your work place by ticking on the appropriate box (where is your water coming from)**

| Piped water | Borehole | River, streams, dams Wells and springs | Specify other: …… |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

**3. Please indicate the type of sanitation/toilet facility at your workplace by ticking on the appropriate box**

| Flush toilet (water) | Pit latrine (long drop) | Bucket toilet system | Specify other: …… |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

## SECTION 2 MUNICIPAL WATER SERVICES PLANNING

**4. In determining municipal planning please tick on the appropriate box below**

| | Yes | No |
|---|---|---|
| I am aware of the Water Services Development Plan of my municipality | 1 | 2 |

**Regarding the most recent water services development planning since 2015, state whether you agree or disagree with the following statements by ticking on the appropriate box below:**

| | Strongly agree | Agree | Don't know | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| 5.A Water Services Development Plan (WSDP) is in place in my municipality. | 1 | 2 | 3 | 4 | 5 |
| 6. Municipality keeps communities informed about service delivery developments. | 1 | 2 | 3 | 4 | 5 |
| 7.Municipality attends to maintenance issues regarding sanitation services within a satisfactory time frame | 1 | 2 | 3 | 4 | 5 |

**Please indicate how often you participate in the municipal water services planning process by ticking the appropriate box below**

| | Never | Sometimes | Always |
|---|---|---|---|
| 8.Community members participate in the Water Services Development planning process of the municipality. | 1 | 2 | 3 |

## SECTION 3 SANITATION RESOURCES

**Thinking about the availability of resources in the municipality to deliver services, state whether you agree or disagree with the following statements by ticking on the appropriate box below:**

| | Strongly agre | Agree | Don't know | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| 9. The sanitation services manager of the municipality has the required competencies and qualifications. | 1 | 2 | 3 | 4 | 5 |
| 10.Supporting staff have the required competencies and qualifications | 1 | 2 | 3 | 4 | 5 |
| 11. Staff regularly attend water services development training. | 1 | 2 | 3 | 4 | 5 |
| 12. Key posts in sanitation services management are filled. | 1 | 2 | 3 | 4 | 5 |
| 13. The municipality has enough sanitation services management. staff (at least 5 per 100 000 persons served). | 1 | 2 | 3 | 4 | 5 |
| 14. The Ventersdorp Wastewater Treatment Works (WWTWs is operated by appropriate number of staff as per regulation 2834. | 1 | 2 | 3 | 4 | 5 |
| 15. The municipality has enough water and sanitation network operation and technical staff. | 1 | 2 | 3 | 4 | 5 |
| 16. A mentoring and coaching programme is in place where experienced staff train inexperienced staff. | 1 | 2 | 3 | 4 | 5 |

| | Never | Sometimes | Always |
|---|---|---|---|
| 17.Material required for daily operational work in sanitation services is provided by the municipality (ie chemicals, and equipment) | 1 | 2 | 3 |
| 18. Annual technical assessment of waste water related systems is conducted | 1 | 2 | 3 |

**19. Please indicate the green drop status of your municipality by ticking on the appropriate box below**

| Please indicate the green drop status of your municipality | Excellent 90% | Good 75-90% | Average 50-75% | Needs attention 33-50% | Urgent attention <33% | I do not know | |
|---|---|---|---|---|---|---|---|

**20. What are your main concerns regarding sanitation services in your municipality?**

.....

.....

.....

.....

.....

**Thanking you for your participation and invaluable contribution**

# ANNEXURE C: QUESTIONNAIRE HOUSEHOLD

**TITLE:**
**PUBLIC RESOURCES FOR PUBLIC SANITATION SERVICES: THE CASES OF MERAFONG AND JB MARKS LOCAL MUNICIPALITIES**

## GUIDELINES TO PARTICIPANTS

This research is aimed at determining shortcomings in delivery of sanitation services. There is no **RIGHT** or **WRONG** answers and your honest, anonymous opinion will be appreciated.

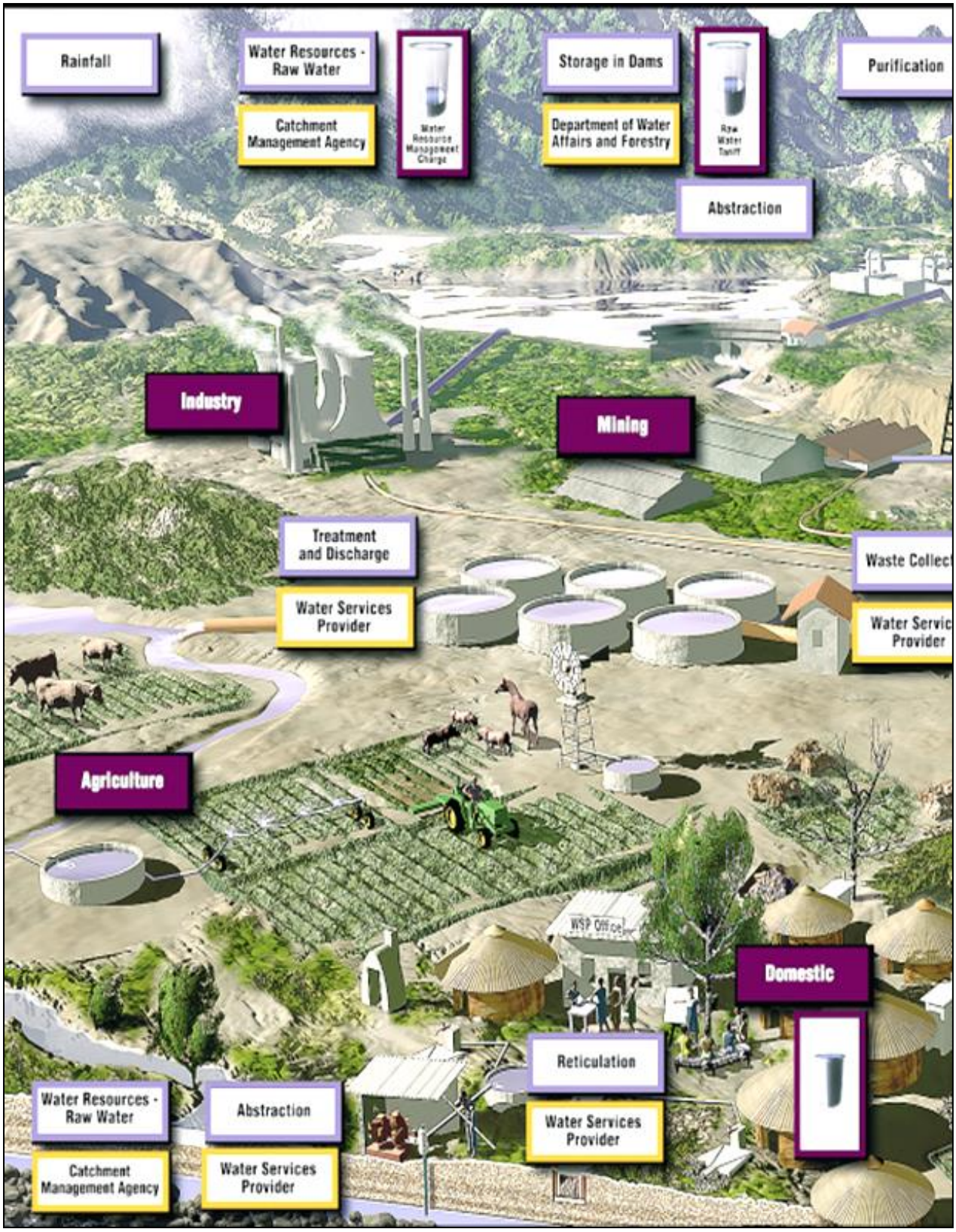
This questionnaire is to be completed by HOUSEHOLDS

Municipality Name:

……

Town name

……




**Schematic representation of a water-use system**

**1. Please indicate the type of residential street in your home by ticking on the appropriate box below (trying to determine the availability of stormwater and sanitation provisioning along the street)**

| | |
|---|---|
| Gravel | 1 |
| Tarred | 2 |

**2. Please indicate household access to water (where is your water coming from) by ticking on the appropriate box below**

| Piped water | Borehole | River, streams, dams wells and springs | Specify if other: …… |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

**3. Please indicate your experience with the level of affordability of services provided by the municipality by ticking on the appropriate box below**

| | **Affordable** | **Expensive** | **Do not pay** |
|---|---|---|---|
| Piped water | 1 | 2 | 3 |
| Sanitation/Toilet facility | 1 | 2 | 3 |

**4. Please indicate the type of sanitation/toilet facility on the premises by ticking on the appropriate box below**

| **Flush toilet (water)** | **Pit latrine (long drop)** | **Bucket toilet system** | **Specify if other: ……** |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

**5. In determining the accessibility and convenience of sanitation facility please tick on the appropriate box below**

| | Yes | No |
|---|---|---|
| Is your toilet facility shared by more than one household? | 1 | 2 |

**6.Please indicate your knowledge regarding most recent municipal water services planning since 2015 by ticking on the appropriate box below:**

| | Yes | No |
|---|---|---|
| Do you know of the Water Services Development Plan in your municipality? | 1 | 2 |

**If yes, please answer questions 7 and 8 below. If no, proceed to question 9 below**

| | **Never** | **Sometimes** | **Always** |
|---|---|---|---|
| 7. Do you participate in the Water Services Development Planning (WSDP) process of the municipality? | 1 | 2 | 3 |
| 8. If so, do you think that the municipality considers your views before adopting the WSDP? | 1 | 2 | 3 |
| 9. The municipality keeps me informed about service delivery developments in my community. | 1 | 2 | 3 |

**Thinking about delivery of services, state whether you agree or disagree with the following statements by ticking on the appropriate box below:**

| | Strongly agree | Agree | Don't know | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| 10.The municipality attends to service delivery issues within a satisfactory time frame. | 1 | 2 | 3 | 4 | 5 |
| 11.The municipal officials know what services are needed in my area. | 1 | 2 | 3 | 4 | 5 |
| 12.The municipality has an important role to play in service provision of water and sanitation. | 1 | 2 | 3 | 4 | 5 |
| 13.The municipality gives priority to my basic needs | 1 | 2 | 3 | 4 | 5 |
| 14. I want my municipality to involve me in decisions about service delivery in my community. | 1 | 2 | 3 | 4 | 5 |

**Please indicate your experiences with the quality of sanitation services provided by your municipality by ticking on the appropriate box below**

| | Never | Sometimes | Always |
|---|---|---|---|
| 15. I experience interruptions in sanitation services in my home. | 1 | 2 | 3 |
| 16. I have experienced blocked toilets and pipelines in my home. | 1 | 2 | 3 |

**17. What are your main concerns regarding water and sanitation services in your municipality?**

……

……

……

……

……

……

……

**Thanking you for your participation and invaluable contribution!**

# ANNEXURE D: CONFIDENTIALITY AGREEMENT WITH STATISTICIAN

CONFIDENTIALITY AGREEMENT WITH STATISTICIAN

CONFIDENTIALITY CLAUSE BETWEEN

RESEARCHER: Mr RP Motsoeneng

AND

STATISTICIAN: _Mr A Masenge_____

**Research Title:**

**Public administration tools for strengthened basic sanitation services in the Far West Rand Municipalities**

The Unisa research code of ethics requires that confidentiality should be maintained throughout data collection, data analysis and reporting.

As a statistician, I understand that I have access to confidential information. By signing this statement, I am indicating my understanding of this responsibility and agree to the following:

- I understand that all information obtained or accessed by me in the course of my work is confidential. I agree not to divulge or otherwise make known to unauthorised persons any of this information, unless specifically authorised to do so.
- I understand that names and any other identifying information about study sites and participants are completely confidential.
- I agree to use the data solely for the purpose stipulated by the researcher.
- I agree to maintain the confidentiality of the data at all times and keep the data in secure, password protected location.
- I agree to shred all hard copies of data in my possession on completion of the project. All electronic copies will be permanently deleted from the hard drive of my computer upon completion of this project.

Andries Masenge — 11.10.2017 — Signature

**Printed name and Surname** (Statistician) — **Date** — **Signature**

Mr RP Motsoeneng — 11/10/2017 — Signature

(Researcher) — **Date** — **Signature**

# ANNEXURE E: PERMISSION LETTER FROM JB MARKS LOCAL MUNICIPALITY

JB MARKS
Local Municipality

OFFICE OF THE MUNICIPAL MANAGER
PO.Box 113
Potchefstroom,2520

Tel: 018-2995003
Email: mmsecretary@jbmarks.gov.za

16th November 2017

RP Motsoeneng
PhD Student :UNISA
Department of Public Administration & Management
University of South Africa
Email:Motsorp@unisa.ac.za

Dear Sir

RE: LETTER OF AUTHORIZATION TO CONDUCT RESEARCH ON THE JB MARKS LOCAL MUNICIPALITY

The above matter refers.

This letter serves as authorization of Mr RP Motsoeneng to conduct the research project entitled "the management and provision of basic sanitation services in municipalities and identifies some public administration tools and hopes to deliver a strengthened model on how to improve rendering of basic sanitation services" at our municipality.

Upon a review of the letter sent to us by yourself, we are glad to offer you an opportunity to conduct the same study in our organization. All interviews, filed surveys, observations around the site and the distribution of questionnaires are approved and will be duly supervised by the human resource unit.

If you have any concerns or require additional information, feel free to contact the unit at 018-299 5364.

Yours faithfully

Dr. NE BLAAI MOKGETHI
MUNICIPAL MANAGER

# ANNEXURE F: ETHICAL CLEARANCE CERTIFICATE

UNISA university of south africa

**DEPARTMENT: PUBLIC ADMINISTRATION AND MANAGEMENT**

**RESEARCH ETHICS REVIEW COMMITTEE**

Date: 30 October 2017

Ref #: PAM/2017/27 ( Motsoeneng )
Name of applicant: Mr RP Motsoeneng
Student#: 32985746

Dear Mr Motsoeneng

**Decision: Ethics Clearance Approval 30 October 2017 to 29 October 2020**

---

**Name:** Mr RP Motsoeneng, student#: 32985746, motsorp@unisa.ac.za, tel: 012 429-6312
*[Supervisor: Prof EJ Nealer, 012 429-3341, nealeej1@unisa.ac.za ]*

**Research project** "Public administration tools for strengthened basic sanitation services in the Far West Rand Municipalities" **Qualification:** DLITT (PBL)

---

Thank you for the application for **research ethics clearance** by the Department: Public Administration and Management: Research Ethics Review Committee, for the above mentioned research. Ethics approval is granted for the period **30 October 2017 to 29 October 2020**. If necessary to complete the research, you may apply for an **extension** of the period.

You are, though, required to submit the letters from the Merafong Local Municipality and the JB Marks Local Municipality in which permission is granted to you to do this research, to this Ethics Committee within **30 days** of the date of this letter.

---

**For full approval**: The application was **expedited and reviewed** in compliance with the *Unisa Policy on Research Ethics* and the *Standard Operating Procedure on Research Ethics Risk Assessment* by the RERC on 30 October 2017. The decision will be tabled at the next College RERC meeting for notification/ratification. The proposed research may now commence with the proviso that:

1) The researcher will ensure that the research project adheres to the values and principles expressed in the Unisa Policy on Research Ethics.
2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to this Ethics Review Committee.
3) The researcher will conduct the study according to the methods and procedures set out in the approved application.

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

# ANNEXURE G: INTERVIEW SCHEDULE (MANAGEMENT)

**TITLE:**
**PUBLIC RESOURCES FOR PUBLIC SANITATION SERVICES: THE CASES OF MERAFONG AND JB MARKS LOCAL MUNICIPALITIES**

**Purpose of research**

This research is aimed at determining shortcomings in delivery of sanitation services in Merafong and JB Marks local municipalities.

**GENERAL INFORMATION**

1. This interview is based on basic sanitation services in the Merafong and Jb Marks Local municipalities.
2. You have been invited to participate in this study because of your extensive experience about the topic under study.
3. You are kindly requested to answer the questions as honestly and completely as possible.
4. The interview will take a maximum of 45 minutes to complete.
5. Participation is anonymous: You are not requested to disclose your identity. Your privacy will be respected.
6. No one will be able to connect you to the answers you give.
7. The information collected from you will be treated with strict confidentiality and used for research purposes only.
8. You have the right to withdraw your participation at any time. Hence, your participation is regarded as voluntarily.
9. You will not receive any payment or reward, financial or otherwise, and the study will not incur undue costs to you.
10. The survey data will be stored in a locked cupboard and the data stored in a computer will be protected by the use of a password.
11. The survey data will be destroyed when it is no longer of functional value (after five years).
12. A copy of the thesis will be available in the library at the Muckleneuk Ridge Campus of the University of South Africa (Unisa), Pretoria.

1. Does the municipality have enough competent and qualified staff?

……

……

2. Does the municipality offer any coaching and mentoring programmes?

……

……

……

……

……

3. Do you have adequate resources to undertake daily operations?

……

……

……

……

4. How often do the municipality undertake wastewater related systems assessment?

……

……

……

……

……

5. Do you know the green drop status of the municipality?

……

……

……

……

……

**Thank you for your participation**

# ANNEXURE H: LANGUAGE EDITING CERTIFICATE

Between the lines editing

Leatitia Romero
Professional Copy Editor and Proofreader
(BA HONS)

Cell: 083 236 4536
leatitiaromero@gmail.com
www.betweenthelinesediting.co.za

14 February 2022

To whom it may concern:

I hereby confirm that I edited the thesis entitled: "PUBLIC RESOURCES FOR PUBLIC SANITATION: THE CASES OF MERAFONG AND JB MARKS LOCAL MUNICIPALITIES". Any amendments introduced by the author hereafter are not covered by this confirmation. The author ultimately decided whether to accept or decline any recommendations I made, and it remains the author's responsibility at all times to confirm the accuracy and originality of the completed work. Research participants' verbatim quotes were not grammatically altered or checked for contextual accuracy. The author is responsible for ensuring the accuracy of the references and its consistency based on the department's style guidelines. I am not accountable for any changes made to this document by the author or any other party subsequent to my edit.

Leatitia Romero

Affiliations

PEG: Professional Editors Group (ROM001) – Accredited Text Editor
SATI: South African Translators' Institute (1003002)
REASA: Research Ethics Committee Association of Southern Africa (104)