

**ANALYSIS OF GOVERNMENT COMPLIANCE IN THE PROVISION OF WATER
AND SANITATION TO RURAL COMMUNITIES: A CASE STUDY OF LEPELLE
NKUMPI LOCAL MUNICIPALITY, LIMPOPO PROVINCE**

By

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DECLARATION BY CANDIDATE

I declare that Analysis of Government Compliance in the Current Provision of Water and Sanitation to communities: A Case Study of Lepelle Nkumpi Local Municipality, Limpopo Province has not previously been submitted by me for a degree at this university or any other university; that it is my own work and execution, and that all material contained herein has been duly acknowledged.

Full Name: Raesibe Anna Mothapo

Date: 17 August 2019

Signature:



DEDICATION

This work is dedicated to the memory of my late father, Mr Lesibana James Mothapo for sending me to school, emphasizing the importance of education and motivating me to improve my academic qualification in spite of the limited resources at his disposal. I also dedicate this work to my dear children, *Nolo and Fatso as I remind them that education is the gateway to a better life and better future.*

Water is a special gift of life from God



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ABSTRACT

A persistent challenge facing especially post-apartheid South African rural municipalities is service delivery compliance. Under the guise of scarcity, rural municipalities repeatedly do not comply with legislation, policies and guidelines for the provision of drinking water and basic sanitation services for the poor. Yet, such challenges concern equity, justice and fairness to social policy and seriously impact the sustainability of livelihood of millions of rural households. The main objective of this study is to analyse the extent to which *Lepelle Nkumpi Local Municipality* has complied with or deviated from specific policies and legislation governing the provision of water and sanitation services at the Gedroogte, Ga Molapo and Magatle (in Zebediela) rural communities and the response of communities. The study was also intended to determine the extent to which water challenges affect the livelihood of the people in the communities. It highlights the refugee-like conditions that millions of South African citizens experience despite official statistics that claim that 86% of the country has access to potable water. A mixed methods design was used for this analysis. The qualitative methods that are used in the study include use of in-depth interviews, site visits, personal stories and the Municipal Integrated Development Programme (IDP). Participatory mapping of water sources; story-telling about water issues; timelines and trend lines by focus group members; transect walks and 7 key informant interviews were used to collect data. A total of 657 quantitative interviews were conducted in three communities. Service delivery compliance has been *grossly* ineffective and inefficient in *Lepelle Nkumpi Local Municipality*, especially in the Gedroogte, Ga Molapo and Magatle rural communities. The findings were that these rural communities still depend on state-owned boreholes for accessing drinking water, which are regularly broken and/or in disrepair. Sanitation service provision in the rural communities does not comply with the approved policy of providing ventilated improved pit (VIP) toilets. New settlements have increased the demand for clean water. Shortages of staff with relevant skills such as management, technicians, and administrators are one of the main reasons why there is a scarce supply of drinking water and basic sanitation services at the Gedroogte, Ga Molapo and Magatle communities. Inaccessibility to nearby treatment plants for waste disposal services (situation per community) and inaccessible disposal facilities and the use of disposal sites also affect the health conditions of community members within the *Lepelle Nkumpi Local Municipality*.

KEY WORDS

Water, Protests, Municipalities, Livelihoods, Sanitation, South Africa, Lepelle Nkumpi Local Municipality, Limpopo Province



ACRONYMS

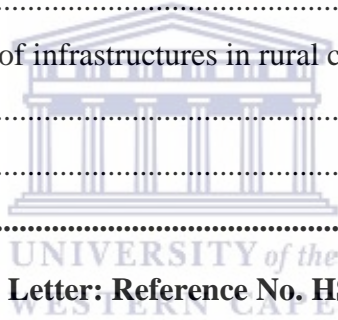
ANC	:	African National Congress
CDM	:	Capricorn District Municipality
CDWs	:	Community Development Workers
CoGTA	:	Cooperative Governance and Traditional Affairs
DWAF:	:	Department of Water Affairs
DWS	:	Department of Water and Sanitation
GHS	:	General Household Survey
HWS	:	Household Water Sources
IDP	:	Integrated Development Plans
IPCC	:	Intergovernmental Panel on Climate Change
KIs	:	Key Informant Interviews
MIG	:	Municipal Infrastructure Grant
PAR	:	Participatory Action Research
PLA	:	Participatory Learning Action
PPPs	:	Private Public Partnership
PR	:	Participatory Research
RDP	:	Reconstruction and Development Programme
VIP	:	Ventilated Improved Pit Toilet
WASH:	:	Water, Sanitation and Hygiene
WB	:	Water Boards
WSA	:	Water Services Authority
WSP	:	Water Service Providers
WWTW	:	Waste Water Treatment Works

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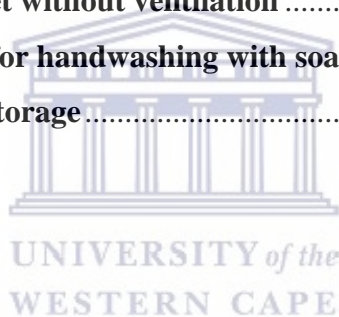


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CHAPTER ONE: ANALYSIS OF GOVERNMENT COMPLIANCE IN THE PROVISION OF WATER AND SANITATION TO RURAL COMMUNITIES

1.1 Introduction

“The water sector has undergone major change since the dawn of democracy in 1994 and since then we have developed a remarkable body of policy and legislation, which has been acclaimed all over the globe for its progressive and ground-breaking nature. But we cannot escape the reality that the implementation of the new policy and legislation has been slow, particularly in terms of equity and redress in access to water and sanitation. Although the provision of safe domestic water supplies has reached 95% of the population, showing remarkable strides since 1994, the allocation and reallocation of raw water to historically disadvantaged communities for productive purposes has not progressed, as it should. The number of people without adequate services is still too large, particularly among the poor. Progress in allocating water for productive purposes to promote transformation has been slow to date and water use patterns are still unequal. To make it worse, there is increasing pressure on our water resources because of challenges in management and future sustainability. These factors could have implications for the socio-economic growth of the country if not resolved timeously. Although South Africa potentially has sufficient water resources to meet our current and future needs, they can only be secured through effective and timeous smart water management options. Ultimately, South Africa is a water-scarce country and water security and associated equity must be achieved within spatial, physical, technological, financial and governance constraints” (Edna Molewa, 2012).

1.2 Background

The analysis of the former Minister of Water and Environmental Affairs, Ms Edna Molewa (2010-2014), quoted above has inspired this study. Human society needs clean water for productive purposes but also for drinking, cooking, washing and other household chores and with sanitation for safe disposal of human waste. In urban areas and rural communities, safe drinking water and basic sanitation are essential for improving health and sustaining standards of living (Hemson 2016). Clean water and sanitation are fundamental to what developing

societies can do or how they can grow in their abilities (Watkins 2006). Therefore, drinking water and basic sanitation can make or break community development.

In South Africa under apartheid rule, access to water was severely restricted for blacks and especially those in rural communities and Bantustans (Goldin, 2010). On 18th December 1996, the *Constitution of the Republic of South Africa Act 108 of 1996* endorsed the provision of basic water to its constituencies with everyone having the right to have access to sufficient water (RSA, 1996). Subsequently, the right to water extends to section 9 (3), for everyone to be equal before the law, section 10 promotes human dignity, and section 24 declares environmental rights, while section 27 grants everyone the right to have access to sufficient food and water and related environmental rights (RSA, 1996).

In South Africa, the guidelines for the provision of water and sanitation are regulated by the Department of Water and Sanitation (DWS). The Department is accountable for the formulation and implementation of policy governing the water sector while the local government has the responsibility of providing water services to communities within its jurisdiction (DWS, 2017). This is endorsed in the *Constitution of the Republic of South Africa Act 108 of 1996*, Section 152 (1) stated that local government must “ensure the provision of services to communities in a sustainable manner”. In backing the constitutional right of access to water, the Water Services Act 108 of 1997 was promulgated on 19th December 1997 to legislate direct municipal function by supplying water and providing sanitation services to rural communities. The Act aimed at achieving the constitutional right to societies by specifying access to basic water and basic sanitation as its main objective (RSA, 1997).

Section 3 (1) declares the right to access to basic water and sanitation, which permits institutions in section 3(2) to take reasonable measures to be accountable to these rights, while section 3 ensures every Water Services Authority (WSA) within its Water Services Development Plan (WSDP) to provide accountability measures for these rights. These activities should be carried out in conjunction with the Water Service Providers (WSP) and Water Boards (WB) by looking after the interest of consumers.

On 20th August 1998, the National Water Act 36 of 1998 agreed specifically to provide fundamental reform of the law relating to water resources, the relationship between these new

laws and reform; and to repeal dysfunctional laws. The Act aimed to ensure that the national water resources are protected, developed, conserved, managed and controlled to meet the basic needs of the future generations of South Africans (RSA, 1998). The Act also acknowledges that as a natural resource, water belongs to everybody, promotes equitable water access, and redresses the impact created by the historical ethnic and gender discrimination in the country. As the Department of Provincial and Local Government (DPLG) (2007) states: “municipalities must spend funds on the provision of infrastructure necessary to supply 25 litres of potable water per person per day supplied within 200 metres of a household and with a minimum flow of 10 litres per minute (in the case of communal water points), or 6 000 litres of potable water supplied per formal connection per month (in the case of yard or house connections); or to upgrade and build new infrastructure up to a basic level of service in existing formal settlements” (DPLG, 2007). The Water Services Authorities (WSA) and Water Services Providers (WSP) are entrusted by the Department of Water Affairs (DWA) with the task of ensuring that *everyone* in the country, including poor rural households who cannot pay for water services, have access to at least a basic level of service (set as 25 litres per person per day) at no cost and within 200 metres of residence. Most rural municipalities – the weakest -- have not met this requirement of a basic level of service.

Despite the challenges that are currently developing in rural municipalities, the South African government is still obliged to comply with rules and regulations pertaining to the provision of basic services to its constituencies. Several scholars such as Edokpayi et al., (2018); Hemson, (2015); Swanepoel & de Beer (2016), indicated many cases of death associated with waterborne diseases due to water scarcity in rural municipalities of South Africa, especially, the Limpopo Province, Eastern Cape and KwaZulu-Natal provinces.

Beyers (2015) reports that the main challenge in providing safe drinking water is in rural provinces and communities. Förster et al. (2017) and Beyers (2015) accuse the DWS of non-compliance in meeting the constitutional mandate and societal expectations. Moreover, Madigele (2017) argue that policy, legislative gaps and lack of suitable institutional arrangements also skewed the provision of water in South Africa. Swanepoel and de Beer (2016) indicate the challenges as ‘relative poverty’ as they specifically relate to social norms and standard of living, i.e. poverty. Furthermore, Statistics South Africa (Stats SA, 2011) issued a municipal Census report for 1996, 2001 and 2011, indicating a vast inherited backlog in the

provision of water and sanitation services in Limpopo Province. Beyers (2015), states that these services in the Limpopo Province have been criticised as incompetent in terms of the provision of drinking water due to their topographical locality. Madigele (2017) asserts that apartheid regulations, policy formulation and white supremacy led to the skewed provision of natural resources (water) in the country. Kanyane et al. (2017) reported that challenges triggered chronic violent service delivery protests in local governments, especially in rural communities like Vuwani in the Limpopo Province, Magatle community (Nhlapo, 2016) and the Muyexe community (Tapela, 2012).

This study focusses on one province in South Africa where the provision of basic services relating to water and sanitation in some rural areas is critical, namely the Limpopo Province. Details regarding the locality of the municipality and the case studies of rural communities will be provided in chapter three.

1.3 Objectives of the thesis

This thesis documents the role of the *Capricorn District Municipality* on the provision of drinking water and basic sanitation of rural household's communities in the *Lepelle Nkumpi Local Municipality*, which are Gedroogte, Ga Molapo and Magatle rural communities in South Africa. A secondary focus is to investigate the experiences and perceptions of rural communities about basic services for their households, especially drinking water and basic sanitation have been denied them by the local municipality. The study focuses on the post-apartheid era in which our government is governed by the Constitution and no law or government action can supersede its governing. Of particular interest is how the freebies from the government (Free Basic Water and Free Basic Sanitation) are allocated amongst rural community members and how it has benefited (if there is provision) and the challenges encountered within their households. This information will provide a reflection into the question of whether basic services provision of drinking water and sanitation benefits rural communities in the *Lepelle Nkumpi Local Municipality* and if so, how it can be improved to be sustainable. Hence, the main research question for this study is: How rural communities in democratic South Africa perceive the provision of water and sanitation services provided by the local municipalities?

The following specific research question is addressed in this thesis.

- (1) What is the current status of infrastructure for water and sanitation supply services in the *Lepelle Nkumpi Local Municipality*?
- (2) In what ways do *Lepelle Nkumpi Local Municipality* water and sanitation supply system affect the rural households' access of water?
- (3) In what ways do rural households respond to the challenges related to the *Lepelle Nkumpi Local Municipality* water and sanitation supply challenges?
- (4) What are the factors underlining the gaps between community expectations in water and sanitation supply services provided by the *Lepelle Nkumpi Local Municipality*?

1.4 Ethical considerations

The Human Research Ethics Committee of the University of the Western Cape granted ethics approval for the study. The submission required the development of the participation information sheet and acceptance of consent from each participant. The university granted ethical clearance to the researcher to conduct the research in a manner which would not jeopardise the researcher, participants and the University of the Western Cape (Appendix 1). The topic of analysis of public policy at the institutional level is a modern idea that leads to gap identification. De Vos et al. (2011) report that the South African Human Research Council has highlighted research principles that have to be applied by all emerging researchers undertaking research. Tapela (2009) recommended the principles, which were applied by the researcher in conducting the study as follows:

(i) Principle of respect

This principle ensures that activities between the researcher and the participants are grounded on mutual respect, culture, values and life choices of the research participants. Graziano and Raulin (2004) report that the participants should be respected as they have the right to make their own decisions unless their decisions are relevant to the research. Research participants were given a detailed participation information sheet explaining relevant details concerning the study and a questionnaire was circulated upon their willingness and keenness to partake in the

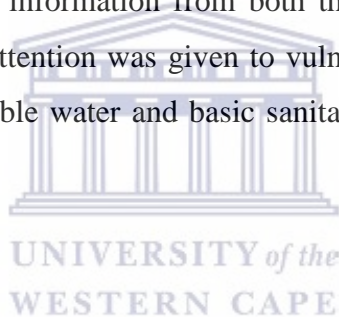
research. The privacy of information pertaining to each of the names of the participants was protected by means of pseudonyms to ensure their anonymity and confidentiality.

(ii) Historical context

Rural communities in South Africa, especially in the Limpopo Province, possess many negative and active historical measures in terms of race, colour, gender and locality. These needed to be acknowledged with respect, however, particularly regarding the socio-economic and political backgrounds of their community. The researcher acknowledged their rural communities and was given a confirmation letter from the Gredroogte, Ga Molapo and Magatle Tribal Authorities for permission to participate in the study in the respective communities.

(iii) Principle of reciprocity, mutual benefit and reasonable sharing

This principle embraces sharing information from both the researcher and the participants during the research processes. Attention was given to vulnerable and marginalised societies being deprived of access to potable water and basic sanitation for healthy living during the process.



(iv) Principle of process

This principle highlights the importance of fairness, equity and flexibility rather than inflexibility amongst the researcher and the participants. The researcher's attention during the process was based on engendering flexibility rather than inflexibility in the research process.

(v) Principle of full disclosure

Transparency was applied to the participants before partaking in the process to ensure that the participants understood the nature, scope and critical purpose of the research. The researcher, as Sepedi speaking, spoke the native language to make full disclosure to the participants about the research.

(vi) Principle of differential needs and objectives

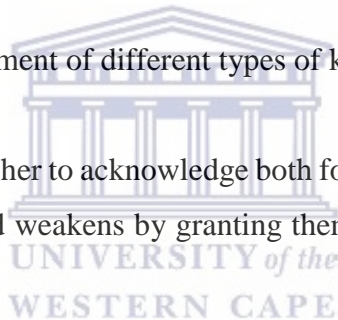
Full disclosure about the aim and objectives of the proposed research was explained to the participants in order to understand the research. Thereafter, the researcher circulated a consent form to the participants with the aim of accommodating them during the process and ensuring that they gave their consent to participate in the study.

(vii) Principle of communication and due acknowledgement

The Gedroogte, Ga Molapo and Magatle rural communities are full partners in this research. So, acknowledgement of their contributions means a lot to them as it is important to give them a published document presented to them in an appropriate method.

(viii) Principle of acknowledgement of different types of knowledge

This principle requires the researcher to acknowledge both formal informal and knowledge and to be aware of their strengths and weaknesses by granting them equal status during the research process.



1.5 Limitations of the thesis

First, the lines of communication between myself and the supervisor were limited due to distance and it was very difficult to plan my studies. Second, the tribal authorities for the three communities were not easily reachable via their mobile telephones to make an appointment for interviewing their community members as they ought to give authority. Third, since I was researching three communities, I have different dates as per community meetings in order to meet them in larger numbers to conduct my research as it was the best time due to their tribal authority meetings. Finally, members of the communities were reluctant to participate because of the municipal elections because the government had promised them water and sanitation provided they cast their votes, it was difficult for me because they thought I am also from government hence I introduced myself and gave them forms to read for participation during

the research. Furthermore, the thesis would have been more improved if I was able to interview some key players in the Provincial Municipality in the water and sanitation chain which provides and regulates local water supply and sanitation and enforces by-laws. But due to municipal elections, it was impossible to interview those people.

1.6 Structure of the thesis

This thesis is structured into seven chapters with the preliminary chapter outlining the background of rural municipalities in South Africa, focusing on those in the Limpopo Province as case studies; for which research questions pursuing answers applicable to rural communities were posed. Chapter two outlines reviewed literature on the subject under the post-apartheid rural South Africa on drinking water and basic sanitation provision in rural communities in South Africa. At least three main bodies of literature have been drawn upon for this thesis. These are: (1) the technical aspects of water and sanitation provision systems in rural communities in South Africa, (2) the environmental factors affecting water and sanitation accessibility in rural communities in South Africa, (3) the socio-economic factors affecting water and sanitation accessibility in rural communities in South Africa. Chapter three focused on the literature of water and sanitation provision. First the focus will be on the district municipality outlook to grab its responsibilities pertaining to the provision of drinking water and sanitation stepping down to the local municipality and the case studies communities. Second, the mixed method used for conducting this thesis will be discussed in detail (quantitative and qualitative) and their intention of using them will be provided. Last, the theoretical framework used to collect and analyse the qualitative data, namely the participatory learning action (PLA) method will be discussed. The following chapters, four and five and six will then present the results individually from the quantitative and qualitative findings. In the last chapter both quantitative (five) and qualitative (six) results will be connected to form the main conclusion of the thesis. The academic implications will also be discussed in this chapter.

2 CHAPTER TWO: WATER AND SANITATION IN POST-APARTHEID RURAL SOUTH AFRICA

2.1 Introduction

This chapter provides a literature and technical review of basic services provision in rural South Africa focusing on drinking water and basic sanitation in rural communities. Three main groups of literature have been drawn upon for this thesis. These relate to the technical challenges of water supply, the environmental factors affecting water and sanitation and thirdly, the socio-economic and political aspects as the demand for basic services provision. Water is a deeply political issue, mired in an apartheid past, it is about citizenship, health, dignity and economic development and the political will by the state to deliver and sustain services. This section includes discussing the sustainable rural livelihoods framework as the conceptual framework.

Rural areas sometimes referred to the “countryside” are associated with farming, dispersed populations and in the third world, life for rural people is often a constant struggle requiring many survival strategies to access resources and get government services. As Bernstein (2003) suggests “rural people” are not a homogenous category and there is considerable debate on what exactly the “rural is” and even if people can be described as “rural” since most do not reside there all the time and interact with cities. Moreover, Bernstein (2003) points out among key factors affecting rural areas and livelihoods are urban-rural linkages, quality of infrastructure, seasonality and agrarian relations (working for rich farmers, working own land one small scale etc.). Farmworkers living on private farms are also not seen as water consumers. Rural communities have limited access to formal infrastructure and reside in close proximity to domestic animals such as goats, cows, donkeys, sheep, dogs and cats, which drink from and defecate in similar water sources that are used by members of the communities for drinking and household purposes.

In South African history, lack of water access, as one of Wilson and Ramphele’s second Carnegie Commission into Poverty (1989) is, “one of the striking features of poverty” because of the time, energy and expense to obtain it. Under apartheid in the former Transkei for example, people on average spent 187 minutes (three hours) every day fetching water. The average container of water weighed 21 kg equivalent to a miner wielding a pick and the hills that people had to ascend added to the burden of carrying water. As Wilson and Ramphele

(1989) noted in times of water shortages people were found queuing for water from a fountain in the middle of the night. Forced into rural encampment called Bantustans, blacks under apartheid were systematically impoverished and subjected to horrors of precariousness, uncertainty, illness and premature death (Wilson and Ramphela, 1989).

When apartheid officially ended, blacks were promised a new and better life. Around 1993, about 8 million rural residents lacked a formal water supply and 14 million lacked formal sanitation (Greenberg 2005). At this time about half SA's population was classified as rural; poverty was most extreme in these areas where most residents live off social grants and remittances hence the significance of rural water and sanitation. In 2010, Mvula Trust suggested that figures provided by the department of water affairs indicate that in April 2010 1.6-million people in South Africa did not have access to any formal water supply. However, because these figures are based on expenditure on water infrastructure, the actual backlog may be significantly higher given that water supply in rural areas faces major challenges in terms of operation and maintenance and many villages counted as served, no longer have a functional supply.

In South Africa, it is estimated that about 10.5 million people do not have access to proper sanitation facilities, of which 2.15 million people live in the Limpopo Province (Sibiya, Gumbo, 2013). In 1994 the state had through the Reconstruction and Development Programme (RDP) the government established Presidential lead projects for rapid water delivery to rural areas. Under Asmal's leadership, Department of Water Affairs (DWA) launched about 350 priority rural water projects linked to private consortia (Greenberg 2005). In Limpopo, Metsico was contracted to build water infrastructure in rural areas. These Build, operate, Train, Transfer (BOTT) projects, once completed were to be handed over to the local government but many were reluctant to take on these projects because they had no budgets to maintain them and residents were unwilling to pay for water use and councils unwilling to recover costs from users (Greenberg 2005).

The literature on rural water for the poor tends to be dominated by a "community-based approach" which is favoured whereby the poor are expected to participate in managing their own water, even if government plays a role (Mvula Trust 2010, Karuaihe et al. 2012). Often overlooked is the definition of rural itself and the historical specificity of rural in the context

of Bantustans and forced relocation in SA – in the mid-1990s some 55% of all rural people live in former Bantustans (Greenberg 2005). About 15% of rural people live in small towns and the rest on farms (ibid.). By 2016 however, the rural population had significantly decreased to around 35% of the SA total population (UN, 2016). However, children tend to be more concentrated in rural areas. According to a UCT study, “A consistent pattern over the years is that children are more likely than adults to live in rural areas: In 2017, 69% of the adult population was urban, compared with 57% of children.” (Children’s Institute, <http://childrencount.uct.ac.za/indicator.php?domain=3&indicator=13>). Children are more vulnerable to waterborne diseases. However, given declining rural populations, it remains a paradox that rural services have worsened over time.

2.2 Conceptual framework

The theory of sustainable rural livelihoods is used in this study because it provides an analytical tool which determines the development issues and the water problem and gives direction to the study. It is used to conceptually frame water and sanitation and organise ideas on how the rural community’s livelihood are affected. Scoones (2009), states that rural livelihood perceptions are developed in different community households, times and localities. Moreover, livelihoods connect with social differentiation, demography, climate, politics and natural, economic, human, social capitals in their household. These frameworks, attempt to assess strategies, institutions, resources and trends for a community’s livelihood outcomes in accessing water and sanitation.

Sinyolo et al. (2014), concur with Dunker (2015), that South Africa depends on mixtures of livelihood resources like social grants, agricultural resources, financial resources and policies to sustain rural household water and food security needs. Dunker (2015) argued that household provision is based on mixtures and myriad levels of basic services for water usages to communities as their objective and values. Water scarcity as a life-threatening condition also influences water insecurity due to its natural resources, .i.e. for household hygiene. Sinyolo et al. (2014) emphasise that both food and water security are linked and should be provided and funded at national and local levels.

A household can do well under favourable climatic conditions and then breakdown during climate change when depending particularly on natural resources, for example, a girl child being absent from school while having to walk further for collecting water (Hemson, 2015). Moreover, Sinyolo et al. (2014), in their findings stated that gender is important: households, headed by females, and are more vulnerable to food insecurity than those headed by males. The figure below captures the elements and dynamics of a sustainable livelihood thinking.

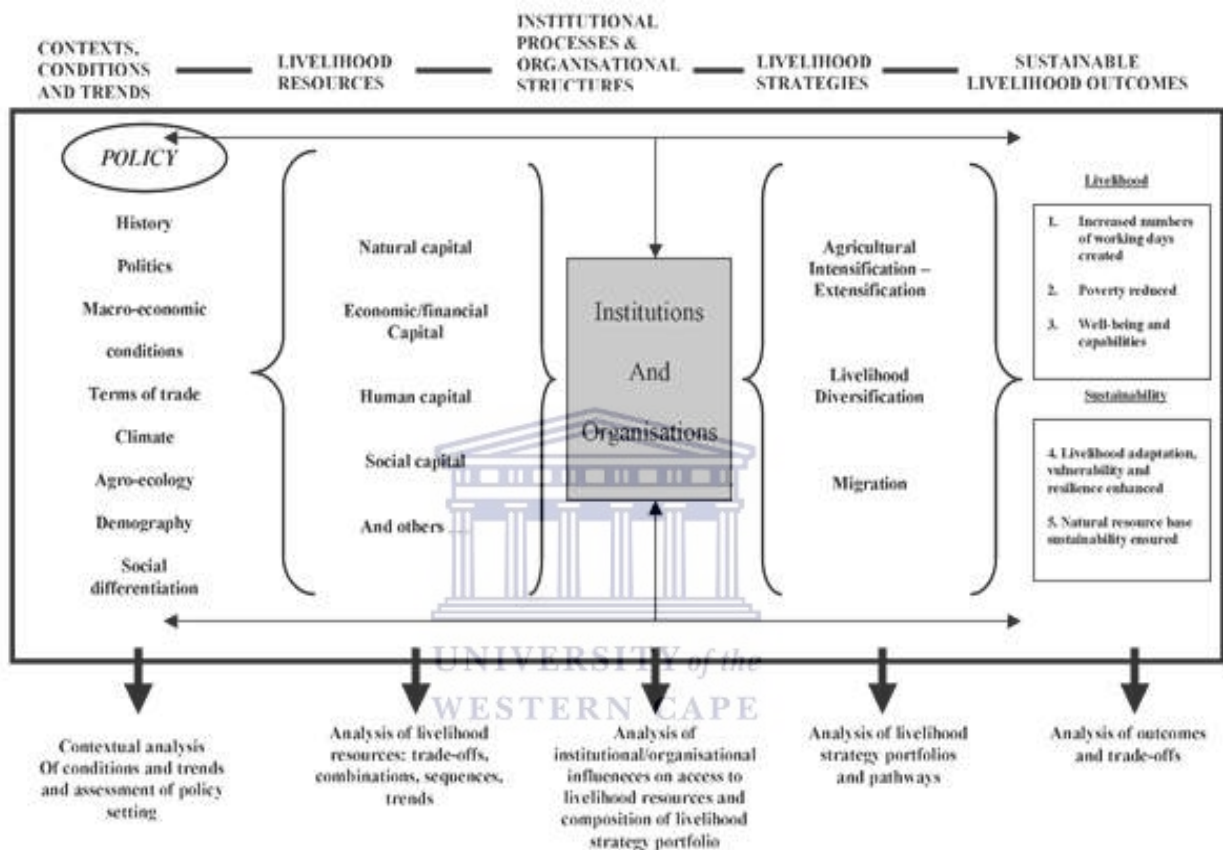


Figure 2.1 Sustainable Rural Livelihoods Framework

Source: Scoones (2015)

Livelihoods refer to a “complex web of activities and interactions that emphasises the diversity of ways people make a living, in reality, people combine different activities in a complex bricolage or portfolio of activities” (Scoones 2009). Scoones (2009) argues that “politics and power” (should) be put at the heart of livelihoods perspectives? Much livelihood analysis centres on the basic question of how different people gain access to assets for the pursuit of livelihoods”. Along these lines, safe water access is connected to food security and livelihood

(Sinyolo et al. 2014 and Rodda, 2016). Hemson (2015), notes all household hygienic aspects like bathing, washing, cooking and dishwashing are affected due to food and water scarcities.

The security of water is linked to its reliability, quantity and safety. Recent research shows that quality is increasingly suspect. An assessment of microbial and physicochemical qualities of borehole water in the rural environs of Mahikeng town, South Africa, revealed that, the detection of *Escherichia coli*, *Salmonella* and *Klebsiella* species in borehole water that was intended for human consumption suggests that water from these sources may *pose severe health risks* to consumers and is unsuitable for direct human consumption without treatment. The study recommended onsite treatment “to protect the households from further possible consequences of using the water” (Palameni et al. 2015).

A sustainable rural livelihood framework involves a wide-ranging process analysing perceptions on households and individuals’ dynamic sustainability. Moreover, trying to determine the water and sanitation chain (Figure 2.2) within rural households for sustainability cannot be achieved alone without connecting other livelihood resources and developments within water security and food security sector. Hemson (2016), found that providing additional infrastructure on sustainable sanitation could improve existing water sources to rural households (Hemson, 2015). Beyers (2015), indicated that the provision of basic services is constrained by “two critical obstacles”, i.e. poor public infrastructure and the increase of informal settlements caused by economic migration to urban areas as people seek for basic services equality, sustained life and reduction of poverty trap for their household livelihoods. The provision of water in rural communities remains the main concern (Edokpayi et al. 2018) followed by illegal connections (Maake and Holthauzen, 2015; Rodda et al. 2016).

According to Edokpayi et al. (2018), an estimated population of 2.11 million in South Africa lack access to safe water infrastructure, which includes some in the communities around the Mutale and Nandoni rivers in the Vhembe District (Traore et al. 2016; Gumbo et al., 2016) that consume unhygienic water for their domestic usage let alone having proper waste disposal. Hemson (2016) argued that the majority rely on state-owned borehole water. The typical systems consist of piped water with public standpipes, mostly fed by groundwater. Overall, it can be concluded that the performance of the systems, although relatively new, is poor.

In most villages, the capacity of the installed infrastructure is sufficient, although storage volume is too small in some villages. The continuity of the water supply is endangered by disputes about payment of diesel for the pump and maintenance and repair of the pump. Finally, the condition is poor mostly due to taps at the standpipes which are damaged and require frequent replacement (Rietveld et al 2009).

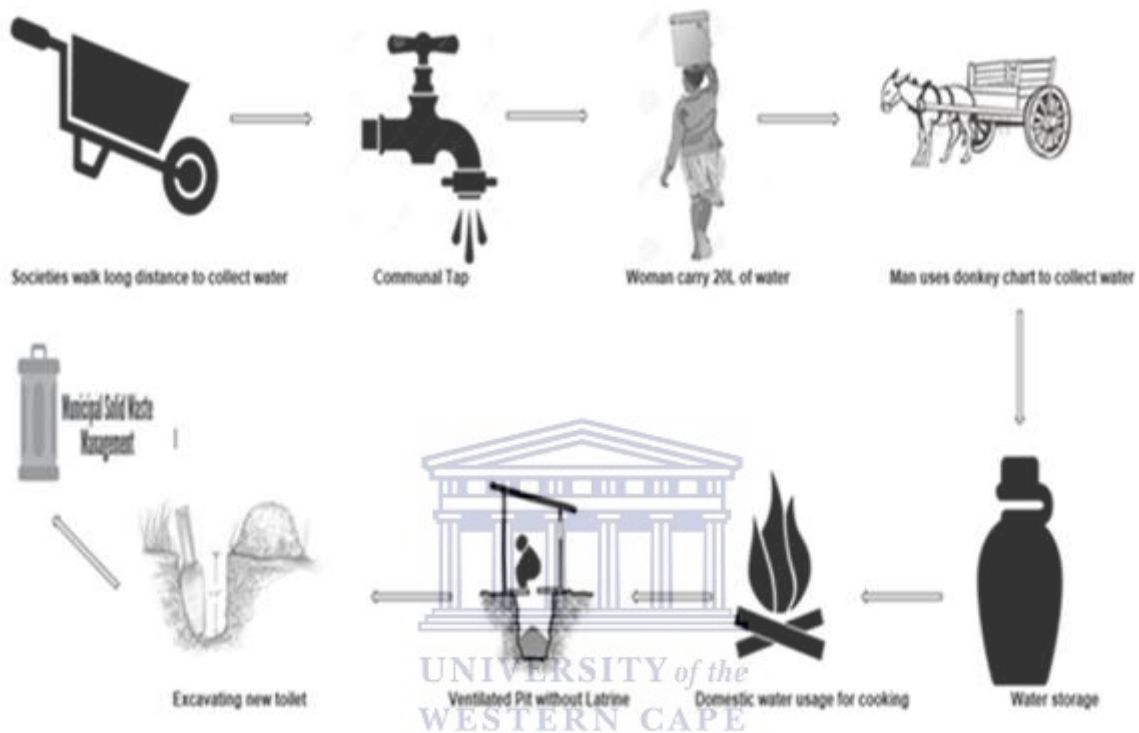


Figure 2.2: Water and Sanitation Chain

Source: Authors representation, 2017

Nel et al. (2017) identified types of accessing water such as a borehole, rainwater harvesting, irrigation channels, municipal piped supply and river water. Customarily, women in rural communities normally carry river water on top of their head daily whereas others use wheelbarrows and donkey carts to carry out their household tasks. Communities normally store their water inside buckets, jojo tanks, scoops and traditional clay pots to avoid contamination. Hemson (2015), showed that recontamination of unclean containers and untreated water influences the final quality of household drinking water during storages.

The storage and consequently the time it takes to fill up a container can also have an impact on the quality of collected water. Illegal connections and lack of hygiene education amongst communities add to the precariousness of water systems.

District municipalities (Category C) are made up of a several smaller local municipalities (Category B). Each district municipality is sub-divided according to whether it is a Water Service Authority or not. Beyers (2015), argues that many rural municipalities including the Capricorn District Municipality fall below the prescribed standards. These minimum standards are assessed in the quantified standard of the Reconstruction Development Programme (RDP) which specifies the provision of 25 litres of water per person per day and adequate sanitation as the Ventilated Improved Pit toilet (VIP). Household water sources (HWS) cannot be simply distinguished from the productive usage in rural communities

2.2.1 Technical aspects of water and sanitation provision systems in rural communities in South Africa and the role of the municipality in water service provision management system

The role of local municipalities in the provision of water in South Africa is a multi-fold task. Slinger et al. (2011) argue that water management systems in South Africa are complicated as it comprises technical, environmental, social and economic mechanisms. Meissner (2013) argues that even though water management is a multifaceted task, it is required to realise the interlinkages of various actors in the water sector hierarchy.

These intentions are endorsed in the Constitution of the Republic of South Africa Act 108 of 1996, Section 152 (1) stated that local government must “ensure the provision of services to communities in a sustainable manner”. Maake and Holtzhausen (2015); Madigele (2017); Duncker, (2015); Hemson (2016), argue that ensuring sustainable services to the communities, is one of the major challenges in rural municipalities by providing effective and efficient of clean drinking water and basic sanitation. Rural municipalities have a historical drive of incompetency with regard to basic services provision.

The allocation of water to municipalities is controlled by the Department of Water and Sanitation (DWS) as the custodian of South Africa's water resources, with the primary

responsibility of formulating and implementing the governing policy of the water sector. South African still lacks access to provision of basic water and sanitation, as endorsed by its Constitution, to all its constituents including the Limpopo Province where they are tremendously affected (Edokpayi et al. 2018, Hemson, 2015 and Hemson 2016).

Moreover, Madigele (2017) and Duncker (2015) agree that the country water sectors are currently facing numerous challenges, which are connected to policy and legislation and most rural communities are not enjoying such privileges as water remain the watchdog. As such, it is important to take into consideration the complexity that exists in water services provision, to understand legislation relating to the provision of water, within the jurisdiction of the local municipalities which are, but not limited to policy gaps, legitimate implications of service provision, uncontrolled water authorities and lack of internal and external amalgamation. Table 00 depicts the planned policy and legislation on basic water services provision in South Africa.

Table 2.1: Planned policy and legislation on basic water service provision in South Africa

Policy/Legislation	Main Theme	Key issues addressed	Reference
Water Supply and Sanitation Policy (White Paper)	Provision of safe water services to the community	Access, affordable, availability and provision of potable water	Department of Water Affairs, 1994
SA Constitution Act (108 of 1996)	Bill of rights	Right to safe water	SA Constitution Act 108, of 1996
Water Services Act (108 of 1997)	Provision of water services by WSA's	Water service in relation to drinking water provided by the municipalities.	SA Water Services Act 108 of 1997
National Water Act (36 of 1998)	Water Regulation	Water regulation in relation to protection, use, management, conservation and control	National Water Act, 1998
Municipal Structures Act (117 of 1998)	Powers and functions of District Municipalities	Water, sanitation and municipal functions aiming at prevention of communicable diseases	Municipal Structures Act, 1996
Free basic water implementation strategy	Free basic water service regulation	Free basic water provided to the poor	Department of Water Affairs, 2002
Drinking water regulation strategy	Provision of safe water	Monitor, manage, communicate on water service delivery and regulate water quality	Department of Water Affairs, 2005

SA drinking water quality management performance 'Blue Drop'	Sustainable provision of safe water by WSA's	WSA adhere to safe water standard SANS 241 to ensure provision of safe water to the community	Department of Water Affairs, 2009
National Water Services Regulation Strategy	Regulating national water services	Protecting the interest of the consumer and public through effective regulation of water supply and sanitation services	Department of Water Affairs, 2010

The state suggests quantities free water should be provided to the communities. These minimum standards are assessed in the quantified standard of the Reconstruction Development Programme (RDP), which specifies that 25 litres (ℓ) of water must be available daily to everyone within 200 metre (*m*) at a flow ratio of 10 litres (ℓ) per minute.

Sullivan et al. (2011) note that water provision projects in numerous local governments are obstructed because of understaffing and lack of technical skills and qualifications in relevant departments. Edokpayi et al. (2018); Maake and Holthauzen, (2015); (Rodda et al. 2016), indicated that the provision of water in rural communities remains a huge concern which impacts communities to connect illegal water to their households. Therefore, given rural municipalities as the benchmark and the widespread challenges facing many South African communities in terms of water service provision, it is questionable whether local municipalities adhere to policy implementation in this regard.

2.2.2 The mechanisms used for water and sanitation provision in rural South Africa

The South African government has numerous mechanisms in place for the provision of water in rural communities, despite countless communities which do not have access to clean drinking water. Water supply refers the provision of water by the government, private sectors, and community development workers or by individuals, usually via a system of pumps and pipes ("UNICEF2010", "WHO 2012"). Of all municipal services, provision of potable water is perhaps the most vital. Nel et al. (2013) indicated that South Africa currently is using 98% of surface water, which comes from sources like lakes, rivers and oceans.

Mpenyana-Monyatsi et al. (2012), stated that groundwater is an important natural source of drinking water for household purposes in numerous rural municipalities. Its vitality has been observed when societies access unimproved drinking water from unprotected dug wells, rivers, dams and tanker trucks for their household usage. Rural communities are solely dependent on groundwater for their water supply, which is critical to their livelihood, health and dignity as they reside in close proximity to domestic animals. Improving water services and uses in developing countries is essential for increasing hygiene and sanitation services that affect the productive lives of people, and easing the burden and drudgery of those who have to collect water from far and unsafe sources such as rural communities.

Sibiya and Gumbo, (2013) reported that in South Africa, it is estimated that over 5 million people do not have access to clean drinking water. Nel et al. (2017), identified several types of household water sources related to a community's daily use which includes accessing water but not limited to borehole piped water, communal tap, rainwater, irrigation channels and greywater. Greywater is usually beneficial for both domestic animals and societies as it is produced from household dishwashers, flush toilets and municipal wastewater. Nel et al. (2017), asserts that the country's regulation is unknowledgeable about household water sources usages of greywater, which can affect health and environmental threats if not preserved carefully, yet is considered beneficial as a pesticide for agriculture crops in the absence of fertilisers.

South Africa grounded its policy on water in the *White Paper on Water and Sanitation 1994*, as 'tap' water, with its accessibility and average time related to provision. The benefit of tap water compared to borehole is that the former should provide higher uncontaminated water as purification is achieved and reduces some waterborne related diseases. Hemson, (2015) and Hemson (2016) asserted that vulnerable rural communities are distressed due to waterborne related diseases such as cholera due to water contamination. Improving water services and uses in rural communities is essential for increasing hygiene and sanitation services that affect the productive lives of people, and easing the burden and labour of those who have to collect water from far and unsafe sources. Such improvements enhance the ability of women, as the main actors in household water supply, to live in dignity.

Edokpyi (2018), found that unreachable access to water has resulted in weakening the quality of drinking water and the longer duration of water stored in the household might increase contamination in rural communities where women normally carry water on top of their heads, daily while other people (men) use wheelbarrows and donkey carts to carry out their household tasks. Communities normally store their water in buckets, 'jojo' containers, scoops and traditional clay pots to avoid contamination. Hemson (2015), asserts that re-contamination of unclean containers and untreated water influence the quality of household drinking water during storage. The storage and consequently the time it takes to fill a container can also have an impact on the quality of collected water as well as illegal connections and lack of hygiene education amongst members of the communities.

2.2.3 Quality of supply mechanism of water in rural South Africa

The quality of supply of water to South African communities should be within accepted standards, in which the efficient and affordable provision of reliable services promote a sound health-related quality (potable) that is physically obtainable with appropriate technology (e.g. tap). It must also be within a reasonable distance from the household (accessible), while being constantly obtainable at the source in quantities sufficient for daily household demand for domestic use, including personal hygiene (available)

Duncker (2015), asserts that the water quality must be adequate and safe without bacterial contamination for it to reach a suitable level of ensuring that health-related diseases amongst the communities are reduced. Inadequate water quality could expose and endanger the health of rural communities as everybody depends on clean water for survival.

Edokpyi (2018), asserts that safe drinking water is vital for the human condition, which in its availability can reduce the burden of waterborne diseases amongst community members. Thus, it is necessary to ensure that bulk water services are treated and purified according to SANS 241 which is aligned to the World Health Organisations guidelines for drinking water before it is made accessible to communities. The term 'water quality' refers to the physical, chemical and biological characteristics of water. The standard that drinking water must achieve the South African National Standard (SANS) 241: 2015. This standard prescribes minimum determinants to be monitored, the acceptable limits and the periods for monitoring. Water samples must be

taken and sent to a recognised laboratory to see if it complies with SANS 241: 2015 requirements. It is also vital to note that borehole water may be contaminated by seepages into the groundwater from various human sources.

Howard et al. (2003), specified that since the quality of water within households is regulated, it is vital to determine the distance and time of collection to comply with international standard. The assessed quantity may, however, reduce where water provision are intermittent and thus reducing the risk of ingress of contaminated water provision in domestic water. Table 2.2, shows four service levels of descriptors of water relative to hygiene in which households should relate to the provision of drinking water.

Table 2.2: Services levels of descriptors of water in relative to hygiene

Service level description	Distance/time measure	Likely quantities collected	Level of health concern
No access	More than 200m or 30 minutes total collection time.	Very low (often less than 5l/c/d)	Very high as hygiene not assured and consumption needs may be at risk. Quality difficult to assure; emphasis on effective use and water handling hygiene.
Basic access	Between 100 and 200m (9 to 30 minutes total collection time).	Low. Average is unlikely to exceed 20l/c/d; laundry and/or bathing may occur at water source with additional volumes of water.	Medium. Not all requirements may be met. Quality difficult to assure.
Intermediate access	On-plot, (e.g single tap in house or yard)	Medium, likely to be around 50l/c/d, higher volumes unlikely as energy requirements still significant.	Low. Most basic hygiene and consumption needs met. Bathing and laundry possible frequency of laundering. Issues of effective use still important. Quality more readily assured.
Optimal access	Water is piped into the house through multiple taps.	Varies significantly but likely above 1/c/d and may be up to 300l/c/d.	Very low. All uses can be met, quality readily assured.

Source: RDP, 1994; Howard 2003

Howard et al. (2003), stated that all these four levels of accessing water can be related to household water security. Hemson (2015), concurs with Howard et al. (2003), that all household hygienic aspects like bathing, washing, cooking and dishwashing are affected by food and water security. Monitoring and assessing water can also be extended to cover its physical, chemical and biological appearances. It is vital to consider biological contamination as a priority in the province to ensure that communities are provided with clean and safe drinking water, more especially those in rural areas. From that perspective, it is critical to understand local shortfalls in assessing the quality of instruments, quality of services and quality of water, as this will be beneficial in aligning water quality with the Integrated Development Plans (IDPs) to be conducted on a regular basis in order to assess risks of contamination. Several researchers Hemson (2016); Hemson (2015); Wutich et al. (2017) and Duncker (2015) conducted studies which have recommended that government review the regulated quantified 25 litres to 50 litres in view of its inadequacy to meet basic provisions.

2.3 Environmental factors affecting water accessibility in rural communities in South Africa

2.3.1 Climate change impact

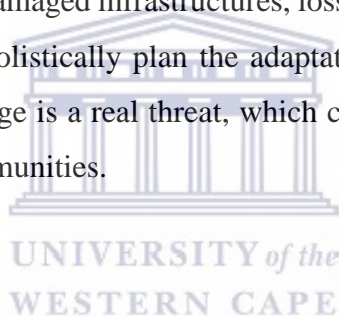


Climate change is the elevation of temperature and unpredictable rainfall patterns and increased drought and floods (Rankoana, 2016 and Hemson, 2016). This points to the fact that water accessibility also depends on prevailing climatic conditions. The household's accessibility to domestic water usage becomes vulnerable during these conditions which causes other social impact for communities accessing social grants, public infrastructures, community *imbizos*, traditional fruits, vegetables, brewing of traditional beer, production of traditional crops and livestock, communal labour and hunting, to mention a few.

Kanjere et al. (2014), complement a comparative point in which water scarcity can occur at any level of provision due to drought and climate change, high population, economic development (or lack thereof), pollution and boreholes. The results of poor borehole quality can affect societal health which can cause contamination from landfills, waste pits and dumps, both in the shorter and longer period.

In 2010-2011, communities at the local municipalities in the Vhembe District, especially Thulamela municipality, experienced the most destructive floods, estimated to have caused 500 million South African Rand (ZAR) in damaged infrastructure, which includes houses and schools (Musyoki et al. 2015). Moreover, there is a linkage of water scarcity and climate with the Letaba Water Catchment and Muyexe rural community in the Limpopo Province, on how water is provided to their communities. Kanjere et al. (2014) concur that increasing climate change needs a greater effective practical solution for well-trained managers and technical staff to ensure equity and accessibility to potable water as climate change distresses the Letaba catchment, households and businesses.

Lethoko (2016), agrees that Intergovernmental Panel on Climate Change (IPCC) should be embedded within the Integrated Development Plans (IDPs) of the Greater Giyani, Greater Letaba, Aganang, Thulamela, Elias Motswaledi, and Ephraim Mogale including Lepelle Nkumpi Municipality, in order to decrease flooding resulting in the loss of community members, livelihood assets and damaged infrastructures, loss of crops, contaminated or limited water provisions as well as to holistically plan the adaptation and the modification of such impacts. Therefore, climate change is a real threat, which complicates the provision of water and basic sanitation in rural communities.



2.3.2 Drought impact

In the literature, drought can be defined as a sustained period of hydro-meteorological actions affecting massive areas of provinces and the societal impact is tremendous (Alemaw et al. 2014 and Trambauer et al. 2014). The Limpopo Province has been declared as a drought province, because from time to time it experiences drought (Maponya et al. 2012 and Lethoko, 2016). In Alemaw et al.'s (2014) view, there are two different types of drought, which are environmental and water resource indicators. Therefore, it is important to reflect water resource indicators as it impacts the household, agricultural usages, water provision, borehole, abstractions and surface water drought.

These water resources impact Thulamela municipality due to the drought and floods (Musyoki et al. 2015) including the *Lepelle Nkumpi Local Municipality* especially in the low lying areas (IDP 2016-2021). Basically, hazardous floods derive from the Limpopo basin which has been

reported to be one of the most water-stressed basins in the African continent, with livelihood challenges and drought affecting neighbouring communities (Alemaw et al. 2014 and Trambauer et al. 2014). Rankoana (2016) and Lethoko (2016), concur that the worst drought and water scarcity are common challenges, which disturb local communities in the Limpopo Province, including the Mamone rural community in the Greater Sekhukhune District Municipality. Mpandeli et al. (2015) assert that the impact of water resource indicators affects agricultural drought which also affects the provision of water let alone sanitation that needs to be cautiously considered. Figure 2.3 depicts the worst drought results from 1926, 1930, 1932, 1962, 1975, 1986, 1992, 2006 to 2012 in the Limpopo Province (Mpandeli et al. 2015).

6-month SPI by March

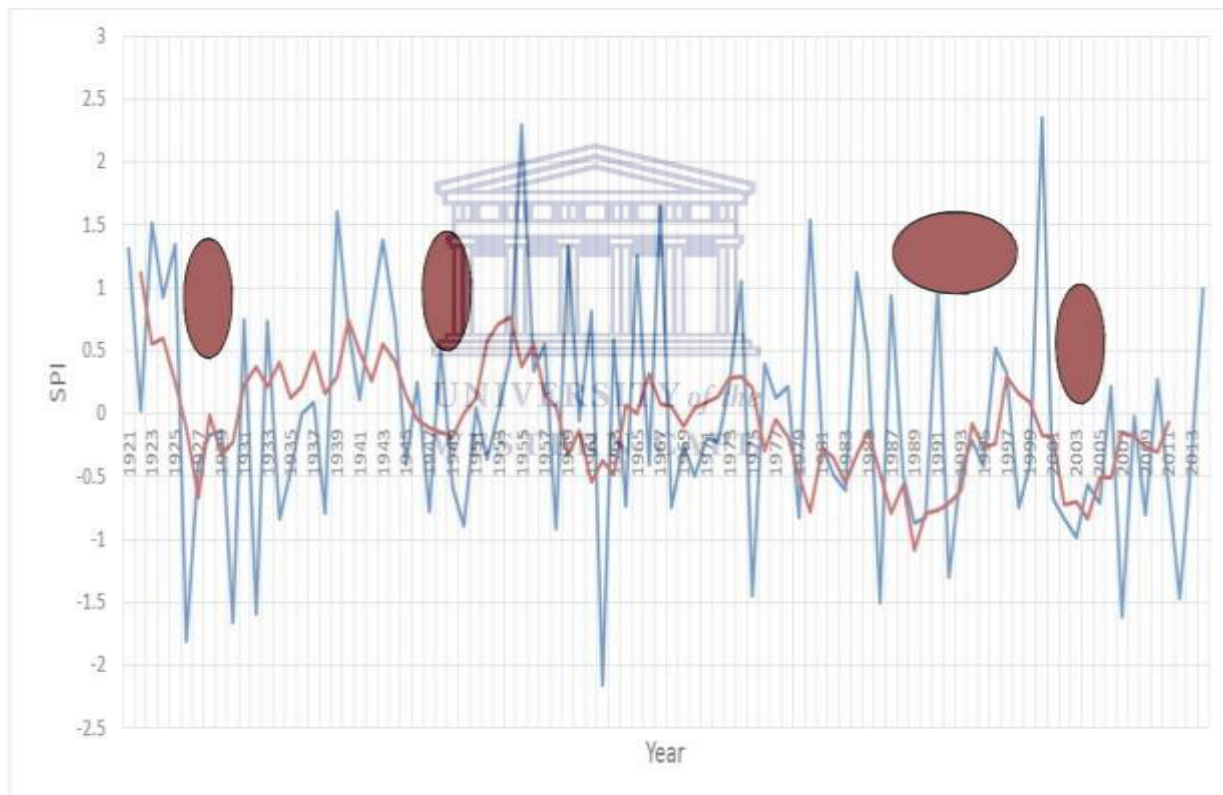


Figure 2.3: The 6 month Surface Rainfall Index (SPI) for the Greater Sekhukhune district in Limpopo Province from 1926-2012

Source: Mpandeli et al. (2015:120)

2.4 Socio-economic factors affecting water accessibility in rural communities in South Africa

2.4.1 Prevalence of poverty in rural communities in South Africa

Swanepoel and de Beer (2016), assert that mass poverty could be described as a situation in which community members, individuals, societies, or large members of a family are trapped in poverty. Since 1994 to date, many rural municipalities in South Africa, including the *Lepelle Nkumpi Local Municipality* have not complied with the public policies pertaining to the provision of basic services while the poverty level continues to rise (Beyers, 2015). Poverty, starvation and food insecurity have been mirrored for decades as the chronic drivers of livelihoods in rural areas and rural municipalities of the Limpopo Province (Beyers, 2015; Kapila, 2014; Mpandeli et al., 2015; Rankoana, 2016). Dunker (2015) and Madigele (2010), reported that access to the provision of water services should be equitable regardless of gender, wealth or locality for the improvement of sustainable livelihood and economic growth for poverty reduction.

Hemson (2016), reported that for poverty reduction, rural local governments should be improved to merge with the implanted policy for the creation of employment, use of local resources, nutritional health improvement and skills development for sustainable livelihoods. Moreover, policies have been implemented in the water sector for the provision of services, whereas backlogs hamper the objectives projected for service provision, which include but are not limited to policy gaps, legitimate implications of service provision, uncontrolled water authorities and lack of internal and external amalgamation (Madigele, 2017 and Rodda et al. 2016). Because water services are economical and affordable, societies are required to pay for services rendered. This has had a negative result due to incompetence, failure by contractors and by-laws which compel poor rural communities to access illegal water to sustain their livelihood. The Water Services Development Plan intends to assist the water services authorities by encouraging women's participation in every community meeting as its primary objective to reduce poverty and inequality for a sustainable household.

2.4.2 Challenges of rural communities in accessing water

Beyers (2015), indicates that the provision of basic services is constrained by two critical obstacles, i.e. poor public infrastructure and the increase of informal settlements caused by economic migration to urban areas as people seek basic service equality, sustained life and reduction of the poverty trap for their household livelihood. Communities feel distressed by the lack of basic needs concerning potable water, hygienic sanitation, tarred roads, public hospitals and schools, as well as electricity both inside households and public street lighting, which also relies on public infrastructure. The provision of water in rural communities remains the main concern (Edokpayi et al. 2018) followed by illegal connections (Maake and Holthauzen, 2015; Rodda et al. 2016). This generally affects water usage in households such as cooking, bathing, and other domestic needs, which leave communities with no other alternative than to look for another source of drinking water (Edokpayi et al. 2018).

According to Edokpayi et al. (2018), an estimated population of 2.11 million in South Africa lack access to safe water infrastructures, which includes some in the communities around the Mutale and Nandoni rivers in the Vhembe District (Traore et al. 2016; Gumbo et al. 2016) that consume unhygienic water for their domestic usage let alone have proper waste disposal. Hemson (2016) argues that dysfunctional infrastructure for marginalised and vulnerable groups in rural communities increases the demand and queries relating to their health and water scarcity as the majority rely on state-owned borehole water.

2.4.3 Rural communities sense of entitlement for service delivery

Rural community's entitlement in the provision of basic services has been assessed with different multidimensional approaches, our democratic government embraces the human rights principle enshrined in the *Constitution of the Republic of South Africa Act 108 of 1996*. Access to safe drinking water and basic sanitation are absolute key apparatuses of a healthy life for everybody that is characterised by pride and recognition of human rights. The South African government adopts a human right governance approach presented by the number of procedures to safeguard everyone's access to the primary level of services without obstacles (Mothetha et al. 2013).

Kidd (2017), indicated that inequalities originated from the riparian rights, which was primarily designed for white societies while black societies were marginalised and suffered in terms of access to the provision of water. Kidd (2017) and Madigele (2017) agree that the historical designs of accessing water in South Africa remained skewed especially due to white farmers continued landownership in the post-apartheid era, which originated from the Native Land Act of 1913. Section 27(1) (b) of the Bill of Rights states that “*everyone has the right to have access to sufficient water*”. Rodda et al. (2016) and Duncker (2015) agree that human rights should be dignified, affordable, sustainable and valuable to all societies accessing basic potable water for food or energy in sustaining their livelihoods. Moreover, the complexity and diverse legislation pertaining to the provision of basic sanitation limits the implementation of municipal strategies regarding the accessibility to basic sanitation as a human right.

2.4.4 Service delivery protest

In 1994, South Africa witnessed the birth of a new democratic government, with the African National Congress (ANC) as the ruling party. Ten years after democracy, there were rampant episodes of ‘service delivery protests’ countrywide (Tapela, 2012). Beyers (2015) asserts that South Africans have witnessed ongoing violent service delivery protests against the national, provincial and local governments in connection with basic service delivery issues, which includes, but is not limited to, water, sanitation, roads and electricity.

The protests have a local government angle, which can involve marches and lobbies to local authorities, and protest action can manifest as community unrest using both violent and peaceful means (for example barricading roads, stopping children from attending schools, damaging public properties, burning private and commercial properties and handing over memoranda of grievances.) These protests have allegedly been caused by lack of provision of basic services by government structures and communities use all forms of protest actions to express their dissatisfaction.

These service delivery protests are not related to unrest over jobs on a mine, dissatisfaction over schooling/university issues (unless school/university attendance was disrupted because of service delivery protest action) and other general economic-related matters. Major service delivery protests started in 2004 yet in 2006, it was reported that the Khutsong community in

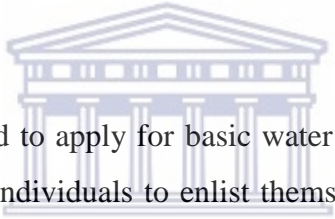
the North West province protested against the relocation of Merafong Municipality from Gauteng into the North West. Whereas in 2018, protests swept through the Limpopo Province against the promised improved water supply and tarred road. Table 2.3 presents an overview of service delivery and municipal demarcation protests across South Africa from 2006 to 2016 with the highest prevalence reported for Limpopo Province.

Table 2.3: Overview of major service delivery and municipal demarcation protests in major news sites: 2006 to 2016

Date/Month/Year	Province	Author	Reporting Institution	Article
		Topic	Reason	
15/02/2006	Northwest	Kenny Modise	Mail and Guardian	Article
		Khutsong residents stage mass demarcation protest	Municipal Demarcation protest	
18/05/2007	Northwest	Staff Reporter	Mail and Guardian	Article
		Khutsong women protest against demarcation	Municipal Demarcation protest	
27/11/2008	Gauteng	Mpho Kgafoane	Mail and Guardian	Article
		Lenasia service-delivery protest turns violent	Service delivery protest	
20/7/2009	Gauteng	Fienie Grobler	Mail and Guardian	Article
		Service-delivery protests a 'warning sign' for government	Service delivery protest	
30/7/2010	Kwazulu Natal	Vuyolwethu Gwala	Daily News	Article
		Women protest at poor service delivery	Service delivery protest	
14/6/2011	Limpopo	Esmie Ferreira	Mail and Guardian	Article
		Rise in police abuse at service delivery protests	Service delivery protest	
31/7/2012	Limpopo	Neil Baynes	IOL	Article
		One dead in Limpopo protest	Service delivery protest	
15/10/2013	Limpopo	Ntsako Khosa	eNCA	Article
		Buildings set alight as Limpopo protests turn violent	Service delivery protest	
03/7/2014	Limpopo	Frank Maponya	Press reader	Article

		Pale's killing Political hit	Service delivery protest	
11/1/2015	Limpopo	Matome Maila	Capricorn review	Article
		Motorist attacked in service delivery protest	Service delivery protest	
04/5/2016	Limpopo	Zoe Mahope	Sowetan	Article
		Limpopo residents protest against new municipality	Municipal Demarcation protest	
19/3/2017	Northwest	Poloko Tau	News24	Article
		North West violent protest shut down Botswana border	Service delivery protest	
31/1/2018	Limpopo	Jabulani Baloi	SABC News	Article
		Service delivery protests sweep Limpopo	Service delivery protest	

2.4.5 Gender and water



Indigent communities are allowed to apply for basic water to alleviate their poverty. These policies require underprivileged individuals to enlist themselves with their municipalities as indigents. According to Duncker (2015), the definition of 'an indigent individual' differs from one municipality department to another when it comes to the provision of services to communities, such as drinking water quantified to the provision of 25 litres per person per day.

In rural communities, women tend to be discriminated against and are compelled to spend much of their time each day collecting water for their households. They are also expected to cook, feed their children and perform other domestic chores and therefore they suffer more from the lack of water and food security. Kanjere (2014) and Hellum et al. (2015) assert that gender discrimination similarly occurs in the provision of water. Therefore, gender discrimination may also be linked to water security, food security, and trapped poverty amongst indigent women in rural communities. The appalling situation also seriously affects the girl child, especially during puberty and after when she needs regular access to water and proper sanitation for personal hygiene during menstruation.

2.5 Conclusion

The literature reviewed above supports the view that rural areas and rural municipalities are among the most vulnerable and have at-risk populations. The literature reviewed above supports a need for a re-examination of significant problems in the current public policy on water and sanitation, towards developing a dependable and feasible service provision in South Africa, especially in municipalities where provision was assigned. Hemson (2016) pleaded with the government to review water and sanitation policies and increase the quantified 25 litres of mandatory water provision to 50 litres, as it is currently inadequate to meet basic provisions, to ensure its constituencies' sustainability and to reduce backlogs. However, to what extent can it be said that the government has met its objectives for sustainable rural livelihoods regarding the implementation of water and sanitation policy? Is it satisfactory? Therefore, it is hoped that the findings of this research will address such issues. Chapter three discusses the methodology applied in this research in order to achieve the objectives of the study.



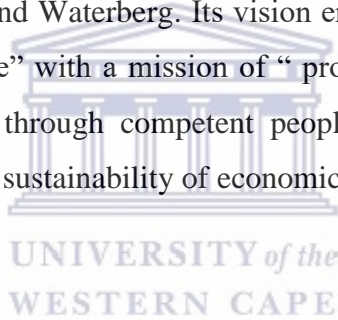
3 CHAPTER THREE: CASE STUDY DESCRIPTION

3.1 Introduction

The objective of this chapter is to present the geographical, infrastructural and social background to the municipal area. It consists of three divisions. First, it attempts to outline the research background by describing the research locality connecting from the supply level (district municipality) to the provision level (local) and finally to the consumers (communities).

3.1.1 Capricorn District municipality

The Capricorn District Municipality (CDM) lies at the centre of the Limpopo Province in the north of South Africa. It comprises of the third largest district economy in the province. The municipality is a gateway to Botswana, Zimbabwe and Mozambique. The district area is 21 705km² and includes Polokwane city, sharing borders with four district municipalities namely; Mopani, Sekhukhune, Vhembe and Waterberg. Its vision embraces, “the home of excellence and opportunities for a better life” with a mission of “providing quality services, in a cost effective and efficient manner, through competent people, partnerships, information and knowledge management creating sustainability of economic development in the interest of all stakeholders” (CDM website).



The District Municipality serves as the water services authority. According to the *Water Services Act 108 of 1997*, water services authority is defined as any municipality responsible for ensuring access to water services in the Act which may perform the functions of a Water Service Provider, and may also form a joint venture with another water services institution to provide water services. Figure 3.1 below depicts the map of Capricorn District Municipality

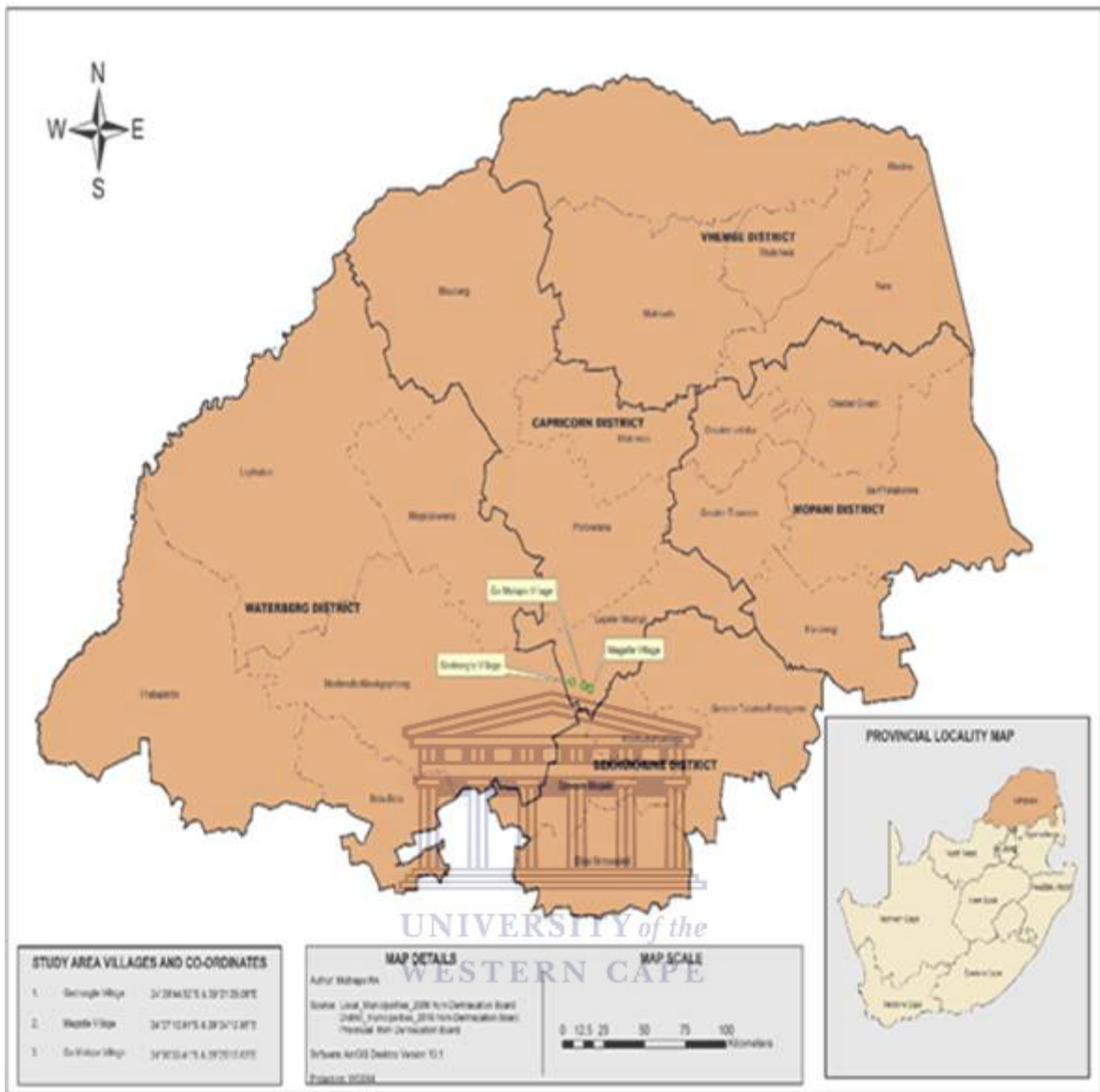


Figure 3.1: Map of Limpopo Province and Capricorn District Municipality

Source: ArcGIS version 10.1.

3.1.2 Lepelle Nkumpi Local Municipality

The name results from two rivers, namely the Lepelle and Nkumpi rivers in which Lepelle river becomes the largest, and 95% of its land is in the hands of Traditional Authorities (Appendix 2). *Lepelle Nkumpi Local Municipality* (LNLM) in the rural Limpopo Province is situated in close proximity to Lebowakgomo the capital of the former Lebowa Bantustan Government and there are several government buildings.

Lepele Nkumpi has about 235 000 residents spread over a wide area so that the density is 67 persons per square kilometre (Community Survey 2016). In the 2016 municipal elections, 66% voted ANC and 24% for the EFF with only 4% supporting the DA. It is 100% black African with 97% of residents born in SA (Community Survey 2016).

The *Lepelle Nkumpi Local Municipality* is the second largest municipality in the Capricorn District which comprises four local municipalities namely, Blouberg, Lepelle Nkumpi, Molemole and Polokwane. The *Lepelle Nkumpi Local Municipality* is a grant dependent municipality consisting of 30 wards with an average of 8000 residents in each ward. Total revenue including grants equals R447.9m for the 2016/2017 financial years. Total grants equal to R259.5m. The budget indicates that the municipality is grant dependent with the highest contributor is income received from National Treasury for Grants and Subsidies at 58.21% for the 2016/2017 (IDP: 2016/2021).



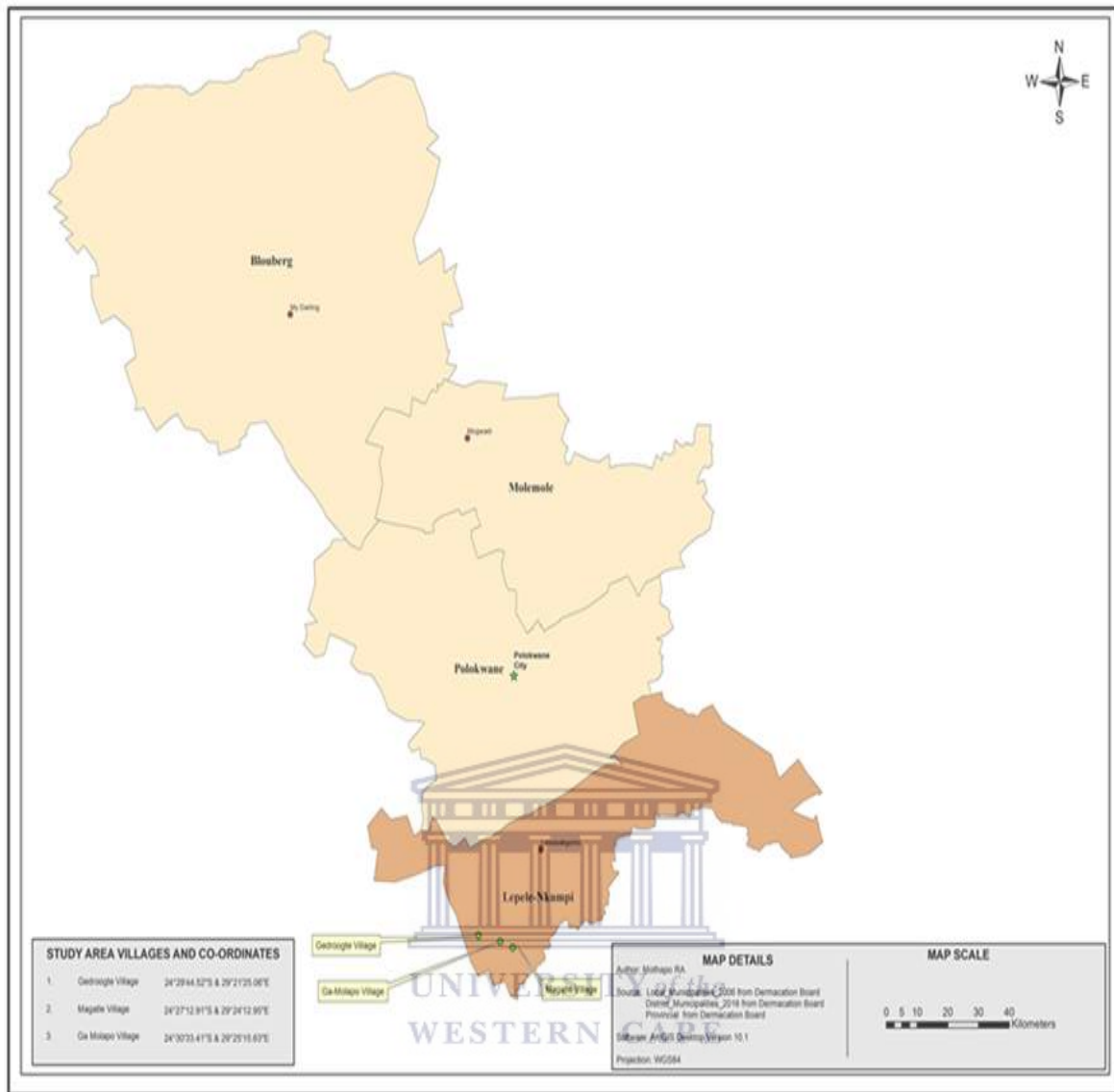


Figure 3.2: Map of Capricorn and Gedroogte, Ga Molapo and Magatle rural communities in the South

Source: ArcGIS version 10.1.

Moreover, in the middle of the 93 settlements, there is one urban settlement named Lebowakgomo and 92 rural settlements shared with 95% of land which falls under the jurisdiction of the Traditional Authorities. These settlements are clustered in five (5) categories of communities. First Order Settlements (Growth Points) with Lebowakgomo as a District Growth Point (DGP) and Magatle as a Municipal Growth Point (MGP), 2nd Order Settlement Population Concentration Points (PCP) as Ga Molapo, 3rd Order Settlement, Local Service Point (LSP) Mathibela and 4th Order Settlements, Village Service Area (VSA) Bydrift and 5th Order Settlements, Remaining Small Settlements (SS) as Mantikane (IDP: 2016/2021).The

Capricorn District Municipality (CDM) was charged with water services in the *Lepelle Nkumpi Local Municipality (LNLM)* for their rural communities including the Gedroogte, Ga Molapo and Magatle “deep” rural communities where populations are especially thinly spread at less than 20 persons per square kilometre.

Basic services provision is a district function but the *Lepelle Nkumpi Local Municipality* through an agreement with the district is a water services provider for the township areas. The great concern according to LNLM for the municipality remains “the non-payment of services by consumers, especially residential households. This leads to postponement of service delivery programmes that this money should have funded which could have improved the accounting systems and procedures to be GRAP compliant”. (LNLM, Newsletter 2015). Water still a serious issue in Ward 4 and “there are two dams in the area but it is not understood why water is not accessed there” (LNLM IDP 2016).

The climate of the *Lepelle Nkumpi Local Municipality* can be described as a humid subtropical with hot and humid summers and mild to chilly winters. Rainfall is unstable and unevenly spread in space with only 12% of the land area causing 50% of stream flows. The maximum rainfall is observed in summer and minimum in winter and spring is often without rain.

The communities receive their bulk pipeline water from Flag Boshielo and Olifantspoort Dam, which experienced a reduction in raw water due to drought and a dry winter season in 2016. On 26 July 2016, the CDM received a warning from the Department of Water and Sanitation about the reduction of raw water to both Olifantspoort and Flag Boshielo Water Schemes.

Moreover, this would result in the reduction of supply of potable water to the *Lepelle Nkumpi Local Municipality* communities including the Gedroogte, Ga Molapo and Magatle rural communities. Hence, the CDM requested members of the communities around the *Lepelle Nkumpi Local Municipality* to start using water economically and carefully for their household needs and livelihoods. The CDM conducted a community awareness campaign in 67 communities. (CDM: 2013/2014).

Lepelle Nkumpi Local Municipality vision embraces “a financially viable municipality, geared towards the improvement of the quality of life of the people by providing sustainable services”

with a mission of “effectively providing quality services and thus make a significant contribution to social and economic development of the community”. However, the municipality is facing poor road conditions, lack of technical and engineering skills capacity, a huge service delivery backlog with water below RDP standard to support 14501 (24%) households and sanitation below standard to support 29827 (50%) households

Table 3.1 describes the demographic profile of the *Lepelle Nkumpi Local Municipality*, into which the provision is distributed to the communities according to the municipal Integrated Development Plan 2016/2021 with an average household size of 3.9 as per Statistics South Africa Census 2011. (IDP: 2016/2021).

Table 3.1: Demographic characteristics of the Lepelle Nkumpi Local Municipality

Characteristics	Proportion
Population	230 350
Number of households	56 682
Sepedi language	198 445
Gender	83.5%
Unemployment rate	48.1%
Youth unemployment rate	62.4%
Average household size	3.8
Female-headed households	56.0%
Households with access to piped water inside the house	19.3%
A household with a flush toilet connected to sewerage	18.4%

Source: Lepelle Nkumpi Local Municipality IDP (2016/2021)

The municipality has a high rate of unemployment of 48.1%, while the youth rate of unemployment is higher at 62.4%. Scoones et al (2012) indicated that no typology is ever definitive as there are people migrating to either urban areas or rural areas from time to time. However, majority of male youth seem to prefer to look for formal employment in urban areas

in which almost the entire population of about 198 445 speaks the Sepedi language, which left 56% female heading the family.

According to Stats (2016), the proportion of Limpopo households with access to piped water has decreased to 80% (1 million) in 2016, from 83,6% (1,2 million) in 2011. However, the number of households with access to a flush/chemical toilet increased from 322 112 in 2011 to 402 442 in 2016. Diarrhoea, bilharzia and malaria have been identified as some of the major health problems in the Limpopo Province.

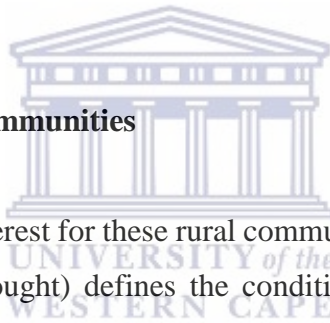
Water collection from the river is discouraged as the water quality is not fit for human consumption and exposure to malaria at the river is a real risk. Rodda et al. (2016) indicate that the country implemented the Green Drop Certification Programme to assess and monitor the quality of greywater released from wastewater treatment works into the rivers for discharge limits based upon the Water Services Act 108 of 1997 and the by-laws. The municipality is non-compliant with the Blue Drop Certification for safeguarding the tap water quality management and Green Drop Certification for wastewater treatment works to improve the operations of sanitation treatment. According to the municipal IDP (2016/2021: 46), the Lebowakgomo Waste Water Treatment Works (WWTW) is non-compliant as per the Green Drop assessments.

In the context of the municipal SWOT (strength, weakness, opportunities, threats) analysis, waste management lacks implementation and fails to comply with the Green Drop Certification due to the absence of by-laws and engineers for basic services provision. In the context of this research, it is imperative that the *Lepelle Nkumpi Local Municipality* abides by the by-law on both the Blue Drop and Green Drop Certification for the benefit of the community and its environment. Figure 3.3 below indicates the map of the *Lepelle Nkumpi Local Municipality*.



Figure 3.3 Map of Lepelle Nkumpi Local Municipality

Source: ArcGIS version 10.1.



3.1.3 Case study areas and communities

Three factors are of particular interest for these rural communities. First, Gedroogte, the name Gedroogte (translated means drought) defines the condition. This indicates that a level of poverty is expected due to climate change and water scarcity of its landscape. Second, Ga Molapo, which the municipality declared as a Population Concentration Point (PCP). Third, Magatle, which was declared a Municipal Growth Point (MGP) with a population density of 9665 where they depend on the state borehole which supplies the community and hospital with water. A heightening demand for clean water is needed which is suitable for drinking, cooking, washing and sanitation for safe disposal of human waste, and proper usages of greywater. All the above-mentioned factors complete the municipality which is also encouraging for this thesis. These rural communities belong to different wards in which Gedroogte and Ga Molapo are both clustered in ward 3 and Magatle ward 4.

The landscape of Limpopo Province rural communities comprises large households mostly depending on subsistence farming for their livelihoods. Aliber and Hart (2009) noted that

agrarian division in South Africa is dualistic with capitalised commercial and fragile subsistence sectors.

Small scale subsistence farming is their means of survival like maize on seasonal periods and supplemented with the indigenous food crops like i.e Bambara groundnut (*ditloo marapo*), Cowpea (*dinawa*), Cleome gynandra (*lerotho*), Amaranths (*thepe*), Jews mallow (*thelele*) for their sustainable livelihoods (van Rensburg et al., 2007). The lack of appropriate knowledge, equity, participatory and flexibility towards supporting subsistence farming by women and men within their communities make them unable to sustain their livelihoods.

Table 3.2: Population by water source (2011 Census)

	Lepele-Nkumpi Ward 4 (93505004)		Capricorn		Limpopo	
Borehole	48.4%	3,525	14.9%	188,167	13.8%	747,993
Other	14.1%	1,026	2.7%	33,913	3%	160,748
Vendor	13.4%	976	5.2%	65,030	4.3%	233,748
Service provider	9.5%	688	69%	870,651	62.9%	3,399,372

In other words only 10% receive piped/reticulated municipal water by the public service provider. This figure is substantially lower than for the district municipality as a whole (about one fifth of the norm for Capricorn DM). The Gedroogte, Ga Molapo and Magatle (see ward 4 below) depend on communal borehole water and water vendors, private wells, boreholes or by buying packaged water. In the *Lepelle Nkumpi Local Municipality IDP (2016/2021)*, communities depend on buying water on credit for their family and others are even starving due to poverty and the inability to meet their domestic needs.

According to 2011 Census, shockingly 992% residents use a pit latrine (without ventilation).

Table 3.3: Population by toilet facilities (Census 2011)

	Lepele-Nkumpi Ward 4 (93505004)		Capricorn	
Pit latrine without ventilation	92.4%	1,815	53.9%	186,426
Pit latrine with ventilation (VIP)	2.5%	50	11%	37,985
Flush toilet	3.4%	66	29%	100,517
None	1.4%	28	4.2%	14,596
Other	0.3%	6	1.9%	6,689

Only 2% of household get a municipal refuse collection service.

At the same time the Magatle community is a designated growth point but it has also seen numerous service delivery protests in relation to water shortages some of which have been documented in various newspapers. In Magatle community, potable water is such a scarce resource that when residents get it, only cooking and drinking is prioritised and bathing is a luxury. Residents often have to beg for water from the local police station (as reported in newspapers and author interviews) or walk long distances to buy it from another community with communal taps. When the police station also runs dry, officers are left with no choice but to transfer detainees to a police station some 10km away. This has been the life for the 5 000 residents of Magatle near Zebediela for the past 14 years.

Communal taps the government installed years ago have done little to quench their thirst as they often run dry randomly.

The little water I'm going to get from here will be for drinking and cooking and maybe some for laundry. There won't be enough for the four of us to bathe. It makes me angry because that's not how we are supposed to live under a black government. The funny thing is that when it's close to elections our water comes back. (Sowetan 19 Sep 2016).

The *Lepelle Nkumpi Local Municipality* already admitted back in 2012 that together with Capricorn District Municipality they have not been able to provide all households with adequate water supply due to huge backlogs and to the fact that water is a scarce resource. The list of factors also included: challenges of theft, illegal connections and poor workmanship, ageing infrastructure and inadequate bulk water supply are as a result of the apartheid spatial planning which excluded the majority of peoples. Gedroogte community was given a tarred road which expands along the Bolahlakgomo community within the *Lepelle Nkumpi Local Municipality*. These, have benefitted community members especially the learners.

Protests have seen 13 primary and high schools within the *Lepelle Nkumpi Local Municipality* shut down periodically. At Sebitja High School in Ga Molapo community, some learners were raped by their community members on their way to school due to bush pathways as the community do not have street lights or even ample security measures to safeguard their children to and from school.

4 CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction

The objective of this chapter is to present the methodology that has been applied in this research. The researcher used a mixed method as the methodological tool conducting this research and the intention for using both methods will be elaborated. The theoretical framework used for data collection, namely the Participatory Learning and Action (PLA) tool is also discussed in this division.

4.1.1 Research philosophy

The study is an in-depth case study of three rural communities, in which the researcher applied a multi-paradigmatic approach incorporating data gathered from both mixed research method to capture different structures pertaining to the topic. Ponce and Pagan-Maldondo (2015), specified that a mixed method study means using both qualitative and quantitative methods as instruments of the research design. Williams (2016), mentions that embracing a multi-paradigmatic approach simultaneously in a community-based research gives a researcher better understanding of complexity and overcomes the limits of positivist research.

On the other hand, interpretivism encourages researchers to prioritise the voice of the research participants. Interpretivists reflect an in-depth insight into the lives of respondents during interviews and enables the researcher to gain an emphatic understanding of the way they attribute meaning to acts they customarily perform, e.g. walking a long distance daily collecting water and gathering firewood. Particularly, interpretivism is effective for obtaining particular information relating to the opinions, values, behaviour patterns, and societal backgrounds of a population. That information may be gathered includes but is limited to focus group, in-depth interviews, key informant and participant observations specifically suitable for collecting specific data's.

Greene et al (1989) have carried out a comprehensive review of fifty-seven empirical mixed method evaluation studies to relate to the results from the academic review and identified five mixed method purposes. The researcher adopted five for the purpose of the thesis as,

triangulation, complementarity, development, initiation and expansion. The first propose is *'triangulation'* - to assess the trustworthiness of suggestions gained from one method, second, *'complementarity'* – to obtain mutual perspectives about similar experiences, third, *'development'* – to build questions from the results of one method to shape and guide the design of another method, *four, 'initiation'* - *to look for the discovery of paradox and new resulting from one method, five, 'expansion'*- to elaborate on the knowledge gained from previous methods.

4.1.2 Research design

The research design makes provision for mixing various instruments to study governance in the provision of drinking water and basic sanitation in a clear and logical manner. This allowed the researcher to further analyse data holistically in relation to the institutions promoting compliance of basic services. Furthermore, Figure 4.1 below displayed the research flow chart on how the methodology would be approached to accomplish the objectives.



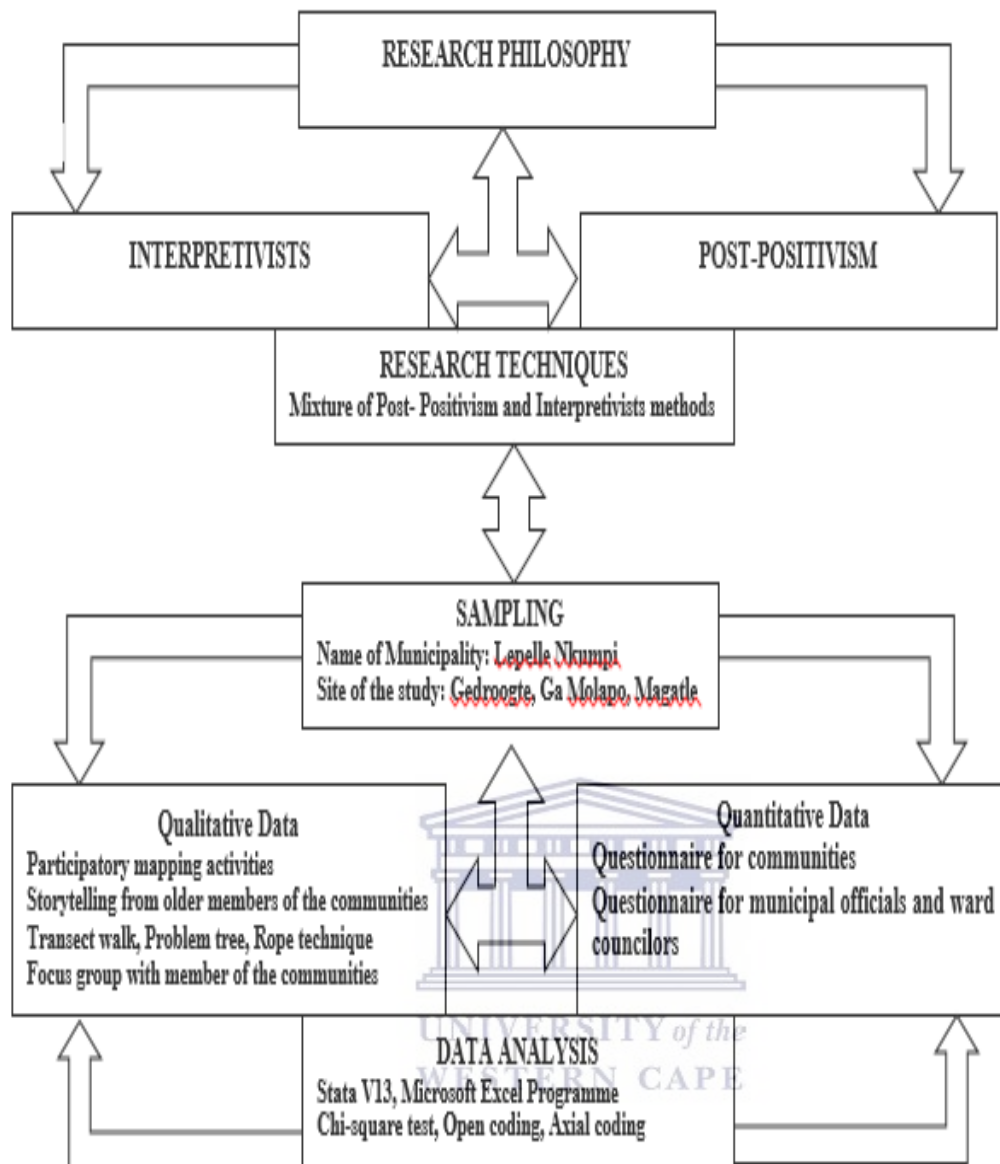


Figure 4.1: Overview of the research design adopted

Source: Author's representation

4.1.3 Methodological framework

Participatory research methodologies have different approaches in which it is orientated in pluralist ideologist of the knowledge making and societal transformation. The following methodologies includes Participatory Research (PR), Participatory Action Research (PAR) uses methods that ‘allow local people to share, enhance and analyse their knowledge of life and conditions, Community Based Participatory Research (CBPR), Participatory Rural

Appraisal (PRA) and Participatory Learning and Action (PLA) which uses visual methods such as interviews with a common depiction of making research with people, sharing a democratic ethos strongly committed to a meaningful stakeholders engagement, promotion of research partnership and strengthening academic and community (Chambers, 1994; Viswanathan et al, 2004; Chambers, 2007; Macaulay et al, 2011; Hinds, 2013). The researcher adopted the Participatory Learning and Action (PLA) (Figure 4.2) and water sanitation chain as the main methodological frameworks perceiving qualitative research to answer the ‘what’ question in the provision of drinking water and basic sanitation, with the core principles of attitude, behaviour and practice.

The following PLA techniques used for this research are participatory mapping, story-telling, transect walks, problem tree and timelines. First, ‘*participatory mapping*¹’ - was used to collect evidence about water and sanitation household sources, the impact of water contamination, inadequate infrastructure, poverty, distance to the sources of water and sanitation, restriction in the usages on communities accessing water and using toilets. Second, ‘*story-telling*²’ -was used to collect evidence on household’s conditions, social conditions, engagement in verbal participation about their challenges encountered in their daily livelihoods. Third, ‘*transect walks*³’ were used across rural communities to capture various physical and socio-economic aspects that obstruct provision of services. Fourth, ‘*problem tree*⁴’ - was used as the evidence exploring the root causes of inaccessibility of drinking water and basic sanitation. Fifth, ‘*rope technique*⁵’ - was used to measure poverty impacted in rural households by inaccessible to drinking water and related waterborne diseases. Yet, my intention was particularly on how rural

¹ Participatory mapping activities is descriptive in nature and able to identify several problems and societal matter based on the fixed image predictable on the map relating to water and sanitation (Hohenthal et al, 2017).

² Story-telling involves verbal participant engaging about their daily livelihoods challenges on what they see in their communities (Hinds, 2013).

³ Transect walks involves actual walk or chain of walk with community members around their community to identify different problems about their area.(Hinds, 2013)

⁴Problem tree is a method which basically emphasises imagining water and sanitation matters and debates in a group (Hinds, 2013)

⁵ Rope technique is a method to measure poverty (Hinds, 2013)

communities in democratic South Africa perceive the provision of water and sanitation services provided by the local municipalities.

4.2 Data Collection

4.2.1 Collection of Qualitative Data

Collecting data in rural areas requires gaining the permission of “traditional” leaders. The Senior Superintendent for Operations and Maintenance at the *Lepelle Nkumpi Local Municipality* assisted in this research by informing the Tribal Authorities about the importance of the research taking place in their rural areas. He researcher also interacting with Community Ward Councillors (CDWs) the watchdogs of the community, as they update community members with matters related water and basic sanitation. Swanepoel and de Beer (2016) report that development workers are ordinary community members who can participate in community development projects, but are professionally named CDWs. Furthermore, (ibid) indicated practical principles in which the CDWs should follow appropriate actions for transforming liberating actions such as, ‘*learning*’ ‘*compassion*’ ‘*adaptiveness*’ and ‘*simplicity*’. Since I was doing three communities as part of my case study, a CDWs accompanied me together with other members of the communities for the transect walk through their areas to explore and identify different problems relating to water infrastructures.

A purposive sampling method was used to select the study participants in which other rural community members were volunteered for the PLA exercises discussed above. After obtaining informed consent and the preparatory part, the first PLA exercise, participatory mapping commenced. The intention was to collect evidence about accessing water sources and their accurate location in collecting water for household chores, e.g. drinking, cooking, bathing etc. Community participants in the mapping exercise started to draw the area and identify where water infrastructures are located in the community in a dialogue pattern. After, the exercise in each community, a volunteer head of the households grouped themselves and informed me about their unabridged livelihood accessing water in their community, as some were born in those communities.

The following exercise was the ‘problem tree’. The exercise was led by the CDWs, in which the researcher observes giving research participants permission to own the tree, which was structured with the *trunk* as the main issue, influenced by the *roots* and *branches*. In this activity, the question of how reliable is the water supply in the community was the first to be asked. The advantage of this exercise is that it emphasises visualisation and discussion from which members of the communities have the gist of visualisation.

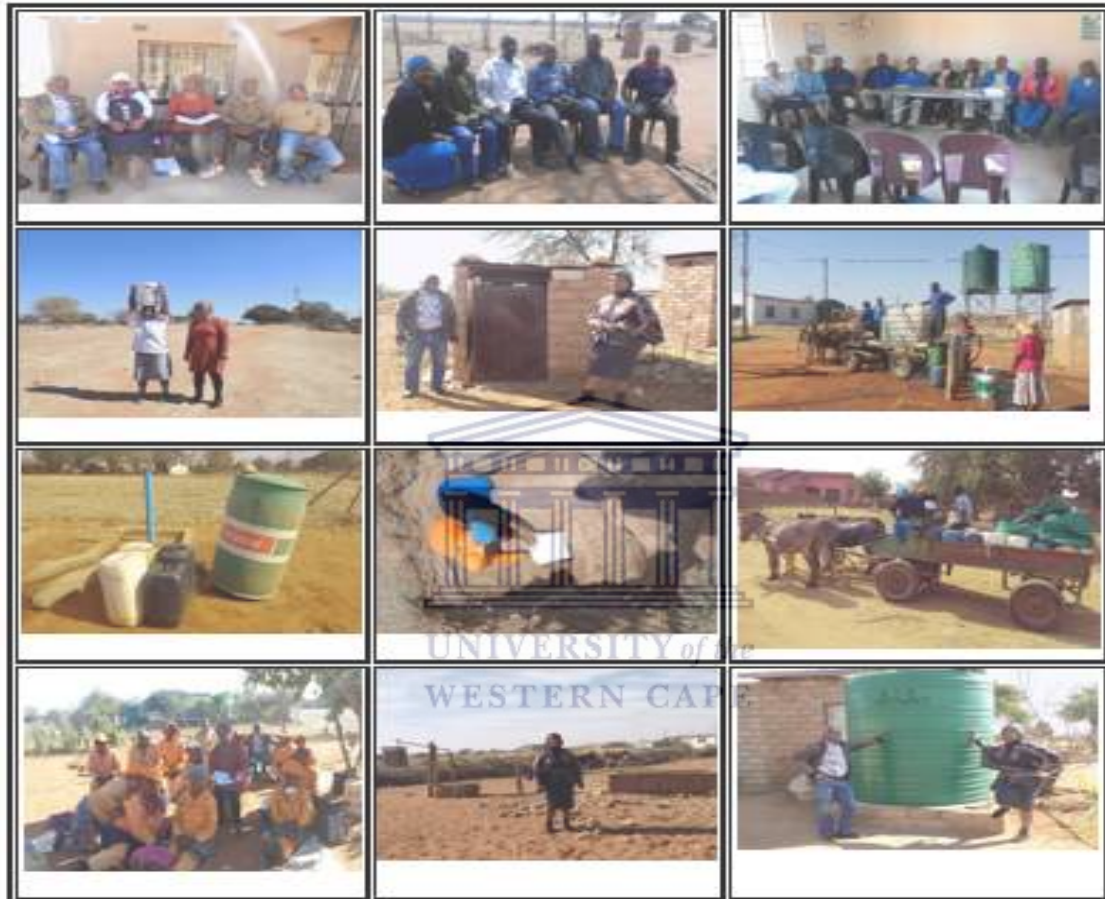


Figure 4.2: PLA exercises with rural case study’s community members

Source: Author’s representation

The last PLA exercise to be conducted was the ‘rope technique’ as it was used to assess the totality of poverty. This exercise involves focus group participants which will be elaborated. The intention of these exercises was to discuss seven dimensions affecting poverty these are, production, medical services, absenteeism of children from school, food security, unemployment, number of dependents in the households and powerlessness. For each item, community participants were given the opportunity to raise their opinion as the rope symbolises

the ‘climbing out of poverty’ and the ropes were collected and assessed according to poverty ranking from 1 to 10. In this activity, the question of factors underlining community gaps and expectations in terms of basic service provision as asked.

In addition to the PLA exercises, focus group studies were also conducted as mentioned earlier. The purpose of using focus group discussions was to generate additional information, ideas, feelings and different observations from the participants (Elliot & Associates, 2005). Focus group is a qualitative research technique as it contains questions to be asked about participants’ observation attitudes, ideas or opinions that can be useful for decision-making.

4.2.2 Collection for quantitative data

After permission was obtained from the respective councillors and traditional leaders in the communities, the 657 participants assembled in community halls and were verbally briefed about the purpose and procedure of the research, after which they were guided to fill the questionnaires. The researcher went around the hall to clarify specific questions in cases where some participants had difficulty interpreting the questions. Overall, community members in the three communities were very keen to participate in the research and provide helpful information for the study. A total of 657 participants completed the questionnaires.

The questionnaire was developed through a mixture of literature reviews of other reports on water and sanitation in South Africa, especially the Limpopo Province. These included but were not limited to Tapela (2012); Beyers (2016); Duncker (2015). The first assessment took place at Gedroogte community on 10 August 2016, followed by Ga Molapo on 28 September 2016 and lastly, Magatle on 29 September 2016. A reassessment of the three rural communities was done on 9 to 11 January 2017 to evaluate pertinent questions relevant to the research. These additional questions were developed to ensure smoother and correct capturing of the key aspects of the previous data. The data was captured on an ethical basis and research participants were delighted and keen to participate in the study.

The direct observation survey was focused on the specific households whose population estimates were as follows: Gedroogte (595), Ga Molapo (1326) and Magatle (1339). From the study population, an estimated total of 638 participants were (based on people who

volunteered) randomly sampled from the various communities as follows: Gedroogte (187), Ga Molapo (225) and Magatle (226); all taking into account a confidence level of 90% with a projected margin of effort of 5% and distribution of 50% (Raosoft, 2004).

The aim of the interview was to ensure that the open-ended questions are asked in similar ways in all the three rural communities. Since the researcher is a native speaker of the local language (Sepedi) a language barrier was not experienced and the decision to use the local language was made based on the high rate of illiteracy in the communities. The researcher's direct observation was conducted among members of the households that formed part of the current population within the jurisdiction of the *Lepelle Nkumpi Local Municipality*.

Quantitative data analysis included descriptive statistics such as means, standard deviations, percentages, and Stata V13 was used to analyse data and a Chi-square test was used to examine the relationship between total income and the households' main source of drinking water. The Fisher's exact test (Mehta et al., 1984), which is the Chi-square test used to check if there are frequencies lower than five on the tables was used to test the relationships between total income and the purchase of water, duration of settlement, type of toilet facility and between household size and water shortages. A probability level of $p=0.05$ or less was taken to indicate statistical significance. Additionally, the study findings were compared with those of StatsSA's General Household Survey (GHS) (2016), Limpopo Provincial Statistics and the Department of Water and Sanitation Green and Blue Drops, and contextually analysed.

4.2.3 Assurance of dependability

It is appropriate to ensure that both the validity and reliability help to ensure the truthfulness, credibility and acceptability of the findings (Neuman, 2006). Validity and reliability are both important and necessary assessments for a good research. Since this study was a mixed method approach, reliability and validity were applied in the following subheadings.

4.2.4 Pilot study

Before the actual data collection, a pilot study was undertaken to confirm the reliability and validity of the data collection instruments and refine the logistics of data collection. In the pilot

test, a draft version of the questionnaire was administered to 20 community members and councillors for completion. Based on their feedback, the final version of the instrument was modified and subsequently used for data collection. Prior to actual data collection, the questionnaire was also validated.

4.2.5 Reliability

Heale and Twycross (2015) and Chakrabartty (2013) report that reliability measures the accuracy, consistency, repeatability and trustworthiness of a research. Hence, reliability is divided into two types, namely the stability to ensure standardisation of the instrument and representative reliability to measure stability of the results such as those based on participants' age and gender. The questionnaire was administered to the participants in the pilot study at two weeks' interval and their responses on both occasions of the questionnaire administration were compared. No substantial differences were found between their paired responses thus confirming the stability of the instrument for data collection.

4.2.6 Validity

Creswell (2005) and Pallant (2011), report that validity tests are mainly divided into four types namely content, face, construct and criterion-related validity. Heale and Twycross (2015) show that validity indicates the extent to which data is accurately measured within a quantitative study. Before the questionnaire was used for data collection in this research, it was content validated by a panel of three experts in the field of Poverty Land and Agrarian Studies (PLAAS) to confirm that it measures what it was designed to measure (Babbie 2007).

4.3 Conclusion

The rationale for conducting the study in the Gedroogte, Ga Molapo and Magatle rural communities was also motivated by the researcher's personal observation of the plight of the people in the rural settlements in terms of provision of water and basic sanitation services. Preparatory visits and follow up observations at the three communities were also undertaken by the researcher. The three communities were chosen because they have similar demographical and settlement characteristics (language, culture and socioeconomic

background). The next chapter analyses the quantitative data of the sample household in order to get a broader view.



5 CHAPTER FIVE: ANALYSIS OF THE QUANTITATIVE DATA

5.1 Introduction

The discussion presented in chapter four provided a brief description of different methodologies for the research which have been used for the collection of the data for this thesis. Chapter five will focus on the analysis of quantitative data in which five main sections will be focused on. First, the sample of the household characteristics, second, the socio-economic differentiation of the sampled households, third, the nature and cause of water shortages are discussed, fourth, the analysis of the source of water and sanitation of the sampled household. In the last section, an attempt is made to analyse the impact of water and sanitation on the sampled well-being.

5.2 Household characteristics of the sampled households

Quantitative data consist of a total number of 657 randomly selected community participants who are residing within the jurisdiction of the Gedroogte, Ga Molapo and Magatle rural communities. Figure 5.1 shows the gender of respondents. Out of the 657 participants that were interviewed, 44.4% (n=292) of them were males, while 55.5% (n=365) were females. This gender provision is consistent with the population characteristics of the study area based on the data published by Statistics South Africa as women have on many occasions accounted for approximately 55.41% of the total population in 1996, 55.55% in 2001 and 54.48% in 2011 as per Census report (IDP 2016/2021:19).



Figure 5.1: Gender of community members in the sample

Source: Author's representation

The size of the community member's households ranges from four to six 50.53% (n=332) and 36.07% (n=237) have 7 to ten member households, while 8.22% (n=54) have one to three in their households and a larger number of ten and above households handle 5.18% (n=34) members. The age profile shows 32.47% (n=213) of 50 to 64 ages currently residing in the area, 30.18% (n=198) of 30 to 49 ages, 29.27% (n=192) of 18 to 29 ages and few veterans 8.08% (n=53) of 65 and above. Migration of men aged 25-29 years to urban areas is noticeable in the three rural communities.

Concerning literacy in the sample, Table 5.1 below reported a larger uneducated number of 63.93% (n=420) rural communities have no education. Totals of 31.05% (n=204) have a national certificate, 2.59% (n=17) degree and 2.28% (n=15) diplomas.

Table 5.1: Household size, age and education of community members in the sample

Community members (percentage)	
Household size	
1-3	8.22
4-6	50.53
7-6	36.07
10 and above	5.18
Age category	
18-29 years	29.27
30-49 years	30.18
50-64 years	32.47
65 years and above	8.08
Education category	
Degree	2.59
Diploma	2.28
Certificate	31.05
None	63.93

n=657

It was evident that those who are formally employed accounted for 22.07% (n=145) and those who are unemployed constituted 45.05% (n=296). Table 5.2 below, reports that several families rely on 'piece job' works, which constitutes 7.76% (n=51), and 4.57% (n=30) are pensioners and depend on government social grants as a substitute to employment for their families. Some are teachers 1.25% (n=10) which adds value to the municipality in terms of growth and 1.07% (n=7) are seasonal workers. Full-time housewives 0.91% (n=6), choose not to work 0.46% (n=3), domestic workers 0.30% (n=2), unable to work 0.30% (n=2) .

Table 5.2: Employment, education, the total income of community members in the sample

Percentage	
Employment status	
Employed	22.07
Unemployed	45.05
Student	15.83
Full-time housewife	0.91
Pensioner	4.57
Seasonal worker	1.07
Unable to work	0.30
Chose not to work	0.46
Labourer (Piece job labourers)	7.76
Domestic worker	0.30
Teacher	1.52
Household people	
No schooling	32.88
Crèche/Pre-School	0.91
Primary school	8.52
Secondary school	55.10
Tertiary education	2.59
Total income level	
None	57.38%
R100-R500	12.79%
R501-R1000	21.31%
R1001-R3000	6.09%
R3001-R5000	0.30%
Over R5000	1.98%

n=657

This table further indicates that education levels in the rural communities in which 55.10% (n=362) of household members have attended secondary school. In rural communities, 55.10% (n=362) of secondary school societies in their households. The entire communities are vulnerable as 32.88% (n=216) of people have not attended school. A reduced number of 8.52% (n=56) attended primary school, 2.59% (n=17) have tertiary education and 0.91% (n=6) are pre-school children in the respondents' households. Turning to employment conditions in the sample, Table 5.2 shows that 57.38% (n=377) reported not to have an income, 12.79% (n=84) respondents earned from R100-R500, 21.31% (n=140) respondents earned from R501-R1000 and 6.09% (n=40) respondents earned from R1001-R3000. Smaller numbers of 0.30% (n=2) respondents earned from R3001 to R5000 while 1.98% (n=13) earned over R5000. This revealed a higher rate of unemployment in rural communities.

The main source of income in their household assesses their level of sustainability and perception of their livelihoods. A large number of 25.00 % (n=164) rural communities sustain their households through farming, while 23.78% (n=156) respondents earned a salary. These societies have allowances for the elderly as their source of income which added to 19.36% (n=27), while 12.96% (n=85) depend on pension funds and 6.86% (n=45) government grant. Moreover, 5.64% (n=37) members of the communities rely on trading, assistance from nongovernmental organisations 1.52% (n=10), relatives' assistance 1.37% (n=9), 1.37% (n=9) survives by selling wood, provisions from poverty funds 0.61% (n=4), while 0.30% (n=2) respondents are assisted from government assistance and 0.15% (n=1) respondents rely on rental income.

The study shows that these rural communities currently are trapped in poverty as the majority rely on subsistence farming to sustain their households. These have been shown through their duration of settlement to confirm their trustworthiness in their reports on water scarcities. A total number of 85.24% (n=560) respondents have been settled in the Gedroogte, Ga Molapo and Magatle rural communities for over 15 years. Moreover, 10.50% (n=69) respondents have been settled there for 6 to 15 years, and 3.20% (n=21) for 1 to 5 years. 1.07% (n=7) responded that they have been settled in rural communities for less than a year.

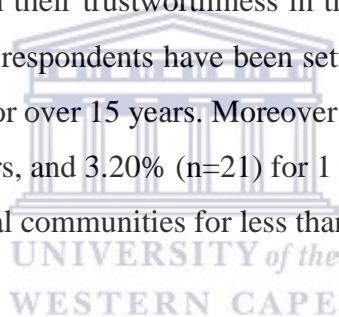


Table 5.3: Main source of income and duration of the settlement of community members in the sample

	Community members (percentage)
Sources of income	
Wage	23.78
Farming	25.00
Husbandry	0.91
Wood and wood products	1.37
Trading	5.64
Rental income	0.15
Assistance of relatives	1.37
Pensions	12.96
Poverty funds	0.61
Government grant	6.86
In-kind aids from government	0.30
Aids/Assistance from NGOs	152
Allowance	19.36
Other	0.15
Duration settlement	
Less than a year	1.07
1-5 years	3.20
6-15 years	10.50
Over 15 years	85.24

n=657

Almost the entire group responded positively that 98.48% (n=647) are experiencing water shortages, which obstructs daily household provision. Only 1.52 (n=10), respondents responded that they are not affected by water shortages. Sinyolo et al. (2014), point out that food security is linked to water security.

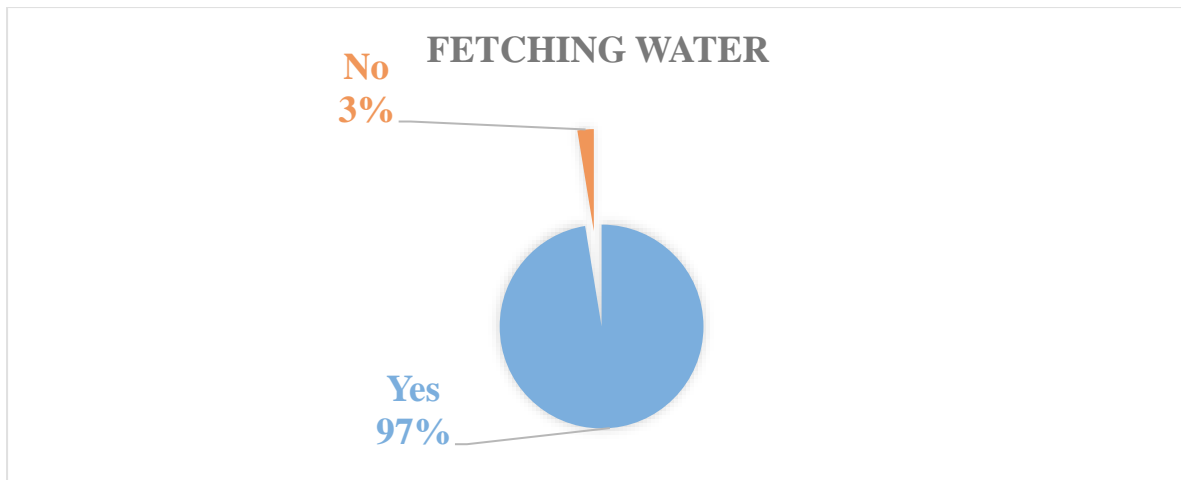


Figure 5.2: Fetching water

Source: Author's representation

As indicated above, almost members of the communities have to walk to fetch water, although they differ in terms of distances. The majority of respondents –47.03% (n=309) –reported that they walked 3km and 26.18% (n=172) walked 2km. The RDP standard for water is 200 meters. This reveals and depicts the rural communities' hardship as 14.61% (n=96) walked over 4km, over 7.15% (n=47) walked 1km and only 5.02% (n=33) walked less than 1km. Mudau et al., (2016) make it clear that lack of access to tap water at the Vhembe District Municipality amongst older people is why they complained about back pain resulting from the distance they had to travel to fetch water from different water sources such as taps, rivers, springs or boreholes.

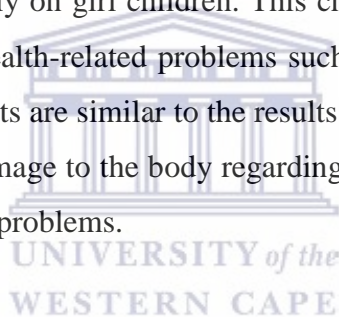
The burden of collecting water at the Gedroogte, Ga Molapo and Magatle rural communities are loaded on at 49.39% (n=324) women, 19.36% (n=127) boy children, 16.77% (n=110) girl children, 9.45% (n=62) men. And 5.02% (n=33) of respondents reported that they collect their water using a donkey cart. Women are the most primary users, providers and managers of water in their households and they are directly affected by lack of sanitation.

Women are the ones who shoulder the problem of carrying water for up to 4 hours per day when the water system (borehole) malfunctions. They use water for drinking, food production and preparation, personal and family hygiene, washing, cleaning and caring for the sick members of their family. The appalling situation also seriously affects the girl child, especially

during puberty when she needs regular access to water and proper sanitation for personal hygiene during menstruation.

Table 5.4 indicates that 56.19% (n=369) used 20-litre buckets to fetch water for their households. Other respondents – 20.24% (n=133) – used water drums, 13.24% (n=87) used 25 litre buckets and 10.35% (n=68) respondents used water containers to fetch water. Moreover, numerous rural communities in Venda, Limpopo Province collect water using 20 to 25-litre plastic buckets (Greere et al., 2010) which is related to the Gedroogte, Ga Molapo and Magatle rural communities.

Statistics show that women number more than men in these communities, which clearly identifies the burden, trauma, cruelty and stress they are experiencing daily with regard to fetching water and using sanitation facilities. Water fetching labour and other preferences are normally the main concern at households and are usually prioritised over school attendance and this burden falls devastatingly on girl children. This challenge can lead to road casualty risks, assault and attacks, and health-related problems such as injuries to the back and neck while carrying water. These results are similar to the results of Geere et al. (2010), who found that carrying water can cause damage to the body regarding musculo-skeletal illnesses linked to the spinal cord and other joint problems.

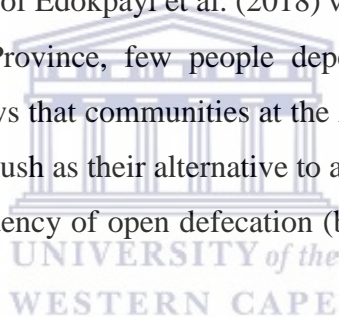


In terms of storage of water for their households, community survey show that 85.54% (n=562) stored their water inside the large (blue) water drum, 7.31% (n=48) indicated that they stored water inside their houses, 6.70% (n=44) in 25 litre buckets, 0.30% (n=2) stored their water outside the house and 0.15% (1) under the trees. These results are similar to Edokpayi et al. (2018), that the households at Thulamela Municipality in the Limpopo Province normally store their drinking water in large water drums, plastic buckets and jerry cans. Although, the Gedroogte, Ga Molapo and Magatle rural communities depend on boreholes which pump three (3) litres of water per second which was revealed by 75.91% (n=498) respondents. 7.01% (n=46) respondents depend on piped water inside the yard, 5.49% (n=36) on piped water from an access point outside the yard, 4.42% (n=29) respondents depend on a water vendor. The other 3.66% (n=24) depend on a rainwater tank, 3.05% (n=20), depend on communal taps and 0.15% (n=1) depend on a neighbour's support.

Noteworthy is the fact that a significant number of sampled households seems not to have adequate toilets as 89.47% (n=586) positively indicated that they have toilets while 10.22% (n=67) indicated they do not have toilets. These results are similar to Beyers (2016) which show that in the Fetakgomo Local Municipality, Limpopo Province, sanitation issues are a major challenge impacting South African local municipalities. Moreover, Hemson (2015) reported that in the Amathole District Municipality in the Eastern Cape Province, communities also indicated that they do not have a toilet in their households.

Further, the sampled households reported that 42.18% (n=275) respondents show that they depend on pit toilets without ventilation, 37.58% (n=245) respondents depend on dry toilets and 11.50% (n=75) on bucket toilet systems. Furthermore, 4.75% (n=31) use the bush and open fields while 0.92% (n=6) depend on flush toilets connected to a sewage system. Few respondents – 0.46% (n=3) – depend on flush toilets with a septic tank for their households.

These results are similar to those of Edokpayi et al. (2018) which shows that in the Thulamela Municipality in the Limpopo Province, few people depend on open defecation to ease themselves. Hemson (2015) shows that communities at the Amathole District Municipality in the Eastern Cape depend on the bush as their alternative to a household toilet. This inadequate number of toilets and the dependency of open defecation (bush) indicate high contamination of groundwater.



Collecting water is mostly female work as shown in Table 5.4.

Table 5.4: Distance, responsible collection, container, storage, water, sources of water of community members in the sample

	Community members (percentage)
Distance collecting water	
Less than 1km	5.02
1km	7.15
2km	26.18
3km	47.03
4km and over	14.61
Responsible collection of water	
Man	9.45
Woman	49.39
Girl child	16.77
Boy child	19.36
Other	5.02
Water container	
Large Blue water drum	85.54
Inside houses	7.31
25 litre bucket	6.70
Outside house	0.30
Under the trees	0.15
Sources of water	
Borehole	75.91
Piped water inside the yard	7.01
Piped water outside yard	5.49
Water vendor	4.42
Rainwater tank	3.66
Communal tap	3.05
Neighbours support	0.15
Sources of toilet	
Pit toilets without ventilation	42.18
Dry toilet	37.58
Bucket toilet	11.50
Bush and open fields	4.75
Flush toilet connected to the sewage	0.92
Flush toilet connected to a septic tank	0.46

n=657

5.3 The causes of water shortages in the sampled households

The extent and causes of water shortages according to the sampled households are presented in table 5.5. This table reports that 98.4% are regularly experiencing water shortages which obstruct their daily household's livelihoods. This may suggest that rural community's households amongst the sample household are really obstructed by poverty and part of the

reason for that may be the scarcity of sources of water and sources of toilet facilities as shown in table 5.5. Only 1.52 (n=10), respondents responded negatively as they are not affected by water shortages. Sinyolo et al. (2014), point out that food security should be assessed similarly to water security at the national province and particularly in rural provinces. As Rankoana (2017), asserted that rural communities have perceptions which are impacted by some challenges not limited to climate change, water scarcity and drought. These have revealed a huge water scarcity in the rural communities, which tends to affect their food security for sustainable livelihood which revealed that 92.69% (n=609) members of the communities have experienced scarce provision of water for almost 15 years as other community members have indicated in their years of settlement in the rural areas.

Meanwhile, 5.63% (n=37) respondents indicated that water shortages occurred for almost months at a time and 1.67% (n=11) responded days without water. This despite that, as per the Constitution and other regulations related to the Water Service Act 108 of 1997, it is unlawful for South African constituencies not to have water in their households irrespective of their geographical environments. The majority 78.05% (n=512) – respondents said that drought is the major causes of their water shortages, followed by 11.59% (n=76) who responded that it was due to the inequality of the allocation of water resources. Water scarcity continues to cause water shortages as 7.77% (n=51) respondents indicated that and 1.52% (n=10) respondents noted the unsuitable geomorphology for water and 1.07% (n=7) noted broken infrastructures as their major causes of water shortages in their rural communities.

Mpandeli et al. (2015) report that the drought which occurred in the Limpopo Province from 1926 to 2012 affected farming products and the provision of water in the Gedroogte, Ga Molapo and Magatle rural communities. Lesiba testified that since 1958, these three rural communities have been characterised by harmful drought, poverty and unemployment and, fittingly, the name Gedroogte (translated as drought) defines the condition. The ‘*problem tree*’ was used in order to get the idea and solution behind the causes of water shortages in the sampled households. Members of the communities have debated in their responses on the ‘*problem tree*’ descriptively to identify the solution as 52.82% (n=347) described bulk water, 35.31% (n=232) responded to tap water and 11.87% (n=78) respondents described enough water provision from government would be sufficient to solve their drought and water scarcity problems in their rural communities.

Turning to the sampled household, the majority are clueless of the policy for the provision of water and sanitation which they are entitled to for their households. This is a very important factor as it shows the level of compliance within the *Lepelle Nkumpi Local Municipality* in providing basic services to the communities. The respondents indicated their responses on a 6-point tabulation.

The provision of free basic services such as water is vital for sustainability. Almost half of the respondents – 60.67% 9 (n=398) agreed on 200 litres per person per day, 15.55% (n=102) respondents agreed on 25 litres. Moreover, 12.20% (n=80) respondents agree on 20 litres, 8.69% (n=57) respondents agreed on more than 200 litres, 2.44% (n=16) respondents on 2 litres and 0.46% (n=3) respondents agreed on no litres but on the sustainable provision of water for their households. These responses undoubtedly indicate that the Gedroogte, Ga Molapo and Magatle rural communities are not enlightened about governmental policies mandated to them for municipality provision. Therefore, the findings of these three rural communities reveal a huge gap relating to the provision of water.

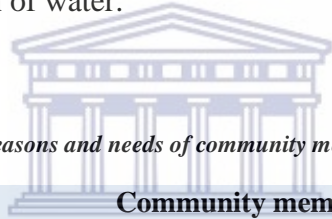


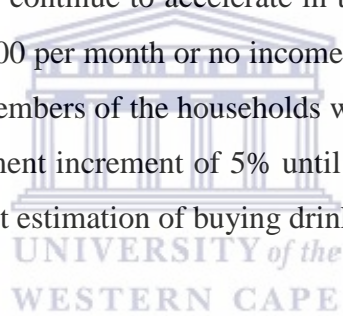
Table 5.5: Perception of water shortages, reasons and needs of community members in the sample

Community members (percentage)	
<i>Duration of water shortages</i>	
Days	1.67%
Months	5.63 %
Years	92.69 %
<i>Reasons for Water shortages</i>	
Water scarcity	7.77 %
Inequality in water allocation	11.59 %
Unsuitable geomorphology of water	1.52%
Drought	78.05%
Other	1.07%
<i>Water Needs</i>	
2 litres per/person per/day	2.44%
20 litres per/person per/day	12.20%
25 litres per/person per/day	15.55%
200 litres per/person per/day	60.67%
More than 200 litres per/person per/day	8.69%
Sustainable provision of water	0.46%

As is shown in table 5.6 the private provision of water and sanitation among all the categories of the sampled household's members is considerable. Table 5.6 shows that the sampled households usually buy private water for their household when there is no supply from the municipality, 99.09% (n=651) buy water while 0.91% (n=6) do not buy water.

Thomas, one of the respondents in the rural community explained that the cost of a 200 litre water drum is approximately R40.00, which normally did not last for a month, depending on the number of people in the household. Moreover, Thomas reported that a 200 litre water drum could be drained within one week or earlier by most families, depending on the number of people living in various households.

As revealed, the size of other households are ten and above, which clearly shows that 200 litres per month per household will never sustain their household with drinking water. Despite the perceptions of the communities, the majority were not satisfied with buying water as the unemployment and poverty rates continue to accelerate in the municipality (IDP 2016/2021) with a household income of R3200 per month or no income at all. The following assessments depicts the calculation cost by members of the households when buying water per month, and per year in 2016 with an assessment increment of 5% until the attainment of the Sustainable Development Goals in 2030. Cost estimation of buying drinking water from 2017 to 2030.



Container size (large drum) 200L	=	R40.00
R40.00 X 4 weeks (Month)	=	R160
R160 X 12 Months	=	R1920

Table 5.6 below, showing that as from 2017 to the end of the Sustainable Development Goals (SDGs) achievement in 2030, herewith estimates the cost incurred for rural communities with a yearly increase of 5% when buying water for their households.

Table 5.6: Estimated cost of buying drinking water per year

2017	2018	2019	2020	2021
R1920 X 5%	R2016 X 5%	R2111 X 5%	R2217 X 5%	R2328 X 5%
R2016.00	R2111.00	R2217.00	R2328.00	R2444.00
2022	2023	2024	2025	2026
R2444 X 5%	R2566 X 5%	R2594 X 5%	R2724 X 5%	R2860 X5%
R2566.00%	R2594.00	R2724.00	R2860.00	R3003.00
2027	2028	2029	2030	
R3003 X 5%	R3154 X 5%	R3312 X 5%	R3478 X 5%	
R3154.00	R3312.00	R3478.00	R3652.00	

Further, the sample household shows that there are infrastructure breakdowns with their main sources of drinking water with 78.02% (n=511) – revealing challenges are caused by broken taps or hand pumps. Another major challenge is the unsafe drinking of water – 8.09% (n=53) – and 1.53% (n=10) indicated their households have challenges with regard to members with disabilities and pensioners who are unable to access municipal infrastructures.

These results are similar to those of Maake et al. (2015) which show that the *Mopani District*, which consists of five local municipalities, namely *Ba-Phalaborwa Municipality*, *Greater Giyani Municipality* (GGM), *Greater Letaba Municipality* (GLM), *Greater Tzaneen Municipality* (GTM) and *Maruleng Local Municipality* (MLM), are also challenged with a high level of water loss through leaking infrastructures within their rural communities.

5.4 Authority Relations

According to the *Lepelle Nkumpi Local Municipality* (IDP 2016/2021), about 95% of land falls under the Tribal Authorities' jurisdiction, 77.61% (n=506) stated that they reported faults to the local water committee members, 12.73% (n=83) to the tribal admin offices, 7.98% (n=52) to the local water bailiff. Hotline reporting was indicated by 1.53% (n=10) while 0.15% (n=1) requested their neighbours to report on their behalf due to other household and personal

commitments. These results indicate that these rural communities currently place trust in their local committee members for their local enquiries concerning the provision of water. The majority of the respondents, 95.43% (n=627) indicated positively that they have challenges while reporting and 4.60% (n=30) negatively that they do not have challenges reporting faults.

According to the *Lepelle Nkumpi Local Municipality* (IDP 2016/2021), the available fault reporting channel is the fraud and corruption hotline which was launched in 2012 and managed by the *Capricorn District Municipality* with a regular campaign to educate communities. These results are similar to Beyers (2015), which show that the *Capricorn District Municipality* lacks suitable methods for the communities to use to participate and report incidents relating to water faults and not only fraud and corruption. There is much fraud in borehole business in Limpopo (<https://citizen.co.za/news/south-africa/1969445/r100m-lost-as-limpopo-suspends-two-officials-over-borehole-scams/>).

Almost 71.41% (n=467) indicated that the municipality took 30 days (one month) to respond to reported faults. Moreover, 17.58% (n=115) mentioned 14 days, 6.88% (n=45) respondents mentioned more than a year and 2.14% (n=14) 7 days, 1.38% (n=9) 1 day and 0.61% (n=4) mentioned 48 hours municipal response.

Table 5.7 from the sample household further describes their problems with toilet accessibility, 53.07% (n=346) respondents indicated mud on the path, those who indicated a clear path were only 27.91% (n=182). 5.37% (n=35) respondents indicated that there are major crevices and potholes on their path to the toilet, while 5.06% (n=33) did not describe their accessibility (there were households who depend on bush and open fields), 4.60% (n=30) respondents reported obstructions at the entrance of their toilet, and 2.15% (n=14) other respondents identified dense vegetation in front of their toilet. Finally, 1.84% (n=12) identified waste, garbage or debris on their path while accessing the toilet. Assessing this statement, the larger proportion of the respondents (about 53.07%) find themselves in a group, which could be characterised as finding toilet accessibility and not having an acceptable building a real problem. The majority of the respondents find that accessing their toilet is unacceptable and contagious for their households.

Table 5.7: Community perceptions of gaps (percentages)

	Community members (percentage)
<i>Challenges with water infrastructure</i>	
Insufficient water	12.37
Broken taps/ hand pumps	78.02
Water is not safe to drink	8.09
Disability/ Pensioners unable to access water	1.53
<i>Channels for reporting a fault</i>	
Hotline	1.53
Local water bailiff	7.98
Local water committee member	77.61
Tribal admin office	12.73
Request neighbours to report on their behalf	0.15
Duration from municipal attending faults	
1 day	1.38
48 hours	0.61
7 days	2.14
14 days	17.58
30 days	71.41
More than a year	6.88
<i>Access to toilet</i>	
Path is clear	27.91
Major crevice or potholes on the path	5.37
Mud on path	53.07
Entrance to the toilet is obstructed	2.15
Dense vegetation in front of toilet	4.60
Waste, garbage or debris on the path	1.84
None	

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Table 5.8 from the sampled household shows that consuming unsafe water in the rural communities creates waterborne diseases which impact their livelihood. Waterborne diseases are caused due to the consumption of unsafe water which has been a serious concern for decades, especially in Gedroogte, Ga Molapo and Magatle rural communities. Several microorganisms have been identified in unsafe water, which causes the highest risk of morbidity and mortality in people 61.59% (n=404) respondents confirmed fluorosis and 20.73% (n=136) respondents mentioned diarrhoea as the problem when consuming unsafe water.

Of other respondents, 11.43% (n=75) reported cholera, 3.20% (n=21) malaria and 3.05% (n=20) mentioned fever and fatigue after drinking unsafe water. These results confirm Hemson (2016) who reports that the occurrence of the cholera epidemic in 2000 to 2001 can be linked to waterborne diseases arising from consuming unsafe water in South Africa. Edokpayi et al.

(2018), reports that in rural communities of the Limpopo Province, children aged 4 to 5 years have dental problems due to consumption of unsafe drinking water, which has led to fluorosis. Waterborne diseases similar to diarrhoea and cholera influence numerous rural communities' health. Inaccessibility to water supply led to 117,147 people in the rural communities infected with a widespread cholera outbreak, which left 265 dead in 2000 to 2001 in the five provinces of South Africa, including the Limpopo Province. These results are similar to a cholera epidemic, which originated in KwaZulu-Natal and questions the quality of water, which impacted the people's health thus making many societies vulnerable to high mortality rates. On the other hand, in the Greater Giyani Municipality, water supply is unreliable and unavailable due to rampant damage to the water infrastructure, which has resulted in higher levels of water leakages. Other rural communities admitted having experienced dental fluorosis from the quality of their drinking water.

Dental fluorosis is a developmental disturbance of dental enamel caused by successive exposure to high concentrations of fluoride during tooth development, leading to enamel with lower mineral content and increased porosity. Additionally, rural community's members mentioned that they lack self-confidence when speaking publicly as it can lead to protests and arguments that could disadvantage vulnerable community members. It can be argued that by increasing such basic services to the communities, their livelihoods could become more sustainable in the future. Water scarcity, drought, food insecurity, poor water quality, uncontrolled veld fires remain the causes of societal service delivery protests. This is linked with their livelihood and their storage of water which can influence the health of community dwellers as they stored their collected water inside water containers and are often not being washed properly due to the lack of water.

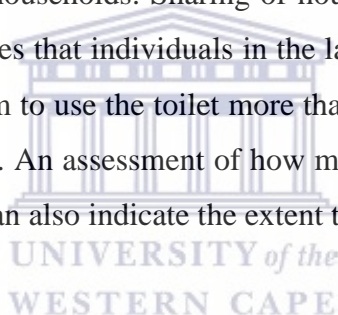
The health impact of non-compliance in basic services provision is related to the overall quality of life of community members, which determines to a larger extent the sustainability of their livelihood. The outbreak of a cholera epidemic, which originated in KwaZulu-Natal questioned the quality of water which impacted the people's health thus making many societies vulnerable to high mortality rates (Hemson, 2016). Poor quality of life can reduce life expectancy.

Table 5.8: Waterborne diseases

Community members (percentage)	
Diseases	
Cholera	11.43
Fluorosis	61.59
Malaria	3.20
Diarrhoea	20.73
Fever and fatigue	3.05

Source: Author's data

Further, the sampled household shows a great concern in hygiene as a large percentage of the communities share their toilet facilities with members of other households. These results may indicate a lack of health education as the majority of respondents – 27.91% (n=182) are not sure of the number of households sharing their toilets, 27.61% (n=180) of the respondents mentioned less than seven households, and 27.30% (n=178) mentioned less than five households. 10.43% (n=68) mentioned less than ten households, while 6.60% (n=43) respondents said more than ten households. Sharing of household toilets especially between more than ten households indicates that individuals in the larger households consumed larger amounts of water, which led them to use the toilet more than the households of less than five people who consumed less water. An assessment of how much water is collected (suitable to meet the needs of a household) can also indicate the extent to which toilets are shared.



5.5 Conclusion

This chapter described the key issues relevant to the assessment of the state of basic water and sanitation services at the Gedroogte, Ga Molapo and Magatle rural communities and its impact on their sustainable livelihood. The chapter also highlights the importance of water and sanitation infrastructure as the socio-economic role played by the municipality gaps and impacts towards the provision of basic services to the communities. The following chapter explores more on municipal infrastructure, borehole typology and its impact on the livelihood of communities cannot be ignored, as it is their lifeline. It could be gleaned from the chapter that while the provision of water and sanitation is the key issue to a sustainable livelihood, the role of Tribal Authorities, the municipality, gender and policies, can all negatively impact the people's health, economic and environmental aspects which could, in turn, hinder, their sustainable livelihoods. Furthermore, the sanitation programme in the communities revealed

gaps encountered by rural-based municipalities and health-related diseases that can adversely affect children and community members within the municipality. Information on the sampled households in their provision basic services, water and sanitation, a qualitative analysis is necessary and to introduce the subject for the next chapter.



6 CHAPTER SIX: ANALYSIS OF THE QUALITATIVE DATA

6.1 Introduction

The analysis of data undertaken in this chapter consists of three main sections. First, the status of the infrastructural system, second, response from the municipal officials and ward councillors in the provision of water and sanitation. Last, the influence of Gedroogte, Ga Molapo and Magatle rural communities in the provision of water and sanitation.

6.2 The status of the infrastructural system for water supply in rural communities: An overview

During my dialogue with Municipal Officials and Ward Councillors it seems that inaccessibility to water and sanitation in the Gedroogte, Ga Molapo and Magatle rural communities was already perceived in the 1950s. Inaccessibility of basic services was brought by the apartheid regime. In 1956, the Water Act, No 54 of 1956, came into effect with the aim of consolidating and amending laws from irrigation infrastructure, bulk water governance to the provision of sufficient of water to all South African. From 1948 to 1960 marked the first phase of apartheid in the struggle for white people and black people differs completely as it has tremendously lamented the Gedroogte, Ga Molapo and Magatle rural communities.

The *Lepelle Nkumpi Local Municipality* has water, sanitation, roads, and energy and transportation infrastructures. Several rural communities in the municipality only have access to water falling below the Reconstruction Development Programme (RDP) benchmarks. These are described in clusters as follows: The first cluster to have access to pipe (tap) water inside their yards, which were identified in Census 1996, was 33%, 2001 was 35% and finally, in 2011 it was 51% distributed to Lebowakgomo Township.

The second cluster to have piped water on communal standpipes were identified in Census 1996 as being 29%, 25% in 2001 and in 2011 24%, where 1339 households in Magatle and other rural communities were merely identified as targets to have taps installed. The third cluster, with no access to piped (tap) water, was noticeable in Census 1996 with 38%, 2001

with 40% and in 2011 with 25% which comprises of Gedroogte, Ga Molapo and other rural communities in the municipality.

In our interview with Municipal Officials and Ward Councillors, three main factors were raised as the noticeable unsatisfactory weakness in the three rural communities. First, '*drought vulnerability*', has become one of the critical weaknesses in rural households livelihoods in various interrelated ways which also associated with poor water quality. Plants and animals depend on water for survival just like human beings, as our quantity of food can shrink which can lead to poverty in rural communities. It has been indicated that since the drought damage is provisional their household food supply returns to normal when the drought is over, but during that period, it tends to make households members vulnerable in the search for water and food for their survival. They have indicated that during the drought period, the quality of water becomes contaminated and that makes it harmful to plants, animals and rural communities to drink, as it is not clean. It has been reported that poverty, starvation and food insecurity have been mirrored in decades as the chronic drivers of livelihoods in rural areas and rural municipalities of the Limpopo Province. They have also linked another symptom, water scarcity as a life-threatening condition and influences water insecurity due to its natural resources .i.e. household hygiene like bathing, washing, cooking and dishwashing are affected by food and water scarcities. Moreover, due to the impacts of drought in the rural communities, inaccessibility to water in their households tends communities to become vulnerable and also to use the toilet.

Second, '*livelihood vulnerability*' they have indicated threats faced by rural households when availability and access to clean drinking water deteriorates which can influence the lack of access to water for households use both in quality and quantity. Population growth, also has been indicated due to the fact that rural household are traditionally larger, unlike urban households. The ability to pay is affected by issues like corruption in service delivery, political violence, increased level of crime and unemployment amongst members of the communities.

Further, they have indicated subsistence farming as vulnerable as they depend on household water for watering their indigenous crops. New occupants in the communities are obliged to contribute to the cost of water infrastructures such as wells or boreholes for their daily usages as the previous occupants have already contributed towards that infrastructure, besides they

buy water when there is no municipal provision for rural communities. The distance for collecting water was reported as it can importantly drain rural communities due to prolonged time. In addition, the soil, land structure on digging a new toilet is vulnerable to rural communities as it is not conducive and they do not have proper tools to dig the hole for a new toilet.

Third, '*household vulnerability*', drinking water remains the core of vulnerability, rural community household's fall into poverty. They have indicated that several households are experiencing a shock when there is no provision for water in their houses. Their ability to cope depends on the local municipality even though they do not have hope anymore as they are suffering silently. Due to larger household consumption, rural communities depend on their extended families, formal or informal social welfare support and other community support for their survival. Basic sanitation remains an antique concept, as other rural members currently do not have toilets in their households as they depend on the bush or open defecation which it is harmful and shocking as they can at times be bitten by snakes or other dangerous animals. Several rural communities depend on pit toilets without ventilation, also it is very dangerous as our children become victims of child mortality as their structure is not up to standard and suitable for their use. The health impact of non-compliance in basic services provision is related to the overall quality of life of community members, which determines largely the sustainability of their livelihood. Health is the wealth of a community, in which poor quality of life can reduce life expectancy. Municipal Officials and Ward Councillors stated that the status of the infrastructural system within the three rural communities are not up to standard in a way that all communities would be able to rely upon the local municipality for basic services provision, especially water and sanitation.

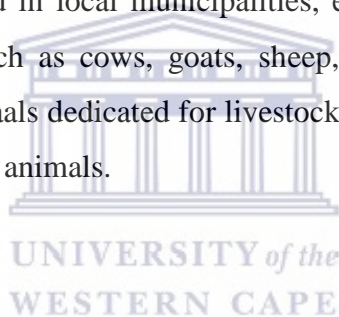
6.2.1 Water infrastructure

The Gedroogte, Ga Molapo and Magatle rural communities suffer physical, economic and social water scarcity. Gedroogte and Ga Molapo rural communities depend on borehole water and a communal tap as their main source of drinking water, Magatle community depends on boreholes, communal tap even though other members have access to piped water inside and a communal tap. Rural communities complain about poor water quality specifically about salty

water as it causes their teeth to develop fluorosis. Water scarcity contributes to the poor water quality, economic scarcity to ageing infrastructure and social scarcity to inadequate water.

Population growth within the rural communities is due to the vast settlement of small-scattered populations within the municipality, they are experiencing a huge crisis regarding the provision of water due to drought. Surprisingly, however, women at these rural communities reported that they are experiencing chronic fatigue, spinal and pelvic deformities, which also affects reproductive health due to their daily carrying of water on top of their heads. The access to wells has declined over the years as communities continue to not use them due to fears concerning poor hygiene and preserving the health and sustainability of households.

During the transect walk at the rural communities, I have learnt that municipal infrastructures such as water pumps are broken which led to insufficient water. Pump operators remembered many occasions during which they experienced shocking incidents concerning broken water pumps which are a normal trend in local municipalities, especially the Limpopo Province. Moreover, domestic animals such as cows, goats, sheep, donkeys, cat and dogs are also impacted, as they do not have kraals dedicated for livestock and worst of all, the people share the same borehole water with the animals.



Illegal Connections

As such, the entire communities are left with no alternative water sources thereby increasing their reliance on illegal water connections or relying on rain to sustain their households. Rural communities persistently clash with tribal authorities, which leads to increased violence surrounding poor service delivery in their communities. This appalling condition adversely affects the people because when external contractors visit the communities' the Tribal Authorities authorise them and everything is handled between them privately. The prevailing situation involves work being ordered through tenders obtained via political means within the municipality. However, the municipality claims the land belongs to tribal authorities and it justifies the work not being done based on this fact. Conversely, the tribal authorities control how and where the work gets done but blame the municipality when this is not done satisfactorily.

Due to larger rural communities deepening their borehole, it is imperative to understand its structure and its capacity. The borehole types within each rural community is considered by type of pump and depth for example.

Table 6.1: Borehole types – the type of provision as a key perceptive aspect.

Community	Borehole Number	Type of Pump House	Borehole Depth	Type of Pump	Account Number	Metre Number
Gedroogte	H01-1267	Concrete	52M	Mono Pump With Element	6681303960	02027009 02040969 02045474
Gedroogte	Unnumbered Borehole	Concrete	80M	Mono Pump With Element	6681303960	
Ga Molapo	H01-1332	Concrete	86M	Mono Pump With Element	6646447010	1114569098 096
Ga Molapo	H01-3417	Concrete	125M	Mono Pump With Element	None	3107140290 420
Ga Molapo	Unnumbered Borehole	Concrete	85M	Mono Pump With Element	8301241478	3114629015 146
Ga Molapo	H01-3422	Concrete	120M	Mono Pump With Element	None	3107140278 359
Magatle	H01-1282	Concrete	80M	Mono Pump With Element	None	None
Magatle	H01-1524	Concrete	105.76M	Mono Pump With Element		
Magatle	H01-1525	Concrete	105M	Mono Pump With Element		
Magatle	H01-1526	Concrete	105.7M	Mono Pump With Element		

Source: Author's data

The municipality took an initiative to abstract water from Olifants River through Olifantspoort Water Treatment Work (OWTW) and through the Lepelle Northern Water Board (LNWB) to the Groothoek Regional Water Scheme (RWS) Cluster, which includes Lebowakgomo Township, Zebedelia citrus estates and other rural settlements (Gedroogte, Ga Molapo and Magatle) as the only one source of drinking water.

The only community within the entire municipality in which reticulated water with tariffs are allocated is the Lebowakgomo Township, as the rest depends on borehole and communal taps. Therefore, for this research, these norms and stands are not applicable as the selected rural communities depend on borehole water as their only infrastructure. Yet, the water tariffs are regulated and not quantified in which communities are allocated, i.e. potable water of 25 litres per person, a minimum flow rate of not less than 10 litres per minute etc. The municipality provides free basic water to approximately 430 households in Lebowakgomo Township while the rest depend on state-owned boreholes for water provision.

6.2.2 Sanitation infrastructure

Sanitation infrastructure in the Gedroogte, Ga Molapo and Magaatle rural communities, it is an alarming factor for rural households. To start with, the Gedroogte and Ga Molapo rural communities depend on pit toilets without ventilation as their main source of sanitation and also Magatle community depends on pit toilets without ventilation even though others have flush toilets. When I visited the three rural communities, I have been informed that they do not have wastewater disposal, as it is only at Lebowakgomo Township. Ward councillors have observed that since their upbringing to date, they too depend on pit toilets without ventilation. Their pit toilets are dilapidated and unsafe to be used by members of their households. Figure 6.1 below depicts a picture of a female community member in front of her dilapidated toilet at Ga Molapo rural community.



Figure 6.1: Dilapidated pit toilet without ventilation

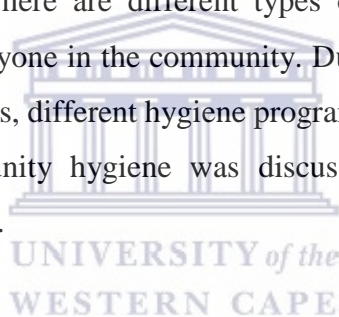
Source: Author's representation

During the focus group, ward councillors have shown some disadvantages of rural communities using pit toilets. One of the major traumas is when a fully lined pit toilet is full, the urine cannot leak in the toilet which results in time and cost to empty and maintain the toilet. Pit toilets do not have water seals, flies and odour are normally noticeable which becomes the problem as it spreads to the whole household and contamination can occur which leads to waterborne diseases such as diarrhoea. It is indicated that pathogens are present in the pit toilet, hence emptying can be a challenge to the rural households as they do not have the equipment.

Further, members of the communities have shown a lack of health education and small children and disabled people are at risk by using the pit toilet. Even though, it does not require water, a standard pit toilet should have a cleanable cover slab in order to be cleaned, surprisingly, most pit toilets in rural households do not have a proper slab or floor above the hole. As both the faeces and urine in some pit toilets can be seen inside while seated or standing, some do not have a proper door to close as it might be broken or they use an old cloth to cover the entrance for privacy while in use.

During the story-telling, it was indicated that mosquito bites are damaging their health because they do not have a health facility to fumigate their pit toilet because mosquitos and spiders breed inside their toilets. During their rainy season, unstructured pit toilets can be vulnerable to rural households as it overflows and cannot be used until the rain stops and the toilet becomes dry or repaired. Another alarming situation for rural households is, washing hands after using the toilet. During the focus group discussions, rural communities did not understand the term Water, Sanitation and Hygiene 'WASH', every household should have handwashing facilities available for immediate use after using the toilet to prevent waterborne diseases.

Washing hands is one of the most important principles for promoting health after using a toilet, a pit toilet without proper handwashing facility will decline the objective of diseases prevention. Sanitation education is important both at primary and secondary schools because it educates children how to maintain health and safety personal cleanliness at home, school and within the entire community. There are different types of hygiene that is needed to be considered when promoting everyone in the community. During the in-depth interviews with members of the rural communities, different hygiene programmes similar to personal hygiene, household hygiene and community hygiene was discussed and practised to give rural communities better identification.



I. Personal hygiene

Hand washing is the most vital part of the method of promoting personal hygiene. There are many simple ways of making hand washing devices at home and in schools. Ward councillors advised members of the communities to be innovative by using jerry cans, old cups or bottles for their member of the households to wash hands after using a toilet. Many water-related diseases are transmitted through poor body and hand washing. Simple hand wash instruments are cost-effective and should be fitted to every toilet made at home and schools.

Plants can be grown below the hand washing instruments so that the used water is not wasted. Both primary and secondary schools, communities and households can benefit by using this simple instrument to promote sanitation amongst their teachers and children to reuse, reduce and recycle the environment in Figure 6.2.



Figure 6.2: Used plastic bottle for handwashing with soap

Source: Author's representation

II. Household hygiene



Household hygiene includes amongst others the storage of clean water for drinking at home in buckets, 'jojo' containers, scoops and traditional clay pots to avoid contamination (Figure 6.3). Re-contamination of unclean containers and untreated water influences the quality of household drinking water during storage. The storage and consequently the time it takes to fill up a container can also have an impact on the quality of collected water, illegal connections and lack of hygiene education amongst communities. Unreachable access to water resulted in weakening the quality of drinking water and the longer duration of water stored in the household might increase contamination. Healthier storage containers of drinking water should be properly cleaned to increase water quality and reduce waterborne diseases in households.



Figure 6.3: Households water storage

Source: Author's representation

III. Community-based hygiene

Community health clubs encourage community members in a coordinated group so that results can be accepted by a group rather than an individual who take personal decisions. Shared water points can be a health risk if not maintained by the community as mosquitos and other flies can breed alongside the stagnant water. Waste disposal and garbage collection within rural municipalities is a challenge as some are still using the traditional method.

6.3 Municipal officials and Ward councillor's responses to water and sanitation provision supplied by the municipality

A direct interview with specific local government officials from the *Capricorn District Municipality* and Ward Councillors was scheduled. Their direct responses from interview questions were presented according to wards that councillors represented as follows:

Table 6.2: Municipal official perceptions and responses

MUNICIPAL OFFICIALS	
What is the Current situation regarding access to water and sanitation services in your household and/or community?	
Gedroogte	
OFFICIAL 1	Responses
	The community do not have adequate water and sanitation for over 20 years. Members of the community including women defecate in open bushes most of the time when they enter into the woods to fetch firewood.
OFFICIAL 2	Indicated that water scarcity and food insecurity as their main problems and the community is extremely poor and depressing.
OFFICIAL 3	Reported that boreholes number HO1-1267, HOI1-1282 and HOI1-1534 are meant to supply water to the entire community. Fortunately, there is another unnumbered borehole which also supplies water to the community to ease the pressure from the other two boreholes. Currently, they are operating three boreholes and the fourth one is still under construction as it must be connected to a Reverse- Osmosis water treatment plant which is already on site.
Ga Molapo	
OFFICIAL 1	Indicated that it is a quiet and clean area however, it is affected by water scarcity and most of their people come from Gedroogte community, as such their relationship is mutual.
OFFICIAL 3	Reported that boreholes number HO1-1332 and HOI-3417 and other two unnumbered boreholes are the main water source for the community. Unfortunately, one unnumbered borehole at the Western side of the community is dry and decommissioned.
Magatle	
OFFICIAL 1	Reported that lots of their members migrated from different unknown villages to reside with them which in turn causes problems and more pressure on few water sources available and this triggered more conflicts since these illegal settlers also fight to get water allocation.

OFFICIAL 2	Indicated that Magatle has been declared a drought area but they do have a municipal growth point which gives them access to water even though it is not enough for an estimated population of 9665 thousand people. Presently, the CDM is busy with a pilot project of digging new boreholes to help the community to have access to water. Moreover, it has been indicated that the borehole pressure is 80 x 60 mm and 200m deep.
OFFICIAL 3	Reported that bulk water from Olifantspoort water treatment plant and HO1-1526, HO1-1526 together with one unnumbered borehole is the current source of water supply in the community. Moreover, the supply is insufficient due to the growing population, which could be estimated to 6758 residents/inhabitants.
Five key issues that the municipality faces with respect to water and sanitation services at the three communities.	
	Responses
OFF (1, 2, 3)	Reported lack of engineers, corruption, insufficient budget, lack of infrastructure and drought
Challenges encountered in resolving water and sanitation issues.	
	Responses
OFF (1, 2, 3)	Reported climate change, drought, water scarcity and food security

Table 6.3 below indicates the responses from the community Ward Councillors pertaining to the current level of infrastructure and services of water supply within the *Lepelle Nkumpi Local Municipality*.

The key informant interviews (KIs) as an in-depth were also conducted to understand the motivation, behaviour, and perspectives of participants through various techniques, which are very much based on the community's observations. Table 6.4 below presents the findings based on the responses of KIs in the three communities. In reporting the findings, pseudonyms were used instead of the KIs actual names. This approach was adopted in order to ensure anonymity and confidentiality of the participants' responses.

Table 6.3: Ward Councillor's responses

WARD COUNCILLORS	
What are the current level of infrastructure and services of water supply within the <i>Lepelle Nkumpi Local Municipality</i>	
	Responses
WARD 1	<p>The community is having approximately ten thousand in population with only two (2) boreholes functional and two (2) none functional boreholes, which is not enough to supply the community. From time to time the borehole is dysfunctional which makes the life of the community and their domestic animals (chickens, dogs, cows, cats, donkeys, goats, pigs and sheep) are dying because of the unavailability of water. However, this dysfunction of the borehole can last for months and weeks, which makes it difficult for the household's sustainability. All the residents including traditional leaders, politicians and ordinary people cry the same tears during water inaccessibility, as they do not have a bulk water supply.</p> <p>The water availability in the community depends on the working condition of the borehole, which normally the Pump Operator works from 08:00 to 16:30 Monday to Saturday. In a condition where there is water inaccessibility, the Pump Operator can work only one week in a month until the borehole is functional. Suggestion from the ward councillor to solve the problem at the community was for the government to add three (3) more boreholes even hand pumps to work as a substitute in case there are electrical power cuts and load shedding.</p> <p>The community depends on a mobile clinic, which comes every two weeks for only one day. In terms of sanitation, the Gedroogte community depends on pit toilets and when it is full, they dig another toilet, which is not standard according to the South African National Standard (SANS) code 10400. According to the ward councillor, the communities use a traditional measurement of 3 metre x 2 metre six (6) feet to dig the pit toilet.</p>
	Responses
WARD 2	<p>The population consists of an estimation of 11 thousand people, which depends on two (2) functional and two (2) exhausted boreholes supplying the entire community with water. Service provision in this community burdens their sustainable livelihood and it is worsened by poverty and famine, which are related to water and sanitation. The water scarcity was perceived in 1959 to date and this affects household animals (chickens, dogs, cows, cats, donkeys, goats, pigs and sheep). Food scarcity is caused by water scarcity since dwellers depend on backyard vegetable gardens as a source of income to sustain their families in terms of watering their indigenous crops at the backyard of their houses as they depend on them for fighting poverty and the malnutrition of the members of their households. The communities plant maize during seasonal periods and supplement this with indigenous food crops like i.e Bambara groundnut (<i>ditloo marapo</i>), Cowpea (<i>dinawa</i>), Cleome <i>gynandra</i> (<i>lerotho</i>), <i>Amaranths</i> (<i>thepe</i>), Jews mallow (<i>thelele</i>) for their sustainable livelihoods.</p> <p>Their household animals like cows, goats and sheep depend on the maize residue after harvesting to feed the community and if there's water inaccessibility, both the communities and household animals suffer due to food and water scarcity. The communities often buy water when there is</p>

	no government provision and it costs them R40.00 to fill a 200 litre jojo container and the majority of the households are traditionally larger which makes challenging the adequate provision of water. The community also do not have a clinic, however, depend on a mobile clinic, which comes twice per month for only one day. The ward councillor also suggest additional borehole and hand pumps from the government to substitute the provision of water in the community.
	Responses
WARD 3	<p>The community have been declared as a municipal growth point and it was developed in 1958, which consist of three political wards. Some societies have experienced “dental fluorosis” from drinking the water. The Capricorn District Municipality (CDM) is helping communities but due to population growth as a result of the influx of young couples to the community there is increased pressure on the few water sources available as well as the infrastructure can no longer sustain the population growth.</p> <p>The community depends on two functional and one none functional boreholes. Currently, the CDM is busy with installing water pipes and the project can approximately take 2 years for the CDM to finish due to new development and a larger community. Community members are part of the project as Community Development Workers (CDW) which empowers the poorest to be employed including widows/widowers, youth and non-pensioners. The ward councillor informed us that their main challenge is immigration which has repeatedly led to illegal settlements and they usually trigger in illegal service delivery protests and vandalise municipal resources.</p>

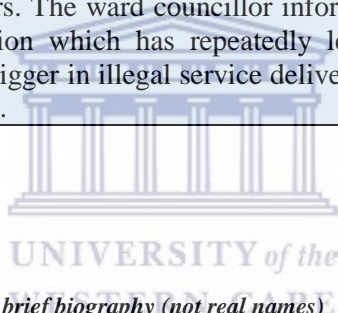


Table 6.4: Key Informant Interviewees and brief biography (not real names)

Participants	Responses
Matome	<p>Matome (pseudonym) is a 59-year-old family man, born and raised in the Gedroogte community and his father was a messenger with the Tribal Authority of the community. During his youth, he migrated to Johannesburg as a soccer player and later returned home permanently. When he arrived at the home, he still experienced the perennial challenge of water scarcity that he witnessed as a youth.</p> <p>Matome also indicated that projects were implemented and engineering contractors did not complete their work properly due to the condition of the environment whereby in some areas they needed to blast some rocks to insert pipes but did not have the appropriate equipment. This frustrated him deeply as they gave him hope for the provision of water not to mention sanitation, as some people still have to defecate in the bush.</p> <p>Matome, further indicated that contractors were careless in that after digging the holes they left them uncovered such that the children were endangered, sometimes falling into the ditches left behind by the contractors when they were playing. He stated, “Tons and tons of soil are heaped on our dusty roads and as</p>

	<p>men, we ended up clearing it because it is dangerous for our families and us.” Matome wondered when he would be able to enjoy life and have access to clean drinking water and basic sanitation as the government promised.</p>
Johannes	<p>Johannes was a 42-year-old unemployed man at Ga Molapo community. He has never formally worked and depends on selling indigenous African crops and on his children’s social grants (R380) to sustain his family. He still depends on rainwater as the topography of his storage is located on dry land and his family relies on his aunt’s private well, which is not healthy for consumption. Johannes stated, “Since I was born and up to date I am still suffering to get clean drinking water, let alone sanitation, which is worse as I am using the bush and our borehole is always broken”.</p> <p>Johannes further stated that they buy water and it is difficult for him to sustain his family due to water scarcity as they are branded with poverty. In view of his family’s terrible living conditions, Johannes lamented as follows: “our children are born in poverty and they eat and drink poverty. We do not have any plan as we are waiting for the government to help us as promised. People are migrating to urban areas because it is not easy to survive let alone to boast or shine about our livelihoods as we live from bread to mouth. We still hope our government can help us to have access to clean water”.</p>
Thomas	<p>Thomas, a 20-year-old male youth lamented with grief and was depressed during the transect walk at Gedroogte community. He is the eldest son from a single mother with two siblings and he was helping his mother collect water and firewood for the family, acting on behalf of his absent father. He indicated that the area is drought-ridden and the municipality must appoint qualified technicians to repair broken boreholes as the communities rely mostly on borehole water. Expressing his frustration, he stated thus, “in most cases they will tell us about a budget and we are used to that name. It is worse for some of us as we dropped education because of poverty”.</p>
Raetsesa	<p>Raetsesa, a 45-year-old woman from Magatle community joined the transect walk eagerly as she collected water and firewood in the area. She performs this chore daily. She is a widow and temporarily works as a Community Development Worker (CDW) in the community. She mentioned that water is very important as it alleviates poverty for her and other women in the community because they are engaged in a community vegetable garden and occasionally harvest indigenous African crops for their families.</p> <p>Raetsesa indicated the importance of greywater, as they used it for watering their crops because it acts as a pesticide. She further indicated that their families are suffering due to water shortages in her community and that they usually vote in elections with the hope that they will get water after elections as promised by the political activists but to no avail. Raetsesa said that water is life and a gift from God and again it is their human right to have access to clean water rather than to be declined due to their rural location.</p>

<p>Pheladi</p>	<p>Pheladi, 52-year-old women from Ga Molapo community, was unhappy about the water and sanitation dialogue. She said, “Ga Molapo is a rebirth of Gedroogte community as the majority of the families have migrated here.” She further mentioned that both communities suffer the same curse due to poverty and water scarcity.</p> <p>Pheladi appealed to the government to intervene in the matter as promised and ensure that they have adequate clean water and basic sanitation, as are their human rights. She indicates that actually, the government owes them because they have been suffering for decades with no help from the government. Pheladi painted a bleak future of their plight in the following statement, “our toilets are also dilapidated and unsafe to use which threatens our family life as they are below construction standard and we have repeatedly pleaded for the government to support us”.</p>
<p>Mapula</p>	<p>Mapula, a 35-year-old woman from the Gedroogte community, indicated that she walks for approximately five kilometres to collect firewood on top of her head and comes back home to collect water using a 20-litre bucket again on top of her head daily. According to Mapula, “this normally causes unstoppable headache, back pains and the mobile clinic comes only once per week on Thursdays and in most cases when you go late after collecting firewood and water there will be no medication”.</p> <p>Mapula pleaded that the government should provide them with extra health care facilities and even build a permanent clinic for their community instead of a mobile clinic, which comes once per week.</p>
<p>Raesibe</p>	<p>Raesibe, a 40-year-old woman from Magatle community, indicates that for Magatle being a growth point community unlike Gedroogte and Ga Molapo, some communities have community tap water in the streets, but very few inside the yards. She stated that, “beside clean water, our community lacks sanitation as we rely on pit toilets without ventilation although we have a clinic and police station unlike our sister communities”.</p> <p>Raesibe urged the government to install more tap water since the community is declared as a growth point by the municipality due to people flocking to the area because of better opportunities for sustainable livelihoods.</p>

Conclusion

The qualitative results provide a comprehensive picture of the poor water and sanitation provision in the Gedroogte, Ga Molapo and Magatle rural communities in the Limpopo Province. The results indicate that although basic services provision rests within the local municipalities, rural communities currently are still struggling to get potable, accessible and adequate drinking water for their households. Findings also show that borehole water and pit

toilet sanitation are traditionally being used amongst all members of the rural communities that participated in the study.

In summary, first, '*water infrastructures*' communal taps and boreholes water sources are broken and some are rusted which in most cases obstruct the provision of water to rural households. Reporting channels for broken municipal infrastructures, also delay provision as they take their time depending on funds allocated for repairing broken infrastructures. Second, '*sanitation infrastructures*' pit toilet without ventilation plays a major role in the widespread of contagious waterborne diseases within rural households, unfortunately, the entire rural communities depend on water for sanitation.

The 'physical influences' of water availability in rural households remains unsafe as their water is not drinkable thus forcing members of their communities to dig their own unprotected wells, which are not safe for drinking and inaccessible, which makes members of households buy water when there is no provision from the municipality. While, water is irregularly unavailable at the source in insufficient quantities for daily households demands for domestic use, including personal hygiene and sanitation. Water quality, the quantified 25 litres per person per day regulation is not applicable at the three rural communities, which makes their water quality, not within the regulation standards. Water affordability, poverty remains the watchdog within the three rural communities; income generated from rural households is not conducive which makes them unable to afford water at different costs. Water collection, walking long distance collecting firewood and household's water, blocks many households as it influences child absenteeism, especially girl child from school, while other girls are influenced during their puberty cycle. The 'socio-economic influences' physical water scarcity influences natural resources such as accessibility to drinking water and its appearance due to climate change which can occur at any level of provision due to drought, high population, economic development (or lack thereof), pollution and boreholes. Livelihoods in households in the three communities are naturally vulnerable, particularly households which are unable to sustain their livelihood for food and water. The 'governmental influences' level of hygiene training, rural households are exposed to waterborne diseases (diarrhoea, malaria) and its impractical on how to control them, as the major health factor derives from washing hands after using the toilet to reduce spreading of diseases.

Gender perception in relation to water and sanitation management also plays a major role in the rural communities, as women are side-lined and they are leading in terms of population density worldwide and locally. Operation and maintenance of water projects also play a major role due to, rural community member's illiteracy, as it is difficult to attend community meetings or giving technical input during water projects. The key influences that members of rural communities face are when there is no water provision for their households. If this happens, members are forced to damage municipal infrastructures, use illegal connections or embark on illegal service delivery protests to voice out their concerns. Another challenge related to basic service provision is malicious damage of property, treatment plants and pipelines during service delivery protests or to access water for productive usage (see <https://reviewonline.co.za/289223/Inw-olifantspoort-plant-stopped-due-vandalism-pipeline/>). In early 2019 community members occupied a major treatment plant, Olifantspoort and took the keys and made damages estimated in millions of rand (<https://reviewonline.co.za/302098/keys-olifantspoort-plant-retrieved-plant-reopened/>).



7 CHAPTER SEVEN: CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This thesis examined the standards of municipal water and sanitation provision to rural communities within the Gedroogte, Ga Molapo and Magatle areas. First, it set out to determine the status of infrastructure for water and sanitation supply services in the *Lepelle Nkumpi Local Municipality*; second, to evaluate the effect of water and sanitation supply systems accessibility on rural households within the *Lepelle Nkumpi Local Municipality*; third, to examine rural households' responses (including protests) to the challenges related to water and sanitation supply system. Finally, it sought to assess the gaps between community expectations and service delivery of water and sanitation to the *Lepelle Nkumpi Local Municipality*. The key findings of this thesis are summarised in this chapter and the policy implications in respect of municipal compliance and rural development are discussed to benefit the Gedroogte, Ga Molapo and Magatle rural households.

A survey of the study area was undertaken in the Gedroogte, Ga Molapo and Magatle rural communities located in the *Lepelle Nkumpi Local Municipality* in the Limpopo Province. A mixed methods approach, including qualitative and quantitative approaches, was used to assess the *Lepelle Nkumpi Local Municipality* compliance to the current public policy provision of water and sanitation. The research participants comprised 638 residents of Gedroogte, Ga Molapo and Magatle rural communities in the *Lepelle Nkumpi Local Municipality*.

The findings from the quantitative data revealed massive backlogs of basic services, which include electricity, water, sanitation and waste removal services, all being below the Reconstruction and Development (RDP) Standard. The provision of basic services in these rural communities is exceedingly poor with 98.48% of respondent reporting shortages of water and 42.18% dependent on pit toilets without ventilation (and a total lack of waste disposal).

The assessment of reliability and availability of public water reflects that 99.9% respondents have to buy water from vendors when there is no supply from the municipality. About 95.43% of residents experienced challenges in reporting municipal faults. The key informant's

respondents in these three communities reveal undoubted negative impacts on their livelihoods. Residents felt marginalised and isolated by the municipality.

Almost 71.41% (n=467) indicated that the municipality took 30 days (one month) to respond to reported faults while some said it takes even longer. The current management of the municipality does not meet the needs and expectations of the rural communities, thereby compelling them to dig their own wells, which are not treated and are unsafe for human consumption. Other critical impacts on these rural communities include drought, climate change, and food insecurity, which are associated with poor water quality.

7.2 The nature and status of infrastructures in rural communities

The results show that at the time of this research in 2016 there was widespread usage of boreholes as their main water infrastructure on a daily basis and pit toilets without ventilation for their sanitation. Respondents reported that they walk more than four kilometres fetching water – an apartheid standard compared to the 200 metres that current policy stipulates. This burden hinders rural community's access and good health. The most important modes of transporting water in the study area include:

- donkey carts,
- wheelbarrows
- women carrying 20 litre buckets on top of their heads
- and illegal vendors using their lorries to collect water.

The findings at the three rural community's revealed deep insecurity around water shortages, which resulted in several years of service delivery protests which often lead to malicious damage to property and public infrastructures. The appalling condition of water shortages at these three rural communities is worsened by some in the communities damaging taps. The municipality has not tried to secure the community taps. The majority of members of the rural communities resort buying from illegal water vendors similar to the Mopani District Municipality. This research has demonstrated that almost all (78.02%; n=511) of the rural community members responded that the current challenges of poor infrastructures are also due to broken taps and hand pumps. About 42.18% (n=275) depend on dilapidated pit toilets.

The *Lepelle Nkumpi Local* municipal officials' responses highlighted several key factors as influencing the poor state of infrastructures in the municipality:

- budget constraints
- corruption,
- drought
- and lack of qualified engineers.

The relevant policies and legislation pertaining to the provision of water have not been fulfilled in a meaningful way in the Gedroogte, Ga Molapo and Magatle rural communities. This is also due to using boreholes to access water rather than the tariff-structured tap water. The municipal IDP studies revealed that deficient tariff systems face rural communities. These deficiencies violate norms and standards presented in respect of tariffs for water service authorities and bulk water service providers as per the Water Services Act 108 of 1997. This regulation is, however, noncompliant in the three rural communities: the IDP (2016/2021) admitted that it is only at Lebowakgomo Township that municipal water tariffs are applied and where very few indigent households are benefiting from the free basic services.

The outcome from my data suggests that water-related health can reduce life expectancy. Some 61.59% (n=404) respondents confirmed fluorosis and 20.73% (n=136) respondents mentioned diarrhoea as the problem when consuming unsafe water. Among other respondents, 11.43% (n=75) reported cholera, 3.20% (n=21) malaria and 3.05% (n=20) mentioned fever and fatigue after drinking unsafe water.

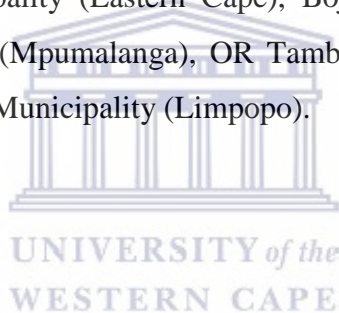
7.3 Conclusion

Based on the findings of this study, the researcher observed the following:

- (1) An inadequate number of boreholes to supply water in Gedroogte, Ga Molapo and Magatle lead to other members of the communities digging wells for their own groundwater supply which is not treated and therefore unsafe for human consumption.

- (2) Shortages of staff with relevant skills such as management, technicians, and administrators are among the reasons why there are scarce supplies of water and basic sanitation services at Gedroogte, Ga Molapo and Magatle rural communities.
- (3) Regularly broken taps also lead to inefficient provision of water in the three communities.
- (4) Inaccessibility to waste disposal services also presents a huge health challenge to the communities.
- (5) Poor pit latrine design and placement pose serious health risks to members of the community, especially concerning the use of unhygienic and hazardous sanitation facilities.

The South African water sectors are currently facing numerous challenges, which are connected to policy and legislation. The outcomes from both qualitative and quantitative data suggests that the nature of water and sanitation provision in the three rural communities appears similar to the Amatole Municipality (Eastern Cape), Bojanala Municipality (Northwest), Ehlanzeni District Municipality (Mpumalanga), OR Tambo and Alfred Nzo Municipalities (Eastern Cape), Mopani District Municipality (Limpopo).

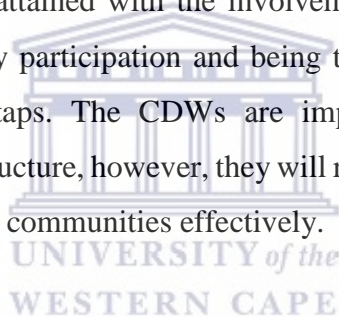


7.4 Recommendations

Based on the above-mentioned key insights derived from the findings of the study, the following are recommendations that may provide useful management strategies and be incorporated in strategies for the current provision of clean water and basic sanitation services at Gedroogte, Ga Molapo and Magatle rural communities:

- (1) The Limpopo Department of Water and Sanitation should implement the Water Supply, Sanitation and Hygiene (WASH) programmes within *Lepelle Nkumpi Local Municipality* for health education and awareness in schools and communities which will help to promote the well-being of the communities at large.
- (2) The Limpopo Department and Social Development should educate rural communities about the use of informal pit latrines in order to be consistent with environmental health regulations.

- (3) The Limpopo Department of Water and Sanitation should implement new national policies and regulations regarding the provision of clean water and basic sanitation to rural communities.
- (4) In view of the untold hardships being experienced by the rural communities, it is essential that *Lepelle Nkumpi Local Municipality* upgrades the water capacity and facilities, including boreholes, in compliance with government regulations, i.e. Water Service Act of 1997.
- (5) *Lepelle Nkumpi Local Municipality* must implement management strategies that incorporate water for productive use in the water distribution plan at Lepelle Northern Water, Olifantspoort as this will foster community development.
- (6) The municipality is held accountable to higher tiers of government and made to answer with a constructive plan about addressing the appalling shortfall inadequate water and sanitation provision (also incorporating tribal authorities' and community participation).
- (7) Improvements might be attained with the involvement of Community Development Workers (CDWs) who by participation and being the watchdog can help ensure the integrity of communal taps. The CDWs are imperative as they are capable of maintaining water infrastructure, however, they will require sufficient training to render their services to the entire communities effectively.



Further research is needed on the roles of the private and corporate sectors in the provision of water and sanitation services to rural communities. Research on service delivery protests in rural municipalities (both at local and district levels) is also required along with understanding how governance and traditional leaders in rural areas and how political will affects priorities in democratic municipal planning.

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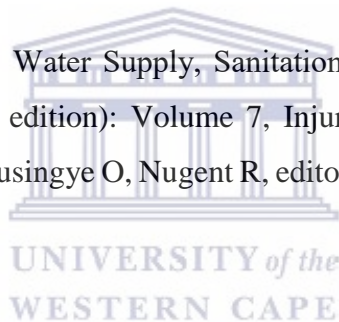
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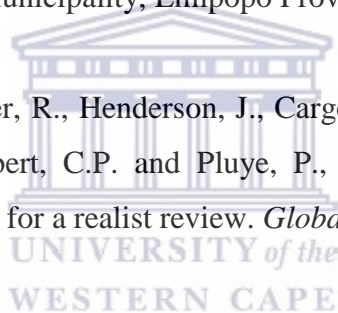
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Appendix 1: Ethics Approval Letter: Reference No. HS/16/1/3



OFFICE OF THE DIRECTOR: RESEARCH
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28 July 2016

Ms R. Mothapo
PLAAS
Faculty of Economic and Management Sciences

Ethics Reference Number: HS/16/1/3

Project Title: Analysis of public policy compliance in the current provision of water and sanitation: A case study of Lepelle Nkumpi Municipality, Limpopo Province.

Approval Period: 11 March 2016 – 11 March 2017

I hereby certify that the Humanities and Social Science Research Ethics Committee of the University of the Western Cape approved the methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval. Please remember to submit a progress report in good time for annual renewal.

The Committee must be informed of any serious adverse event and/or termination of the study.

Patricia Jossas
Ms Patricia Jossas
Research Ethics Committee Officer
University of the Western Cape

PROVISIONAL REC NUMBER - 130416-049

Appendix 2: Lepelle Nkumpi Local Municipality Attestation Letter



CAPRICORN DISTRICT MUNICIPALITY

41 Biocard Street
P O Box 4100
POLOKWANE
0700

Tel: (015) 294 1000
Fax: (015) 291 4297
Web: www.cdm.gov.za
E-mail: info@cdm.org.za

Ref: 3/2/3/1/2/10

Enquiries: Mapholo N.S

MEMO

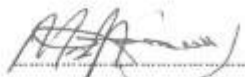
TO WHOM IT MAY CONCERN:

**SUBJECT: WATER SUPPLY ASSESMENT REPORT FOR MAGATLE, MOLAPO
AND GEDROOGTE WATER SCHEMES IN CAPRICORN DISTRICT MUNICIPALITY**

On the 7th August 2016, R.A Mothapo visited Magatle, Gedroogte and ga-Molapo to conduct water supply Status Quo in the area and she was orientated by the officials of Operation and Maintenance for Capricorn District Municipality.

We informed her about the development which is still under taken construction and it will alleviate the water shortages problems. The existing two boreholes were operational and two boreholes are still under construction.

Hoping you will find this in order.


Satellite Manager
Lepelle-Nkumpi Municipality

UNIVERSITY of the
WESTERN CAPE

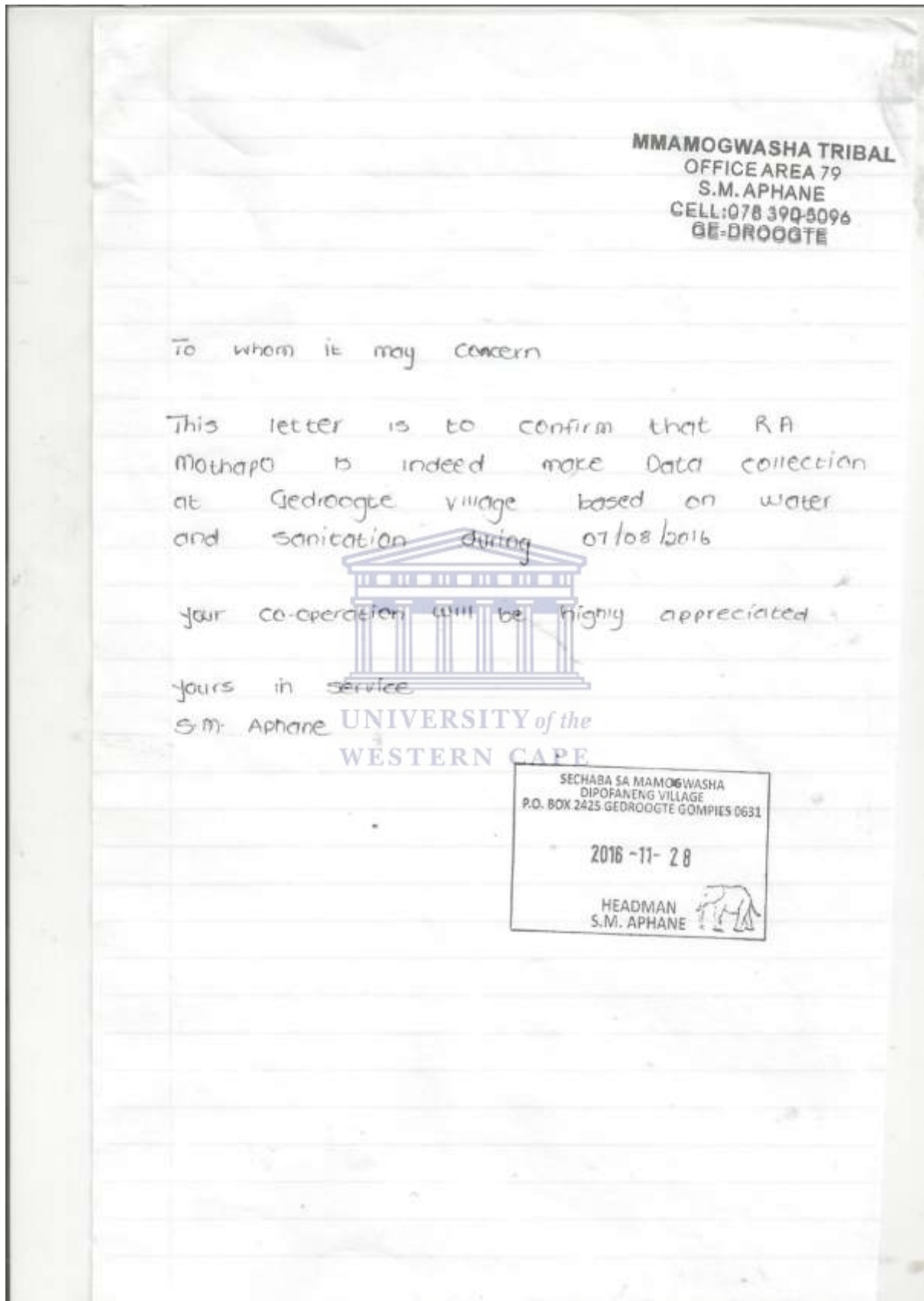

Date



Re Kelafo Mengwaga e Masomo-Pedi re Somo de Setjhaba
Anti-Fraudline 0800 20 50 53 / Cisester Toll free 0800 666 777



Appendix 3: Confirmation letter from Gedroogte Tribal Authority



Appendix 4: Confirmation letter from Ga Molapo Tribal Authority

Moshate wa Makgwading
ga Molapo Village
P.O. Box 4001
Gompies
0631
26-11-28

To whom may concern
This letter is to confirm that R.A.
Mothopo is indeed make Data Connection
at ga Molapo Village based on water
and sanitation during 07/08/2016

your Co-Operation will be highly
appreciated

yours in service
E.N. Aphanu
UNIVERSITY of the
WESTERN CAPE



Appendix 5: Confirmation letter from Magatle Tribal Authority

EMO:APHANE M.S
CELL 076 3843038.

ACTING HEADWOMAN APHANE M.S
MAGATLE VILLAGE
STAND NO 98
Box 79
GOMPIES
0631

30.11.2016.

TO WHOM IT MAY CONCERN

THIS LETTER IS TO CONFIRM THAT R.A
MOTHOPO IS ~~THE~~ MADE DATA COLLECTION
AT MAGATLE VILLAGE BASED ON WATER AND
SANITATION DURING 07.08.2016



UNIVERSITY of the
YOUR CO-OPERATION WILL BE HIGHLY APPRECIATED
WESTERN CAPE

Yours in Service.
APHANE M.S.



Appendix 6: Questionnaire guide for Gedroogte, Ga Molapo and Magatle rural communities

ANALYSIS OF GOVERNMENT COMPLIANCE IN THE CURRENT PROVISION OF WATER AND SANITATION: A CASE STUDY OF LEPELLE NKUMPI LOCAL MUNICIPALITY, LIMPOPO PROVINCE

This project has been approved by the University of the Western Cape. The results are confidential and the findings will only be used for statistical purposes and your participation is voluntary. Your responses will be helpful to improve the quality of life and development in your village in terms of provision of water and sanitation services.

INSTRUCTIONS: There are Thirty one (31) questions in this questionnaire. Please answer each question by either ticking in the appropriate box and/ or filling in the space provided. The survey will take about 30 minutes to complete.

Any queries may be directed to: Prof G Ruiters - +27 21 959 3859

DEMOGRAPHICS

Question 1: Please mark your appropriate gender category, by using an X

		X
1.	Male	
2.	Female	

Question 2: Please mark your appropriate age category, by using an X

		X
1.	18 – 29 yrs.	
2.	30 - 49 yrs.	
3.	50 – 64 yrs.	
4.	65 years and above	

Question 3: Education

		X
1.	Degree	

2.	Diploma	
3.	Certificate	
4.	None	

Question 4: Please mark your appropriate employment category, by using an X

		X
1.	Employed	
2.	Unemployed	
3.	Student	
4.	Full time housewife	
5.	Pensioner	
6.	Seasonal worker	
7.	Unable to work	
8.	Chose not to work	
9.	Labourer (Piece job labourer)	
10.	Domestic worker	
11.	Teacher	
12.	Civil servant	



SOCIO-ECONOMIC DIFFERENTIATION

Question 5: How many people are working in the household?

		X
1.	No Schooling	
2.	Creche/Pre-school	
3.	Primary school	
4.	Secondary school	
5.	Tertiary education	

Question 6: Total income level

		X
--	--	---

1.	None	
2.	R100-R500	
3.	R501-R1000	
4.	R1001-R3000	
5.	R3001-R5000	
6.	Over R5000	

Question 7: What are the main income sources of your family?

		X
1.	Wage/salary	
2.	Farming	
3.	Animal husbandry	
4.	Wood and wood products	
5.	Tourism	
6.	Trading	
7.	Rental income	
8.	Assistance of relatives	
9.	Pensions	
10.	Poverty funds (State which one.....) the	
11.	Other governmental aids/assistance (i.e. unemployment wage)	
12.	In kind aids from the government (coal etc)	
13.	Aids/assistance from NGOs	
14.	Allowances for elderly	
15.	Other (please specify)	

Question 8: Household size

		X
1.	1-3	
2.	4-6	
3.	7-10	
4.	10 - above	

Question 9: How long have you lived in this area?

		X
1.	Less than a year	
2.	1-5 years	
3.	6-15 years	
4.	Over 15 years	

ENVIRONMENTAL AND WATER PROVISION

Question 10: Have you experienced water shortage in this area?

		X
1.	Yes	
2.	No	

Question 11: If yes, for how long?

		X
1.	Hours	
2.	Days	
3.	Months	
4.	Years	

Question 12: What do you think are the major causes of water shortages in this area?

		X
1.	Water scarcity	
2.	Inequality in allocation of water resources	
3.	Unsuitable geomorphology for water and sanitation services provision	
4.	Drought	
5.	Other (please specify)	

Question 13: What solution can you identify?

Question 14: How many times do you think the government is entitled to provide water to people per person per day according to the 1994 Water Supply and Sanitation Policy of South Africa?

		X
1.	2 litres per person per day	
2.	20 litres per person per day	
3.	25 litres per person per day	
4.	200 litres per person per day	
5.	More than 200 litres per person per day	
6.	Other (please specify)	

Question 15: Do you walk a distance when fetching water?

		X
1.	Yes	
2.	No	

Question 16: If yes, how long do you think the distance is?

		X
1.	Less than 1km	
2.	1km	
3.	2km	
4.	3km	
5.	4km & over	

Question 17: Who collects water in this household?

		X
1.	Man	
2.	Women	
3.	Girl child	
4.	Boy child	
5.	Other (please specify)	

Question 18: What container do you use to fetch water?

Question 19: Where do you store water?

Question 20: Do you buy water when there is no supply?

		X
1.	Yes	
2.	No	

Question 21: What are the main sources of drinking water for members of your household?
(You may select more than one answer).

		X
1.	Piped water inside the dwelling	
2.	Piped water inside the yard	
3.	Piped water from access point outside the yard	
4.	Borehole	
5.	River/stream	
6.	Water vendor	
7.	Rain water tank	
8.	Other (please specify)	

Question 22: Are there any challenges with the above infrastructures?

		X
1.	Insufficient water	
2.	Broken taps/hand pumps	
3.	Water is not safe to drink	

4.	Other (please specify)	
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Question 23: Have there been problems of diseases due to consuming unsafe water in your household?

		X
1.	Cholera	
2.	Fluorosis	
3.	Malaria	
4.	Diarrhoea	
5.	Other (please specify)	

Question 24: What are the available channels for fault reporting?

		X
1.	Hotline	
2.	Local water bailiff	
3.	Local water committee member	
4.	Tribal admin office	
5.	Other (please specify)	

Question 25: Are there challenges in terms of reporting faults?

		X
1.	Yes	
2.	No	

Question 26: What is the average time taken by the municipalities to respond to fault reports?

		X
1.	1 day	
2.	48 hours	
3.	7 days	
4.	14 days	
5.	30 days (month)	
6.	Other (please specify)	

SANITATION PROVISION

Question 27: Do you have a toilet?

		X
1.	Yes	
2.	No	

Question 28: If yes, what kind of toilet facilities do members of your household use?

		X
1.	Flush toilet (with septic tank)	
2.	Flush toilet (connected to sewerage system)	
3.	Dry toilet facility	
4.	Pit toilet with ventilation (VIP)	
5.	Pit toilet without ventilation	
6.	Bucket toilet system	
7.	Bush and open fields	

Question 29: Do you share toilet facilities with other households?

		X
1.	Less than 5 households	
2.	Less than 7 households	
3.	Less than 10 households	
4.	More than 10 households	
5.	Not sure	

Question 30: How would you describe the accessibility of the toilets?

		X
1.	Path is clear	
2.	Major crevice or potholes on path	
3.	Mud on path	
4.	Entrance to toilet is obstructed	
5.	Dense vegetation in front of toilet	

6.	Waste, garbage or debris on path	
7.	None	

Question 31: How would you rate the quality of your toilet?

		X
1.	Good	
2.	Satisfactory	
3.	Average	
4.	Poor	
5.	Awful and hazardous to health	

