



**An Investigation of Water Meter Tampering and Illegal Pipping
Connections: Case Study of Folweni, KwaZulu-Natal**

By

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DECLARATION

I hereby declare that the dissertation entitled: *An Investigation of Water Meter Tampering and Illegal Pipping Connections: Case Study of Folweni, KwaZulu-Natal* submitted to the University of KwaZulu-Natal, is my own original work and that it has not previously been submitted at any university for a degree. All the reference materials contained have been accurately acknowledged.

Signature of candidate...N.NGCOBO.....Student number:...215062692.....

Date...25..JUNE ..2021.....

DEDICATION

This dissertation is dedicated my parents Mrs D.A Ngcobo and Mr P.S Ngcobo; my siblings Nondumiso, Sinegugu and Xolile, and my nephew Lukhanyiso. Thank you for always believing in me, for giving me the love and support I needed to reach full potential in my academics, may God bless and protect you.

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“The Lord is my strength and my song; he has given me victory. This is my God, and I will praise him- my father’s God, and I will exalt him” Exodus 15:2

To the Lord almighty Jesus Christ, thank you for loving me unconditionally, for always protecting and being my safe place whenever I face challenges in my academics.

I would like to thank the following People

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MAY GOD BLESS YOU ALL AND YOUR FAMILIES!

ACRONYMS

ANC- African National Congress

CBD- Central Business District

DA- Democratic Alliance

DWAF- Department of Water Affairs and Forestry

DWS- Department of Water and Sanitation

EFF- Economic Freedom Fighters

FAO- Farming and Agriculture Organisation

GST- General Strain Theory

HSSREC- Humanities and Social Science Research Ethics Committee

IWRM- Integrated Water Resources Management

KZN- KwaZulu-Natal

RCT- Rational Choice Theory

RSA- Republic of South Africa

SA- South Africa

SAHR- South African Human Right Commission

SDT- Social Disorganisation Theory

UN- United Nations

WSD- Water Suppliers Department

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ABSTRACT

Much has been learned about saving water due to the ongoing issue of water scarcity that many South African townships experience. However, limited research has been conducted to identify the core factors that contribute to water shortages. This study focused on illegal water connections and water meter tampering (referred to as water theft) as core factors that lead to water shortages, with specific reference to a township context. The goal of this study was to evaluate the causes of water theft and the effectiveness of existing strategies to combat this crime. It is vital to note that water theft is a global issue that has a negative effect not only on human lives but also on the economy. Water theft has a negative impact on the smooth running of water distribution networks and places undue pressure on municipal and government revenue.

The objectives of the study were to: (i) assess the nature and extent of water inaccessibility in Folweni Township in the Durban area; (ii) determine the causes of water theft in this township; (iii) explore the effects of water theft on the community and the eThekweni Municipality; and (iv) assess measures and strategies that may be effective in curbing water theft in the study area. The study was informed by Shaw and McKay's (1942) social disorganisation theory, Merton's (1938) strain theory, and Beccaria's (1967) rational choice theory. The field work was conducted in Folweni Township that falls under the eThekweni Municipality in the larger Durban area in the KwaZulu-Natal (KZN) province. This study area was selected because it experienced a high number of water theft cases and severe water supply interruptions. Telephonic semi-structured interviews using open-ended questions were used as the data collection instrument. The findings of this study suggest that the causes of water theft are unemployment, ineffective communication between the community and the municipality, and a lack of social control by law enforcement agencies.

Furthermore, the findings revealed that water supply interruptions lasted up to a month without any reports issued by the municipality to inform the community of the nature of the problem experienced. The study further determined that illegal water connections and water meter tampering had become an acceptable norm in this community and that no strategies had been put into place to curb this crime. Participants argued that the municipality introduced only inconsistent mechanisms to deal with water theft and that residents were expected to use these to cope with water shortages.

KEY WORDS: Illegal water connection; water meter; water scarcity; water supply; water theft.

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CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.1 Introduction

Crime in South African townships escalate by the day and curbing it has become a major problem. Breetzte (2018) asserts that it is an undeniable fact that South African townships experience high levels of crime compared to residential areas in rural communities and former whites-only neighbourhoods.

Breetzte (2012:304) argues that historical review of crime and criminal activities in the post-apartheid era in South Africa shows that crime is still on the rise in police precincts located primarily in the townships of South Africa. In South Africa, aggressive and environmental crimes occur in townships that have dense numbers of informal settlements (Breetzte, 2012). Crime in South Africa has escalated to the extent that there has been an increase in environmental crimes such as water theft and deliberate pollution. Meehan asserts that “informal and illegal water provision is increasingly targeted as an impediment to state authorities and water development in the Global South” (2013). In an article in the *Global Citizen*, Mlaba (2020) reported that South Africa had to contend with several issues and challenges related to water as a resource and a basic right for people, arguing that water is frequently not accessible where and when it is needed or it is of such poor quality that it is dangerous for human and animal consumption. This issue has become so predominant that there was a severe water crisis in the Western Cape Province in 2018, particularly in and around Cape Town, which received global attention (Countrywide water shortage is looming..., 2019). Water-related issues have not been addressed adequately and are still prominent to this day, particularly in townships in South Africa where residents still encounter constant or intermittent water crises.

Felbab-Brown (2017) argues that water authorities and law enforcers have paid minimal attention to environmental crimes such as water theft and that legal punishment is no deterrent as it is hardly taken seriously by perpetrators who flaunt their efforts to fight against water crimes. It seems a travesty that law enforcers and water authorities act against environmental crimes only when the damage has been done. Water associated damages manifest as water shortages and numerous cases of waterborne disease outbreaks due to pollution and the contamination of unsupervised and unauthorised water. Mlaba (2020) states that water issues

mostly affect poor households as the water sector is only effective in protecting water for wealthy neighbourhoods. Mlaba (2020: n.p.) presents the following argument in support of this point:

“According to a 2018 report on the impact of Cape Town’s water management solutions on different households, 64% of the WMDs were [*sic*] installed in poor communities and not in affluent homes whose water usage would be expected to be excessive.”

His argument exposes a serious inconsistency in the water sector and offers a reason why curbing water scarcity in South Africa remains an issue. Due to the growing crisis of water inaccessibility and water shortages in South Africa, water theft has become a growing issue as most townships are severely affected by the lack of water due to the illegal diversion of water sources and theft. South Africa at large faces several challenges regarding water accessibility, both in terms of water as a resource and the actual distribution of water services by municipalities (Hellberg, 2015: 25). The latter author also argues that the sustainability of the sector is in jeopardy due to a poorly maintained and often ill-equipped infrastructure, general under-pricing of water across the value chain, and the failing quality of sanitation services in several municipalities.

Scholars focusing on what has been termed ‘green criminology’ have different arguments with regards to the root cause of water crimes in South Africa and in townships in particular. Some argue that the main cause of water crimes is the inadequate and unequal distribution of water in the national supply and distribution grid by municipalities (Algotsson, Murombo, Davis, & Poole, 2009). On the other hand, Corruption Watch (2020) argues that corruption is at its peak in the national water sector where it extends from the supply of water to taps in rural areas to the systems that supply South Africa’s economic core, which are central business districts (CBDs) and townships. One issue that is mentioned is that taps run dry in under-developed townships and villages due to the fact that government officials and their contacts procure corrupt contracts in the water sector. Bega (2020) reported in *IOL News* that the construction of a dam to provide water to most parts of South Africa was delayed by years because a minister had changed procurement rules to benefit close contacts for personal gain. In the Western Cape, raising the Clanwilliam Dam that would have extended its capacity and created thousands of new farming jobs was delayed for a similar reason.

Moreover, large companies that have relations with officials at the national level of water distribution have promoted unnecessary developments and claimed payment for work of poor

quality (Corruption Watch, 2020). Furthermore, Corruption Watch argues that Although public officials and legislators are held to a higher standard, the activities of private people and corporations who purposefully exploit public sector flaws have a significant influence on water security and human rights to water.

Corruption in the water sector results in numerous communities experiencing water shortages and this aggravates and frustrates individuals who can do nothing about the situation. Bega (2020) emphasises that South Africa faces major water challenges due to erratic weather patterns, inadequate infrastructure, the abuse of financial services, and weak management. Water shortages, lost jobs, and contaminated rivers demonstrate the influence of corruption in the water sector. Sadly, young children, the elderly, and people with weakened immune systems have become seriously ill from drinking unsafe water or using unhygienic toilets. However, Falbab-Brown (2017) argues that the root cause of the problem of water theft is not due to the national level of water supply only, but to water crimes at local level where people are misusing water and bypassing water meters for their own gain and greed.

It is noteworthy at this point that several public agencies are active in the conservation, maintenance, and use of the country's water supplies and in the provision of facilities for water supply and sanitation. The South African Yearbook (2017) asserts that the national Department of Water and Sanitation (DWS), which is currently part of the Ministry of Human Settlements, Water and Sanitation, is responsible for providing clean water to local municipalities. The national government is also primarily responsible for the protection of water in rivers, wetlands and reservoirs, including those shared with other nations. Municipalities are only responsible for the procurement of water facilities and should operate in this regard within the context of national government legislation and guidelines.

Unfortunately, as Kruger and Landman (2008) assert, water crimes are committed by officials, business individuals, and local community members who either gain revenue for their own benefit or avoid paying water rates based on the volume of water used by households in their areas of operation. Kruger and Landman (2008) also argue that the water crimes issue is systemic as informal laws that circumvent or distort formal structures have largely replaced formal rules and laws. They state that the solution to this problem is not merely to reinforce

formal codes and authorise authorities to check every household's use of water, but that it needs to go much further and deeper as the water problem has become endemic in societies.

Water theft is a controversial issue and there is thus no common definition that clearly defines this type of water crime. Felbab-Brown (2017:2) stipulates that water theft is "...the appropriation of water without the required payment, or in violation of existing rules". Water theft has become a norm in South African townships, especially in squatter settlements, where this type of water crime tends to cause serious damage to the country as individuals who do not commit this crime suffer when they fall victim to water shortages. Water theft is a problem that automatically leads to water inaccessibility in most areas in South Africa, but more especially in townships (Johnson, South & Walters, 2017). Although this problem is rife, not much research has been done to determine which factors contribute to the fact that individuals commit water theft or to explore the effectiveness of mechanisms to curb this crime.

The current study aimed to bridge this gap by determining which factors contribute to water theft and cause the inability of law enforcement agencies and officials to curb this crime. The study thus investigated water theft objectives and practices that drive the illegal extraction and distribution of water. Different municipal policies and mechanisms to combat water theft were investigated while strategies enforced by state authorities to combat the issue of water theft were also explored.

1.2 Background to the Study

According to Breetzke (2012), the root of crime in black communities can be traced back to the apartheid era when the criminal justice system turned a blind eye to the social issues faced by black communities. Kynoch (2005) asserts that due to the lack of proper policing in many townships especially those situated under KwaZulu Natal and Gauteng, this gave rise to crime culture in South Africa as a whole. During this period, police officials were not doing anything to reduce the levels of crime in black townships and the majority of police resources were concentrated in assisting and providing a safe and secure life in white communities (Schonteich & Louw, 2001). However, recent scholars such as Johnson, South, & Walters (2017) have argued that destructive social issues and poor service delivery are mainly due to the inability of current politicians to deliver on their promises, and this gives rise to protests and aggravates individuals who then commit crimes to make a better living for themselves and their families.

South Africa has benefited greatly from its transition from the apartheid era to a democratic society. During apartheid, segregation and oppression were enforced on the black community. Nnadozie (2011) states that the apartheid government made excessive investments in maintaining a sound infrastructure for the white community in terms of education, healthcare, housing, municipal services, and welfare, while the majority of the population was sacrificed to facilitate the development of the privileged minority. In this regard, Kruger and Landman (2008:77) argue as follows:

“When the first democratic elections were held, the country’s apartheid policies directly influenced planning policies and practices which, to a large degree, [had] shaped cities and towns in South Africa. Cities were partitioned into various zones based on race.”

Residential areas surrounding the central business core were traditionally reserved for the white population. On the periphery of the city, removed from the white suburbs, townships were created for the migrant black labour force. Often coloured and Indian communities were located between the white and black areas to act as a buffer. The white communities were further separated from the townships by purposely designed buffer zones that were either set aside for industry or left unused. Informal settlements then developed on much of the vacant land surrounding these townships (Snyders & Landman, 2018).

One problem that was commonly experienced in these ‘buffer’ and informal settlement areas was access to potable water. Access to water is a basic need and is recognised as a fundamental human right. According to the south African Constitution it is stipulated that the right of access to sufficient water is accorded to everyone in Section 27(1)(b) of the Constitution, which states that everyone has the right to have access to sufficient water (Republic of South Africa Constitution, 1996). However, in 1994 approximately 40% of households had no access to a basic water supply. Black local authorities who had authority over the black townships within the Republic of South Africa (RSA) had inefficient management skills and a lack of funding and thus did not alleviate the situation (Goldin, 2010).

However, in the post-apartheid area matters took a turn for the worse. Barlow and Clarke (2002: n.p.) commented that “...10 million residents [had] their water cut off [when] the government implemented a World Bank-inspired ‘cost recovery’ program.” This programme made the availability of water dependent on a company’s ability to recover its costs plus a profit,

“...something that had never happened in the worst days of apartheid” (Barlow & Clarke, n.p.:2002). For example, more than 100 000 people in KwaZulu-Natal became ill with cholera after water and sanitation services to local communities had been cut off due to non-payment (Barlow & Clarke, 2002).

Barlow and Clarke (2002) argue that, during the apartheid era, water crimes such as water theft were not severe as water as a resource was only distributed to white people who lived in privileged urban areas, whereas most black people who lived in townships and rural areas used water from nearby dams and rivers for survival. According to Nnadozie (2011), after 1994 when the country became a true democracy the issue of sanitation and water shortages mostly affected people living in townships and rural areas. These areas, that still lack water and sanitation, mirror the apartheid spatial geography (South African Human Rights Commission [SAHR], 1994). The lack of sanitation often leads to other human rights being transgressed, including the rights to dignity, health, safety, and a clean environment (Nnadozie, 2011).

Kruger and Landman (2008) argue that the living conditions of the poor, who are mostly located in townships and rural areas, have not developed in several ways. For instance, numerous individuals and families in township areas do not have adequate infrastructure such as roads, electricity and a clean water supply and the infrastructure that does exist is often not maintained regularly. For instance, in some townships certain roads have deteriorated to the extent that vehicles cannot gain access to these areas which makes it difficult for the police to patrol these areas or to respond to calls for assistance (Inman & Rubinfeld, 2013). These areas also suffer from poor water sanitation and provision and thus waterborne diseases tend to be high. The lack of water provision also results in minimal recreational facilities such as community halls and sports fields. This creates a fertile ground for the proliferation of informal (and often illegal) taverns. Although the level of vehicle ownership in townships is generally very low, most areas are not designed to accommodate pedestrians as they lack walkways, sidewalks, pedestrian bridges, or adequate lighting. This oversight exposes the poor in particular to situations where they are vulnerable to victimisation and crime (Kruger & Landman, 2008).

Turton, Plessis, Walker and Swanepoel (2016) argue that rural areas and townships are at the top of the pyramid with regards to poor service delivery by government and municipalities.

The challenges that developing communities encounter are inadequate equipment and systems for efficient monitoring and reporting of poor water utility performance, and it is ironically these communities that can least afford this lack of service delivery (Inman & Rubinfeld, 2013). According to Beck, Rodina, Luker and Harris (2016), the water sector in South Africa has not always been this poor as this sector was well equipped and could distribute and supply water across South Africa. Satterthwaite (2018:101) shares that

“Democratic South Africa was seen as a global leader in the management of water resources and the provision of water services. It had achieved the 2015 Millennium Development Goal for domestic water supply [and] through its free basic water policy it had given practical effect to the human right to water, and it had given legal protection to environmental water flows.”

In 2002, South Africa led the campaign to set a global goal for sanitation provision that is now included in the United Nation’s Sustainable Development Goals. Since then, the performance of South Africa’s water sector has declined significantly. It needs to be questioned why this decline has occurred, and it seems that the reliability of water supply services has dropped, according to official data, due to a lack of the resilience of services to address problems such as drought and floods (Weststrate, Dijkstra, Eshuis, Gianoli & Rusca: 2019). Payment for water has also declined due to public rebellion and corruption and, as a result, municipal debt has increased. This undermines service provision in many localities where there is simply not enough money for operations and maintenance. Moreover, rivers are polluted due to failed municipal wastewater management and poorly regulated mining operations are also widespread and growing (CorruptionWatch:2020). In 2018, the Auditor-General and Parliament’s Standing Committee on Public Accounts reported that the management of the national Department of Water had collapsed, with billions of rand of irregular expenditure, huge debts, and failed projects contributing to this demise (Corruption Watch:2020).

Water theft is under scrutiny worldwide as most communities face a water crisis such as water shortages or poor-quality water. According to Meehan (2013:319), “World Bank experts estimate that over 48.6 million cubic meters of potable water, enough to supply 200 million people, escape daily from municipal networks”, while 30-50% of all treated water is also lost due to poor maintenance in developing countries. This affects the financial viability of water services, which in turn reduces the capacity to fund the necessary maintenance and expansion of water supplies in metropolitan areas.

Water crimes can be associated to a great degree with a lack of efficient service delivery by municipalities and poor socio-economic circumstances such as unemployment, uneven access to basic public services, and overwhelming levels of crime and violence. However, it may also be attributed to a large proportion of foreign migrants that enter informal areas (Meehan, 2013). The World Bank (2014) argues that due to the growth of the population that is happening worldwide and difficulties associated with access to basic needs such as water, people tend to commit water crimes to gain access to gainful resources. This study addressed this issue by focusing primarily on water theft in the form of illegal water connections and tampering with existing water meters.

1.3 Problem Statement

The research problem that this study focused on is limited access to water due to water theft, with specific reference to the tampering of water meters and illegal water connections. The study was a case study that was conducted in the Folweni Township situated near Durban in KwaZulu-Natal (KZN). Water theft is an ecological crime that has been escalating in KZN (Madlala & Rawlins, 2014). The larger Durban area, known as the eThekweni Municipal region, faced a severe water crisis at the commencement of the study due to the theft of steel cables that hold up the uMngeni River pipe system that supplies huge volumes of water to this area. Kings (2020) argues that eThekweni statistics for the year 2013 illustrate that 8% of its water was lost through theft due to 40 000 illegal domestic connections. In 2016, the number of illegal domestic connections increased to as many as 45 000 in the eThekweni area. To restrain this crime, the eThekweni website (2011) offered an official pardon to all illegal users of water if they reconnected the lines legally at a cost of R250. Saal and Cowan (2017, n.p) reported on *Timeslive* that the theft of water "...from outside household taps is rife, with most residents able to take a bath only once a week. Guesthouse owners have removed baths from rooms and municipal swimming pool employees now work in libraries". It was information such as this that prompted this study in the quest to identify measures that may be effective in preventing this crime.

The fact that water resources in South Africa are declining significantly not only affects households but also the market industry that now produces insufficient quantities of products as there is not enough water on farms to irrigate plants and ensure the sustainability of animal husbandry. Reports have been received of a high mortality rate among marketable animals such

as cows, goats, lambs, and even chickens (Herold, 2011). The industrial sector is also adversely affected by this crisis because all industries use water to produce their specialised products. This fact proposes that different mechanisms should be introduced to combat the water crisis in South Africa. The voice of community members and a perusal of government policies that are used for the distribution of water resources should therefore be considered (Gerstetter, Stefes & Faure, 2016).

It cannot be denied that the majority of people who are most affected by water theft reside in townships where there are no water inspectors. Some areas in Folweni Township are still under the rule of traditional leaders known as 'Inkosi' or 'Induna' who are very powerful leaders in all aspects of community life and this makes it difficult to investigate water crimes. A large number of households thus easily make illegal connections and bypass meter payments. However, water inspectors were to operate in these areas, the problem of water theft will continue as some government officials and water suppliers accept both petty and large bribes to falsify meter readings and conceal illegal connections. The growing water crisis and lack of monitoring measures reinforce these corrupt practices and allow flexible officials to wield their power and gain from their corrupt practices with impunity. This escalating problem weakens the rule of law in South Africa (Global Initiative, 2014).

Madlala and Rawlins (2014) indicate that the effects of water theft spread to law-abiding citizens who regularly pay their water bills as they are also subject to water scarcity and intermittent provision. Saal and Cowan (2017) reported that some KwaZulu-Natal residents had experienced water shortages for almost four years and the issue had still not been resolved at the time of their study. Some residents took matters into their own hands and bought JoJo water tanks but received water only once a week and when it rained. To address this situation, the study explored some of the effects of water theft committed in a form of illegal water connection and water meter tempering and strategies to curb this crime.

1.4 Rationale for the Study

Several reasons prompted me to undertake this study. When I engaged in research on 'green criminology', I discovered a dearth of academic writings on environmental crimes, as most academic writings in the Criminology field tended to focus on more aggressive crimes in South

Africa and the role of the criminal justice system. As water crimes affect numerous individuals and households in rural and township communities, their effects are widespread and impact particularly law-abiding citizens who do not commit water crimes and pay their water bills regularly (Eman, 2016). Water theft is prevalent in most townships and is an escalating issue that has serious implications at both local and national levels in terms of water distribution, supply, and access (The Water Wheel, 2009).

The fact that minimal research has focused on the factors that contribute to water theft (tampering with water meters and illegal water connections) has thus left a gap in knowledge about this crime, and this should be addressed. Many township residents experience a lack of water, sometimes for several days, and this often causes sickness due to the consumption of poor-quality water. Furthermore, water shortages around the country have affected several communities (The Water Wheel, 2009). The research that was reviewed tended to focus on ways in which citizens could save water rather than on the root causes of the problem and suitable strategies to address it. I thus decided to focus on the root causes of water theft to be able to recommend strategies that can effectively reduce and combat this crime and thus curb water shortages, especially in townships. Mlaba (2020) asserts that townships and informal settlements face several social issues and challenges that are caused by many factors such as social disorganisation that is mostly caused by poverty, limited accessibility to resources, unemployment, and a lack of law enforcement supervision, which all subsequently result in high levels of crime.

I live in a township and face many societal problems every day, and I thus deemed it important to conduct a study on this topic because water scarcity is a problem that needs to be curbed. I envisaged that my research into this phenomenon would not only raise awareness on how water theft affects and accelerates the problem of water scarcity, but I felt that community members could also use the findings and recommendations as a guide to avoid a future water crisis in their communities. The eThekweni Municipality will also be informed how best to work with communities to conserve water for the future and for the well-being of all. Moreover, I intended this study to expose the injustices that rate payers experience due to low water pressure and water scarcity caused by water theft in townships. It is my contention that, due to the minimal research that has been conducted on water theft, minimal strategies are in place to curb this crime, and the study will thus go a long way in addressing this issue. Moreover, as the study focused on the impact of unsupervised water meters, the findings and recommendations will

make a positive contribution to current prevention strategies in the community of Folweni and the eThekweni Municipality at large.

1.5 Motivation

Environmental crime is an under-studied topic and not well understood in the academic field, particularly in Criminology. Yet the environmental crime of water theft is escalating on a daily basis and subsequently results in water scarcity. Turton et al. (2017:7) argue that the challenges associated with water scarcity “...affect individuals, families, communities, and businesses and therefore demand a collaborative response based on a collective understanding of the urgency and immediacy of the risk[s]” associated with this threat. Research on environmental crimes in townships has focused predominantly on water pollution and a shift in the focus was thus required to expose the causes of the decline in water scales in a township context. Due to water theft, individuals who pay their utility bills experience various water problems such as water outages and low pressure in their water supply systems (North Corridor, 2018).

Due to the negative outcomes that go in hand with water theft, I was prompted to conduct this study on water theft in order to give awareness and help relevant parties such as the police authorities, the eThekweni Municipality (Water inspectors), and the community on working together to fight over the issue of water theft as it affects everyone even the individuals that commit this crime. The researcher believes that the findings of this study will add to the existing literature on water crimes and water scarcity. The findings of this study will be presented back to the community, in order to use the study as a guide on the existing problem, which is water theft, how to eradicate it and how to prevent it for future purposes. This study is set to be also an awareness not only to the Folweni community but around the world because water theft is an existing problem which causes a lot of difficulties and damages to the outsourcing of water in different communities.

1.6 Research Aim

This study aimed to evaluate the causes and effects of water theft in a township area and the effectiveness of current strategies to combat water theft in the form of water meter tampering and illegal piping connections.

1.7 Research Objectives

The objectives of the study were to:

- assess the nature and extent of water inaccessibility in Folweni Township;
- determine the causes of water theft in Folweni Township;
- determine the effects of water theft on the community and the eThekweni Municipality.
- assess current measures and strategies to curb water theft in Folweni Township.

1.8 Research Questions

- What is the nature and extent of water inaccessibility in Folweni Township?
- What are the causes of water theft in Folweni Township?
- What are the effects of water theft in this township on the community and the eThekweni Municipality?
- What are the current strategies to curb water theft and how effective are they in Folweni Township?

1.9 Significance of the Study

This study is important because it will highlight the necessity of saving water while it will expose the dangers and consequences of misusing and stealing water. It is envisaged that the findings of the study will contribute richly to the body of knowledge on water crimes in townships. This study will also inform the eThekweni Municipality, and by implication other local municipalities and local councillors on the depth and seriousness of water theft and how to effectively eradicate this problem using the findings. This study is important in the Criminology field because it will promote research on green criminology that has seen very little research on environmental crimes, yet society has suffered a great deal because of environmental crimes. The study will thus essentially highlight the causes of and the circumstances that contribute to water theft.

This study will also focus on the gap that exists between water suppliers and water users. Water theft is both a social and economic issue and has severe effects on societies and industries across the world. This study will thus benefit policymakers and local municipalities who may

wish to review existing ineffective strategies in order to curb water theft as this crime is escalating. The study will also assist police officials by providing information that may assist them in their efforts to apprehend the perpetrators of water theft.

The findings and recommendations will also inform community members of the issues involved and will hopefully encourage them to report this crime and perpetrators to police officers. Only when perpetrators are apprehended and brought to book will the normal and legal flow of water be restored and will residents stop encountering water cut-offs and poor water pressure. By heeding the findings and recommendations, community members will be informed of practical solutions for saving and preserving this precious resource. This study is also drafted to alarm police officials and water inspectors about the severity of water theft and will inform them of possible solutions that will assist them in implementing the law to control this crime. The police and water inspectors have to play an important role in curbing this crime as they have the power and legal backing for social control when it comes to water theft. This study will also highlight the importance of an effective relationship between the community, the eThekweni Municipality, and the police in terms of social control and collaboration to combat environmental crimes, particularly water theft.

1.10 Research Methods

1.10.1 Interviews

This study is qualitative in nature, semi-structured interviews were conducted with selected participants. Open-ended questions were utilised which allowed probing for deeper answers. These in-depth interviews opened the door to conversations that elicited valuable data from the participants that I had not previously considered. De Jonckheere and Vaughn (2019) argue that the goal of conducting semi-structured interviews to collect data is to get information from key participants who have personal experiences, attitudes, opinions, and beliefs about the issue of interest. I thus entered the world of the participants to understand what it looked and felt like from their point of view.

1.10.2 Research Site

This study was conducted in Folweni, an under-developed township that is located within the eThekweni Municipality in KZN. Folweni Township is an underdeveloped township situated

between uMbumbulu rural area and uMlazi Township. It is situated about 71 kilometres from Pietermaritzburg, the capital city of this province. This township was purposively selected due to its proximity and the nature of the water issues that the community is experiencing (Erasmus, 2021). As Folweni township is an under-developed township, residents have few resources and service delivery is at a slow pace. Many residents do not have access to water, electricity, and land for cultivation in order to sell produce and earn an income. This results in some resorting to illegal means to gain access to resources for free in order to avoid paying rates. The high unemployment rate affects the youth of the community and causes an escalation in crime. Water crime is particularly rife as residents want to avoid paying water rates. It is also seen as a quick way to get cash for a better lifestyle

1.10.3 Sampling

The non-probability sampling method was used which was purposive in nature. Acharya, Prakash, Saxena and Nigam (2013:332) argue that the “purposive sampling technique is the most commonly used sampling method. The sample is chosen based on the convenience for the researcher [and] often the participants are selected because they are at the right place at the right time”. The purposive sampling technique was suitable for this study because it allowed me to select participants based on their ability to provide rich and meaningful data related to the study topic. This method also allowed me to achieve the intended goal of selecting community members from a specific section of Folweni Township. In this area water theft had become a serious issue according to anecdotal evidence, and the research participants that were selected complied with the inclusion criterion which was that they had to be directly or indirectly affected by water meter tampering and illegal water piping.

I decided to involve only 14 participants because the end goal of this study was to elicit in-depth information on water theft to raise awareness on how water crimes contribute to water depletion and how they affect society at large. Vasileiou, Barnett, Thorpe and Young (2018:20) emphasise that “samples in qualitative research tend to be small to support the depth of case-oriented analysis that is fundamental to this mode of inquiry”.

1.10.4 Data analysis

Thematic content analysis was utilised in this study. Maguire and Delahunt (2017:3352) argue that “thematic analysis is the process of identifying patterns or themes within qualitative data”. Clarke (2006) and King (2004) emphasise that thematic analysis is a useful method for examining the perspectives of different research participants, highlighting similarities and differences, and generating unanticipated insights”.

1.11 Definition of key concepts

1.11.1 Theft

Scholars have different explanations for the term ‘theft’. Green (2011:56) asserts that “theft occurs when a person takes or uses something which does not belong to [him]/her without the owner’s permission. It is also considered theft if a person moves something which he plans to steal or take”. An individual is guilty of theft if he/she dishonestly appropriates assets that do not belong to them, take full ownership or gain access to and have benefits derived from it and completely deprives the original owner/s of it (Gouthaman, Bharathwajanprabhu & Srikanth, 2011). In the criminal justice system there are two parts to a charge of theft. First, there must be an act of taking, moving, or using something without the permission or knowledge of the true owner. Secondly, the person taking or moving the item must have known that the property belonged to someone else. For a person to be found guilty of theft both parts of the offence must be proven by the prosecutor in a court of law (Snider, 2002).

1.11.2 Water theft

Water theft results in multiple elements with regards to water inaccessibility. Many individuals steal water as an easy way of dealing with a water shortage as it is an important basic human resource. Water theft is a phenomenon that is on the increase and occurs when there is climate change, long-lasting drought, freshwater scarcity due to water crimes like water pollution, and conflicts over natural resources, poor water regulations, or a poor water supply in a particular area (White, 2019).

Barclay and Bartel (2015:190) argue that “pumping, impounding, or diverting water from irrigation channels, river systems, dams, or groundwater bores without a license or in

contravention of license conditions [to] cause changes to flow and reduce water access to neighbouring farms, livestock and riparian zone management” constitute theft. Water theft is an illegal practice. Meehan (2013:322) argues that “water theft is a resource theft which is chaotic and disorderly... [and it is] an unlawful activity [that often occurs in] a systematic form [and is] subject to informal codes of conduct, internal hierarchies of power, and class-based expressions of political resistance”. However, illegal resource use does not necessarily indicate the absence or failure of institutions as it often marks the presence of other forms or causes of resource misappropriation, mismanagement, and poor distribution (Snider, 2002).

1.11.3 Water meter tampering

Meter tampering is defined as “a fraudulent manipulation which implies a service that is not billed by a utility company. It is a lack of consumption control for the utility company and a major problem because it causes an important loss of income. This act does not allow for registering of the customer’s consumption as well as proper billing of the service” (Monedero, Biscarri, Guerrero, Roldan & Leon, 2015:4). Water meter tampering or bypassing is when the perpetrator adjusts the meter to either under-register or to stop recording how much water a house/building uses. This is usually done by individuals to avoid paying for the water that they consume. Once a meter is tampered with, it instantly stops working normally, meaning that if there is a fault inside your building or house it will not be picked up and the water supply will stay on without registering use. This is a serious safety hazard and can result in people suffering from waterborne diseases due to the consumption of poorly sanitised water (Morote & Hernandez-Hernandez, 2018).

1.11.4 Illegal water pipe connections

Goodwin, Kaggwa and Maleb (2013:8) state that water pipe connections are illegal when “the consumer is not even a customer of the water supply system [but] simply connects their dwelling/a building to the network”. Individuals who commit illegal water connections do so for the reason of avoiding payment. Such piping connections are done by means of the installation of pipes and water fittings on premises for the illegal supply of water. An illegal connection is made to a pipe or water fitting outside the boundary of the premises without the permission of the relevant Council.

1.11.5 Water supply

The water supply system is the installed infrastructure for the collection, transmission, treatment, storage, and supply of water to homes, commercial establishments, industry, and for irrigation purposes. It also serves public needs such as firefighting and street flushing. Water supply systems are mostly used by municipal services because the provision of potable water is perhaps the most vital resource for the survival and well-being of residents. Water supply includes structures such as aqueducts, pipes, valves, pumps, and meters that belong to the council or municipality and are used or planned to be used by it to ensure a supply of water to residents (Guyer, 2017). Water supply systems must also meet requirements for public, commercial, and industrial activities. In all cases, the water must fulfil both quality and quantity requirements. The availability of potable water is probably the most important of all municipal services. Water is used for drinking, cooking, cleaning, removing waste, and other household and industrial uses and thus water supply networks must be able to meet the needs of public, private, and industrial users (Peck & Lovvorn, 2001).

1.11.6 Water shortage

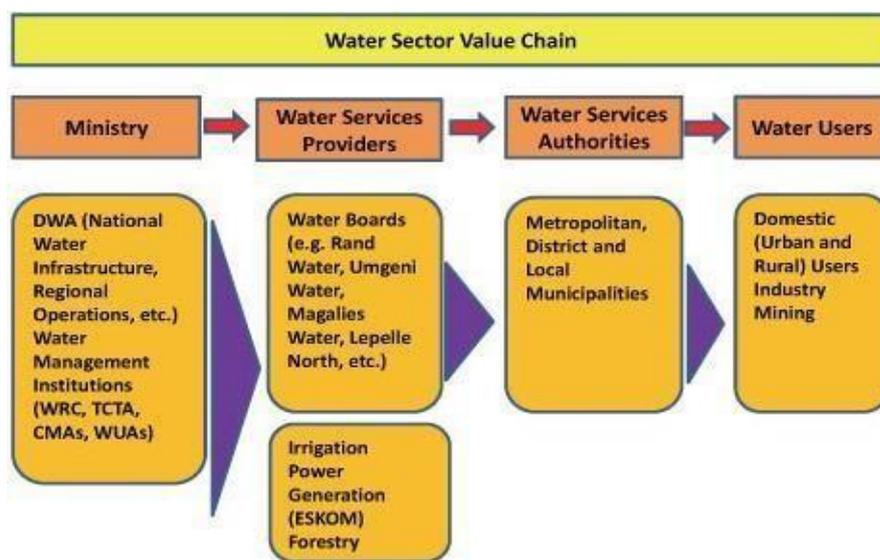
According to UN-Waters (2016), a water shortage occurs when a community's water supplies become insufficient due to climate change, population growth, or other factors that cause scarcity of water for use. This situation could result in a lack of water for families' and individuals' consumption. A water shortage occurs when there are insufficient available water supplies to meet a region's water needs. It affects every continent and approximately 2.8 billion people on the planet for at least one month per year (Xercavins, 1999).

1.11.7 Water sector

The water sector comprises several public agencies that are active in the conservation, maintenance, and use of the country's water supplies and the provision of facilities for water supply and sanitation (Department of Water and Sanitation, 2015). The South African Department of Water and Sanitation (currently part of the Ministry of Human Settlements, Water and Sanitation) is mandated to ensure water supplies to local municipalities. The national

government is responsible for much of the protection of the water in rivers, wetlands and reservoirs, including those shared with other nations. Municipalities are responsible for the procurement of water and the maintenance of facilities that are operated within national government legislation and guidelines (Department of Water and Sanitation, 2015). According to the United Nations (2010: n.p.), water sector services should include “drinking water, wastewater, and storm water utilities”. The mandate of a sustainable water sector goes beyond that of just water infrastructure sustainability as it includes the effective management of all aspects of water system operations and infrastructure.

Figure 1: The Water sector value chain



Source: Water South Africa, 2019

1.12 Chapter Sequence

Chapter One: Introduction

This chapter is the blueprint of the study and informs the reader about what is to be encountered in the dissertation. It expounds the aim of the study and lists the objectives, the problem statement, as well as the main questions that gave impetus to the study.

Chapter Two: Literature Review

This chapter explores relevant literature and explains how this study fits into existing literature by looking at the knowledge gap that was identified in the available literature. The literature review was used to contextualise this study and to explore relevant theories pertaining to its purpose and data analysis.

Chapter Three: Theoretical Framework

This chapter focuses on the theoretical model that supported this research. In it I discuss the theories that I used to explain the research problem and the data that I elicited.

Chapter Four: Methodology

In this chapter I outline the research methodology and techniques that I used to collect the required data to address the objectives and research questions. I discuss the types of data collection methods that I used, consider the trustworthiness of these instruments, and explore the manner in which they lent credibility to the findings.

Chapter Five: Data Presentation and Analysis

In this chapter I present and interpret the data. The data were explored to determine whether the information and findings that were elicited were appropriate to answer the research questions and meet the objectives. This chapter thus provides a detailed presentation and discussion of the data. The data are analysed and similarities and differences emanating from the participants' responses are highlighted while the findings are discussed in light of the theoretical framework that underpinned the study.

Chapter Six: Conclusion and Recommendations

This chapter concludes the findings and outlines recommendations for future research associated with water theft in South Africa.

1.12 Conclusion

It is vital that communities and water services/ boards be made aware about the severity of the impact of theft on the water supply system and the distribution of clean water to residents and industries. Water theft in the form of water meter tempering and illegal water connections was identified as an ongoing issue on which limited research had hitherto been conducted. I

explained that the study intended to investigate township residents' and municipal employees' views in relation to water theft in townships. This chapter provided a broad overview of the entire research project and explained what it entailed. It introduced the research focus, and the problem that was addressed and outlined specific objectives and research questions. The chapter that follows will present a detailed discussion of the literature review based on the topic under study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature review that I discuss in this chapter will enlighten the reader regarding the broader context of the water theft phenomenon within which the research questions and objectives were addressed. Hart (2018:4) defines a literature review as “analysis, critical evaluation and synthesis of existing knowledge relevant to a research problem”. Hart (2018) states that the purpose for reviewing literature is to advance understanding of existing research, discussions, or arguments relevant to the area of study or topic, and to present that knowledge in the form of a written report. Labaree (2009) argues that a literature review provides the basis of knowledge on a particular topic or area of study of a researcher. It recognises areas of prior research to avoid duplication and gives credit to other researchers. The reviewed literature also identifies inconsistencies such as research gaps, conflicts in previous studies, and open questions left from another research.

The literature review that is presented in this chapter will highlight known sources and causes of water scarcity and the damage that water theft has caused in terms of South African water security. The nature and extent of water theft are discussed by looking at different scholarly findings and arguments as well as media reports that were released at international, national, and local levels. The focus of this review will be on relevant literature that addresses issues concerning water inaccessibility while the discourse will also focus on water theft in the form of illegal water connections and tampering with water meters.

2.2 Global perspective on water theft

Water theft is a global challenge that affects developing and developed countries alike. It manifests in multiply ways and is caused by different conditions and circumstances. Catley-Carlson (2017) states that urbanisation, population growth, environmental destruction, climate change, water pollution, and an increase in living standards are some of the key factors that encourage water theft and water scarcity. The demand for groundwater use is rising as surface water is depleting day by day, particularly in drought-stricken and over-populated areas. This makes it hard to control water misuse and theft. Global Initiative (2014) argues that the quantity

of fresh water on earth, both from surface and groundwater sources, is limited and that drought and rising high temperatures lead to higher evaporation levels than before. The rapid population growth of the world has also contributed to this fact. According to Intelligence (2019), it is estimated that about 85% of the world's population lives in the driest areas of the world and that, by 2025, 3.5 billion inhabitants of the earth will be living in stressful water conditions. More than 300 million people live in arid areas on the African continent alone, representing around 66% the continent's population.

However, Donnenfeld, Crookes and Hedden (2018) disagree with this statement by arguing that it is evident that the raging drought of 2014/2016 has catalysed a national discourse and introduced water protection measures to some degree into the world's political discussions, and they thus assert that drought has not triggered water shortages and water theft to the extent that had been estimated before. What the drought did was to highlight the flaws in water systems, and this assisted developed countries in particular to control the issue of water theft. Such countries have enough revenue to fight this criminal act and implement technical strategies to prevent individuals from tampering with water meters or make illegal water connections. The fact remains that water theft is prevalent in both affluent and water-deprived countries. Crimes linked to water have been observed in California, Southern Europe, Nigeria, Kenya, the Middle East, and South Asia. Water smuggling has escalated as a gainful enterprise in many parts of the world with complicated network chains and water mafias running such operations (Barlow & Clarke, 2017).

White (2019) states that Africa in particular faces significant problems due to water theft. The World Health Organization (2012) stated in a progress report on drinking water and sanitation that Nigeria was ranked third in the world with the highest population without access to safe drinking water. The report also revealed that South Africa was a big water smuggling locale and most farmers were accused of extracting up to 1.58 billion kilolitres of water from water sources each year, which is equivalent to the Mohale Dam's entire yield in neighbouring Lesotho (Meehen, 2011). This practice has persisted and become a major problem as it contributes to water theft in the agricultural sector that consumes large volumes of water compared to other sectors. Donnenfeld, Crookes and Hedden (2018) assert that the agricultural sector is South Africa's main water user as it consumed approximately 9.7 km^3 (around 63% of total withdrawals) of water in 2015 alone. The food and agriculture (FAO) report states that, globally, approximately 70% of the total volume of available fresh water is used by the

agriculture sector, although this figure varies relatively significantly by region. The next largest user of water in South Africa is the municipal sector, which used about 4.2 km³ (about 27% of total withdrawals) of water in 2015, while the manufacturing sector accounted for about 1.6 km³ of water consumption in 2015 (about 10% of total withdrawals).

Water thefts across borders has also been recorded. For instance, Catley-Carlsons (2017) states that water sourced illegally from South Africa's Nkomati River caused protests from Mozambique and that studies in Kenya, where droughts have become quite severe, suggest a rise in water-theft crimes in urban slums. The disconnection of water pipes by criminals who extract and sell water has become a frequent occurrence in areas where proper access to piped water is lacking. Statistics convey that informal settlements in the world accommodates about 1.5 million people suggest that, on average, about 75 incidents of water theft are reported here each day (Meehan, 2011).

According to Felbab-Brown (2017), the construction of illegal pipelines, the illegal distribution of truck water, and the assimilation of water regulators that are complicit in licensing fraud and government approval to access and deliver water illegally have made the smuggling of water a lucrative business. Illegally sourced and diverted water is everywhere in use, from personal use to use in the farming and industry spheres. White (2019:145) argues that “illegal usage and water dumping are difficult problems to tackle. The primary explanation for this is that large-scale farming [enterprises] and industry also exert control over regulators and law enforcement [officials]”. It is an unfortunate fact that the prohibition of illegal water delivery will create a problem in slum areas that are often poorly connected to legal pipelines. This prohibition can thus threaten the livelihoods of the poorest and the most deprived. It has been observed that when the price of water rises, people around the world oppose it (Zetland, 2014) as it primarily impacts large communities that live under the breadline.

Without effective legislation, adequate pricing strategies, and the elimination of illegal water smuggling the sustainability, long-term viability, and fair distribution of water cannot be achieved. However, it is argued that as long as climate change, conflict, and poverty continue to aggravate the Earth's dwindling water supplies, water theft will remain a reoccurring and intensifying global problem (Felbab-Brown, 2017). Therefore, while water theft remains a petty offense within the national context rather than a transnational organised crime issue, it is unlikely to be effectively resolved. In developing countries this process is often difficult to

complete due to poor water infrastructure and a lack of revenue to control water losses through theft, but these countries should still try to find effective ways to control water loss, especially by curbing water theft (Donnenfeld et al., 2018).

2.3 Legislation that Governs Water Provision in South Africa

The Constitution of the Republic of South Africa Act No. 108 of 1996, the Water Services Act No. 108 of 1997, and the White Paper on Water Supply and Sanitation Policy of 1994 are the three main legislations that regulate water provision in South Africa (Mackay, 2003).

2.3.1 The Constitution of the Republic of South Africa of 1996

The Constitution (Republic of South Africa, 1996) entrenches the Bill of Rights (Chapter Two) and is the backbone of the South African democracy. Section 7(2) of the Constitution states that the state shall respect, encourage, and fulfil the rights of all citizens as listed in the Bill of Rights. The Constitution also protects the right to equality stating that no one shall be arbitrarily discriminated against based on gender, sex, ethnic group, social origin, and language, and everybody is equal before the law according to Section 9(1), (2), (3) and (4). The right to human dignity is protected in Section 10. The Constitution also protects the rights to health care, food, water, and social security. Section 27(1)(b) expresses unequivocally that everyone has the right to adequate food and water. Section 2 of this section notes that the state bears sole responsibility for ensuring that these rights are realized (Republic of South Africa, 1996).

Muller (2008) states that municipalities are required to provide essential services through a variety of steps under Section 74 (2)(c) of the Municipal Systems Act No. 32 of 2000 enforces municipalities to provide important services following different steps stipulated under the Municipality System Act. For example, the tariffs that are issued cover operational and maintenance costs while also subsidising low-income households. The Free Basic Water Policy, which was implemented in South Africa in 2000, is a follow-up on previous legislation. According to this policy every household is entitled to 6 000 litres of water per month under the free basic water scheme, which equates to 25 litres per person per day for a family of four (Hall, Leatt & Monson, 2006:58). This provision was designed to help the poor, but it is difficult for the government to maintain control over this policy because even those who do not qualify take advantage of it. Municipalities regulate this provision by enacting an indigent

program that requires citizens who apply to fill out a questionnaire in order to receive a rebate (Muller, 2008).

2.3.2 The Water Services Act No. 108 of 1997

According to Pollard and Du Toit (2008), households' connection to basic water and sanitation is guaranteed under the Water Resources Act No. 108 of 1997. This Act also provides for the creation of water boards and waterworks committees. This imposes a legal obligation on the state and its subsidiaries to address people's right to basic water and sanitation as well as their right to an environment that is not detrimental to society. Section 3(1) of the Water Services Act of 1997 states that everyone has the right to access basic a water and sanitation supply system. This section's subsections 2 and 3 state that any water service organisation must take appropriate steps to operationalise this mandate while any water authority must devise steps to realise this right to people in its water service development plan. In essence, the law requires that the distribution of water to the general public must be equal and equitable. The Department of Water and Sanitation (2015) states that the Water Services Act No. 108 of 1997 provides, in Section 4 (1)(2), that water services must be provided in line with the terms and conditions that are set out by the water service provider. These conditions must be established in such a manner that water is accessible to the general public. The requirements for payment, tariff increases, and the circumstances in which water services can be reduced or discontinued must be made public to recipients according to subsection (2)(C) (Department of Water and Sanitation, 2015).

Harris, Van Vliet and MacKay (1999) state that the Water Services Act clearly defines water boards and water service authorities as well as their respective jurisdictions. They state that, according to this Act, "every water service authority has a responsibility to all customers" to provide contaminant-free water (Harris, Van Vliet and MacKay, 1999:32). The state, local governments and municipalities are mandated to oversee this obligation as water service authorities. According to the Water Services Act, any local authority is responsible for providing water to all communities under its jurisdiction (Louw, 2003).

2.3.3 White Paper on Water Supply and Sanitation

According to the Department of Water Affairs and Forestry (1994), the inequity in water supply in the Republic of South Africa led to the publication of the White Paper on Water Supply and

Sanitation. At the time of its publication by the end of the previous century there was already a significant disparity in water availability. For example, piped water distribution was between 95.4 and 100% for Indian, white and coloured communities, whereas only about 43.3% of the black population had access to piped water. At this time the majority of water in South Africa was used for white commercial agriculture. However, Section C states that basic facilities, including water, are a human right. According to South Africa's Constitution (Republic of South Africa, 1996) all citizens, regardless of race and gender, are equal. As a result of this legal provisioning everybody is entitled to access to free basic water (Department of Water Affairs and Forestry, 1994). In light of the policy a basic water supply, in accordance with the government's Reconstruction and Development Program, must be made available to all citizens, regardless of race. The free basic water supply is allocated at 25 litres per person per day, as was stated earlier.

Mjoli (1999) asserts that the South African government also agreed to subsidise impoverished areas that are unable to provide in their own needs. Needless to say, due to various uncertainties that occurred as a result of the government's water subsidy details, people who did not qualify for these subsidies stopped paying. The role of water boards as DWAF agents at regional level is also outlined in this White Paper (Department of Water Affairs and Forestry, 1994). To promote local democracy, the provision of equitable water supplies and sanitation services at regional level is the mandate of local water committees. The national government's task is to make sure that what happens at local level occurs within policy provisions, and various check and balances are thus used to exercise this mandate. In a nutshell, central government's responsibilities include oversight, performance auditing, and regulatory functions (Mjoli, 1999).

Another important feature outlined in this White Paper is the inclusion of women in all legislative bodies, including local water committees in the water sector. The control of drought and other hazards is also addressed in this White Paper. According to the Department of Water Affairs and Forestry (1994:24), "the White Paper also governs irrigation boards. This is because the early history of water production in South Africa was based on irrigation, and vast public resources were devoted to the development of water resources for landowners with suitable agricultural land". It can be argued that the White Paper promotes demand-driven and community-based growth. When it comes to water supply and sanitation, the central government's job is to manage the country's water resources and ensure that all people have access to basic facilities, but particularly water. While the national government's mandate is

monitoring and auditing, local governments are established by provincial governments to execute water policies at grassroots level. In the absence of local government, water boards can provide services directly to customers. A collaboration between the government, the private sector, NGOs, and communities is encouraged to achieve the goals of this White Paper.

2.4 Understanding Water Scarcity in the South African Context

Water is found in large volumes on and below the surface of Earth, but less than 1% is liquid fresh water. Much of the estimated 1.4 billion km³ of water on Earth (326 million cubic miles) is found in the oceans or frozen in polar ice caps and glaciers (Catley-Carlson, 2017). Seawater contains about 35 grams of dissolved minerals or salts per litre (4.5 ounces per gallon), rendering it unfit to drink and for commercial or agricultural uses other than fisheries (Intelligence, 2019). Large bodies of fresh water contain less than 3 grams of salts per litre, or less than one-eighth ounce of salts per gallon, which is not enough to satisfy human need. Moreover, such waters are not always accessible at the times and places where fresh water is required and they are also not uniformly spread across the globe, which often results in water scarcity for vulnerable communities (Nathanson, 2010).

Water scarcity can occur as scarcity in availability due to physical shortages, or access scarcity due to systemic failure, or a lack of adequate infrastructure to disseminate fresh water equitably. Water scarcity already affects every continent (Catley-Carlson, 2017) because water use has increased worldwide at more than twice the rate of population growth in the last century. An increasing number of regions have been hit hard as they cannot live sustainably due to the low rates at which water resources can be provided, particular in arid regions where hunger and even famine often prevail (Zetland, 2014).

South Africa is a water-scarce country with an annual average rainfall of 500 mm, which is far less than the global average of 860 mm. Rainfall is irregular and severe weather conditions such as droughts and floods are relatively normal. Moreover, water services are not distributed equitably and are often exercised inefficiently. As a result, the Department of Water Affairs is obliged to monitor and regulate water provisioning (Zhuwakiny, 2012), but whether this occurs efficiently in all areas is debatable. I base this statement on the fact that water scarcity in South Africa has become a significant problem that affects everybody, yet water provisioning is continuously mismanaged. South Africa has not yet taken the issue of water loss control

seriously and this may lead to serious repercussions in areas where maximum water supply levels have been reached (Water Wheel, 2014). It is argued that the 2010 State of the Nation address by erstwhile President Jacob Zuma should have alerted South Africans to the country's water scarcity that causes inaccessibility to water in various areas, thus highlighting the need to bring water losses under control.

The year 2014 was demarcated as the year that municipalities had to reduce water damage proportions by half (South Africa's looming water disaster, 2014). While this target date has now come and gone, water loss control has shown no marked improvement. Kings (2020: n.p.) argues that the reason for this is that the Department of Water and Sanitation was burdened by problems from within. He states: "In the previous year, the Department had overspent its budget and quadrupled its debt to R2.6 billion, yet only achieved a quarter of the goals it had set for itself. By any system of measurement, the department tasked with overseeing South Africa's most important resource was on the verge of collapse and some 20 million people in 2017 did not have a clean and reliable source/supply of water, according to Statistics SA".

2.5 The Nature and Extent of Water Theft

According to Detroz and Silva (2017), poor water supplies in most communities result in individuals committing various crimes such as water theft. In South African townships the prevalent forms of water theft are water meter tampering and illegal water connections. South Africa was one of the first countries in the world to enact legislation on human's basic right to water. Since this step, several organisations have claimed that water metering and cutbacks are abused when households fail to pay their water bills, which can be considered a form of human rights abuse. In the case of *Mazibulo vs the City of Johannesburg*, the highest court in South Africa upheld the complainant's argument that cut-offs for unpaid bills violated their water right and jeopardised household's well-being (Detroz & Silva, 2017).

According to McConnachie, Skelton and McConnachie (2012), Section 27(1)(b) of the South African Constitution stipulates that "everyone has the right to have sufficient water". However, despite taking strides ahead to improve water security and access sanitation facilities, challenges in the water sphere persist, as noted in a South Africa-Netherlands Water Network report released in 2010. This report highlights several challenges:

- Many municipalities are not served by water boards and do not have the money and skills to increase their sources of supply. This limits these municipalities' ability to respond to the demand for additional water and improved service levels.
- Current institutional arrangements in many municipalities are unable to deliver effective or sustainable services that meet people's needs.
- Significant skills gaps, that compromise service delivery, exist in many municipalities. The pricing of water across the value chain (from source to tap and back) remains problematic and leads to inequitable tariff structures as well as the under-recovery of the real costs of sustainable water services.
- The poor state of wastewater treatment in many municipalities poses severe risks to the environment as well as to people living downstream of the works.
- Water services are not ring-fenced and managed as business units within municipal systems.

Water theft by means of meter tampering causes severe losses due to a lack of control of the consumption by the utility provider because it does not effectively record consumption by the consumer or executes proper service billing. While the losses incurred by meter manipulation are a major source of damage, the losses may also be attributed to meter failure or unlawfully connected water diversion pipes (Monedero et al., 2015). The service provider needs to install a meter that record customers' consumption in every house or place where water is used. The use of modern meter technology, databases, and information systems has thus provided the ideal scenario for the application of data mining and artificial intelligence in customer consumption analyses. Many older water meters are still in use, and these are more vulnerable to different forms of theft or illegal use. Additionally, the latest smart grid-related technologies include additional information that will increase knowledge regarding consumers' use of water (Monedero et al., 2015). More will be said about this in a later section.

It is argued that it is consumers who generally tamper with water meters, but in some cases water meters are tampered with by municipality officials who install them for personal gain. Joss (2018), a Northern News reporter, stated that the City of Cape Town defrauded Ms Sylvia Afrikaner by bypassing her water meter and blaming her for not paying for water. Ms Afrikaner protested, but they only sent an investigator, Jerome Goslett, to the Bonteheuwel woman's home on August 5 where he installed a new meter after checking that the seals had been broken.

During an investigation, the municipality said that a 50% recovery charge was due to Ms Afrikaner.

According to Frauendorfer and Liemberger (2010), illegal water connections are costing municipalities a lot of money as they have to maintain the availability of water for all community members. However, with time water resources have become rapidly scarcer for supply purposes. Waterworth (2017) reported that unlawful water supply connections cost municipalities a substantial amount of money and placed the water network under extreme stress. Water theft has far-reaching consequences for many residents as municipalities have to recover these costs by levying higher rates and/or higher fines if such connections are found. Therefore, municipalities encourage members of the public who may be aware of any illegal water connections to report these without fail as every individual is impacted by this criminal act.

An article in the Water News (2017) reported an incident that had occurred near Cape Town. A resident, Zinzi Mwigwi, worked as a Du Noon community advisor in an office alongside Manelisi James. They were both members of the Western Cape Water Caucus and claimed people resorted to illegal connections because when a related issue was reported to the municipality, officials made it the contractor's problem and the contractors was sluggish and irresponsible. James stated that some people had been without any water supply for periods as long as two months while noting was done. It was stated that metres were poorly mounted to the water mains and James described the contractors as 'poorly qualified plumbers. This incident illustrated that ill-fitted water management systems cause households to resort to unlawful water connections to ensure access to water.

Detroz and da Silva (2017) state that water officials are routinely bribed to disregard unauthorised water links or to falsify readings and bills. Water contracts are sometimes negotiated in a non-transparent and unethical manner, with politicians often awarding the water supply contracts themselves if water is diverted or received by illegal or unpaid connections in the city of Durban. Water loss is reportedly 37% at national level (African check, 2017). The act of water theft further escalates the issue of water scarcity because the limited volumes of water left in water sources must be conserved or saved. Hamilton and McKenzie (2014) argue that the manner in which water is supplied to households plays a major role. They state that

when proper procedures are followed as it is easy to detect when water theft is being committed in a particular area.

Muller (2008) indicates that officials are often guilty of this criminal activity. He also argues that poor water supplies in developing countries are caused by low reserves and poor infrastructure that lead to the mismanagement of funds. The argument is that developing countries need to make wise use of their resources so that they do not perish. Money should be wisely allocated to sustain infrastructures for the proper provision of water to all communities. Funds must thus not be misappropriated and any perpetrators of this crime must be brought to book. Moreover, if there is no infrastructure development and maintenance or if funds are continuously misappropriated by officials with impunity, water supplies will remain severely constrained and water theft will continue to prevail.

However, the Maseko (2018: n.p) disagrees with such accusations and argues that “it cannot be that the responsibility [for the misappropriation of water] solely falls on the shoulders of the Department and that community members are absolved of the responsibility of ensuring water security”. Collective efforts are thus required to enhance water conservation and protection. As an important arm of the national government, the DWS should thus take the lead by formulating and implementing appropriate policies in this sector. A justifiable argument is that “the effects of vandalism have not only resulted in major financial dents for the Department and other stakeholders in the water and sanitation sector, but they also too often pose a serious threat to the sustainability of general water supply countrywide” (SA News, 2018: n.p.). In 2011, Harold (2011) claimed that a main cause of poorly managed water supplies that contributed to water being stolen was that an abnormally long streak of good rains prevented South African municipalities from providing decent water to residents. He also argued that the water that was supplied was of poor quality and that this contributed to water theft.

The issue of the inadequate handling of wastewater also poses a danger to clean water sources and can contribute to eutrophication. Some scholars maintain that individuals steal water for their personal gain (Felbab-Brown, 2017). Such perpetrators obtain unlimited access to municipal water without paying utility bills for excessive water usage. Water theft poses various threats to human life as it is argued that water overuse, whether through a lack of control or compliance, threatens water quality. This compounds pollutant drainage and intrusion into water supplies. The contamination of water is not only caused by the excessive

use of surface water, but also because water that is tampered with is not properly sanitised and regulated to eliminate any harm to humans (Felbab-Brown, 2017).

However, individuals continue to commit water theft regardless of the consequences. Those who are caught in the act of committing a water crime may be barred from having access to water, but their actions also compromise the livelihoods of innocent citizens. In this regard a Witness reporter, Ntuli (2018) reported that due the municipality spends more than R12 million per month for bulk water, but only collects 50% of that, the Umgungundlovu District is pursuing customers who have unlawfully rejoined after being disconnected for non-payment and permanently terminating their water supply. Because it jeopardized the district's financial stability, it became an audit question. To cope with the unlawful reconnection[s], a revenue protection team consisting of attorneys, detectives, and tractor [operators] to dig out meters has been created. Water theft is a criminal offense, thus some of the incidents will be reported to the authorities. For those water losses, legal claims will be filed against individuals who committed the crime.

This report illustrates that water theft does not only compromise the availability of water in different communities but that it also affects the revenue a particular municipality can collect. Municipalities are mandated to provide local communities with a water supply system and to sustaining natural resources. Thornton, Sturm, and Kunkel (2008) revealed that water loss audits uncovered many illegal contacts and/or meter manipulations which are practices that have a direct impact on the ability of municipalities to collect revenue. The property owners involved were each fined R1 500 for tampering and R5 000 for damaging the municipality's land and property. Water supplies were analysed and billed in earlier years to determine if any illegal use had occurred. Currently it seems that criminals are not dissuaded by municipal fines. Criminal charges have also been laid against property owners who abused their right to water which, in some instances, resulted in a criminal record or even a prison sentence for theft and fraud (Thornton, Sturm, and Kunkel, 2008).

Water is an essential resource that is utilised in various ways and contexts, including manufacturing processes. It is undeniably crucial to human life and the sustainability of all ecosystems across the world. However, due to climate change and illegal acts that threaten water resources, stress is exerted on South African water suppliers, particularly on municipalities. Against this background, unrestricted access to water in the future has become

questionable (Lloyd, 2005). According to Muller, Schreiner, Smith, Koppen, Sally, Aliber & Pietersen (2009), water is without a doubt fundamental to the sustainable economy of a country, and the manner in which water is overseen and utilised can substantially affect a nation's social welfare and economic viability. Water resources “are very sensitive and highly impacted by climate change. Water resources, whether they are rivers, lakes, groundwater, or soil moisture tend to react to climate change, whether negatively or positively (Morrison, Morikawa, Murphy & Schulte, 2009:1). Several African countries have experienced water scarcity caused by weather conditions, and South Africa is no exception (Muller et al., 2009). Climate change can cause floods that contaminate the water in resources which, in turn, leads to people and animals drinking contaminated water. Climate change is also associated with severe drought which is a major problem on the African continent (Felbab-Brown, 2017).

South Africa is facing many difficulties associated with water both in terms of resource sustainability and actual water administration by districts. The sustainability of the sector seems in grave peril because of inadequately maintained and a regularly unprepared infrastructure, general under-evaluating of water over the worth chain, and the failing quality of sanitation services in several municipalities (Hellberg, 2015).

2.6 Distribution of Water in South Africa

To understand the causes of water theft it is vital to understand how water is distributed across the country. According to the Department of Water and Sanitation (2018), there are six major sectors that use water, namely irrigation (farming and gardening), urban use, rural use, industrial use, mining and bulk production, power generation, and forestation. The Department's studies indicate that the vast majority of South African water is used in agriculture, with over 60% of all available water being used for the irrigation of crops. Up to 30% of South Africa's water is for urban and rural use, while the rest is split among industrial, power generation, and forestation use. Statistics South Africa's General Household Survey (Statistics South Africa, 2018) reported that, since 2006, households with access to piped water had increased in number and percentage. For instance, in 2018 as many as 13.8 million households had access to piped water compared to 9.3 million in 2006. An estimated 46.3% of households had access to piped water in their dwellings in 2018 while a further 28.5% received on-site water, 12.3% relied on neighbourhood taps (taps in streets), and 1.9 % relied on taps from neighbours.

A recent BusinessTech (2015) report stated that about 12% of all water was used for domestic (home) use in the country. This latter body highlights that urbanisation has a major impact on water availability as the influx of people into urban areas puts pressure on water systems. Moreover, a dense population in a relatively small area exacerbates pollution and “often ruins the quality of water” in rivers and dams.

2.7 Causes of Water Theft

2.7.1 Affordability of water

According to Felbab-Brown (2017), poor socio-economic conditions contribute to the decision by individuals to commit water theft. Water bills in South Africa have experienced steep increases and water affordability has become a challenge for many households. South Africa is a developing country where the growth rate varies for different areas (Felbab-Brown, 2017). Because of the country's development, infrastructure that makes it easier to access resources is expensive and this leads to escalating payment rates for water and electricity (McKenzie et al., 2012). Poor citizens, particularly those living in informal settlements and townships, are often unable to keep up with developments due to financial constraints (Felbab-Brown, 2017). Kruger and Landman (2008) argue that the living conditions of the poor have not been developed in any way. Numerous individuals in townships and surrounding areas do not have adequate infrastructure such as roads, electricity, and a regular water supply, and theft and other forms of crime are prevalent in these areas.

Poor service delivery is also a factor that leads to dissatisfaction and rebellion and often erupts in violent protests. South Africa thus faces various social problems and unemployment that cause high crime rates in the country (Hemson, 2016). Due to economic constraints, many people – particularly parents and youths – relocate from rural to urban areas to seek jobs and a better way of life. However, many fails to find gainful employment which makes them revert to crime to earn a living (Hedden & Cilliers, 2014). What many migrants do not understand is that urban life is not free and that even basic resources in townships and on the outskirts of cities come at a price. It is for this reason that many township dwellers illegally bypass water meters to gain access to free water. Some even go to the extreme of selling water at a low price to those who cannot afford to pay their water bills due to financial constraints (Bourblanc, 2017), and these unscrupulous persons make a 100% profit on something they obtained

illegally and fore which others have to pay. However, it may be argued that most people who steal water lack the financial means to pay for piped municipal water. This problem is exacerbated when water sources are not gated or inspected by water officials. This lack of guardianship makes it easy for farmers and vegetable gardeners to steal water from a dam or other water sources in order to irrigate their crops or maintain their livestock herds. Crops and livestock are sold to people or companies by these farmers without taking responsibility for the resources that were used (Ray & Williams, 1999). This means that the tax payer directly pays for these enterprises as losses are recovered by escalating water bills that law-abiding citizens have to pay.

On 2 February 2018, a newsreader announced on KFM 94.5 (City hunting down alleged water crooks..., 2018) that a caller in Rosebank had reported suspected water theft from the Liesbeek River by men driving an unmarked flatbed truck. It was alleged that the men on the truck, which carried multiple tanks, had been illegally drawing water from the Liesbeek River for a week at around 11 pm. Robbie Roberts, the City's director of Law Enforcement, investigated the case after a resident had submitted photographic evidence of the suspicious activity. Another caller added that it appeared that a local company had been hiring out trucks for water delivery services to individuals without a water-use license.

Based on the above case, it is clear that water is accessed illegally from easily accessible water sources by individuals or syndicates. During a particularly challenging period of drought, various municipalities implemented a restriction of 50 litres of water per person per day to save water. However, some people used more than 50 litres of water per day in order to run their businesses such as car washes or laundries. Many ruthless entrepreneurs reverted to stealing water for personal gain, but this did not help the situation and only made it worse. Individuals who bided by the law ended up suffering due to not having access to water because others were stealing it and depleting precious water resources for their benefit (Gosling, 2018).

Many residents refuse to pay their water bills and rather damage or tamper with meters, which is a form of water theft. This practice impacts water reserves as it often continues for years on end (Butler, 2005). South Africa was one of the first countries in the world to introduce legislation that protects people's right to water, and therefore many have argued that metering and the suspension of the water supply for unpaid bills are violations of human rights (Gerlak

& Wilder, 2012). The most elementary form of water theft is the use of water without paying the bill for it. Many users simply do not pay their bills for years or even decades, and the water authority is unable or unwilling to cut off their supply (Gerlak & Wilder, 2012). In the above case the court actually upheld their right to water regardless of their refusal to pay for the excess water they had used.

Using water beyond a set quota, whether from legal boreholes, public water hydrants, or illegal taps by licensed or unlicensed users is another form of water theft. So is underreporting the use of water, whether it is sourced from unregistered private wells or by tampering with water meters (Kok & Collinson, 2006). Many hotels, businesses, and upscale establishments, as well as middle-class households, operate illegal wells or booster pumps. Water theft and smuggling are thus hardly confined to poor urban or rural areas and nor are water crimes, including theft and smuggling. Moreover, these are not problems that exist in developing or poor countries alone (Olivier, 2017).

Due to unpaid water bills and increments in water tariffs, municipalities owe the Department of Water and Sanitation. Gosling (2018), a *News24* reporter, issued the following report that Municipal water debt grew by R1.7 billion between March and September. MPs were warned that the country's large water debt had significant repercussions since the Department of Water and Sanitation and the country's water boards did not have the money to repair water infrastructure, particularly dam infrastructure, and deal with important concerns like water contamination. Municipalities owed water boards R8.6 billion, and water boards owed the department R4.5 billion, according to the agency's Paul Nel.

Gerlak and Wilder (2012) argue that, due to increasing water tariffs to make up for financial losses, non-payment will always be a problem since South Africa also have a high number of unemployed citizens. This is because, if municipalities must settle the debts they owe the DWS, their rates will always have to increase. The irony is that law-abiding, paying citizens have to bear the financial brunt incurred by ruthless water thieves, whether they are individuals or syndicates.

2.7.2 Urbanisation

The depletion of water in conjunction with intense urbanisation and the growth of urban informal settlements has increased illegal water theft and water inaccessibility (Ray & Williams, 1999). Evidence suggests that city authorities are faced with rapid urban development that cannot adapt to demands for infrastructural provision to meet economic and social needs (Kok & Collinson, 2006). Not only are planned preparations and interventions major issues on the agenda to manage rapid urbanisation, but city governments are not successfully linking the economic development trajectory to implications for urban growth and subsequent housing needs (Ooi & Hong Phua, 2007).

Both urban areas and townships are vulnerable to crowding compared to rural areas because most people migrate to urban areas for better living conditions or improved livelihoods. One reason is that it is easier to get a job in an urban area than in a rural area in South Africa (The Water Wheel, 2014). However, most individuals who migrate from rural to urban areas do not have the means to keep up with developments and financial demands in urban areas. It might be because many remain unemployed or are so used to living in difficult conditions that they do nothing to improve their situation (McKenzie, 2014). This results in the mushrooming of informal settlements where social problems and water theft abound. Most people in informal settlements veer towards illegal means to obtain resources such as water and electricity (Ray & Williams, 1999). Water inaccessibility is high and water bills are neither levied nor paid, and thus municipalities cut off supplies to these areas. This exacerbates health issues due to poverty (Butler et al., 2005) and leads to a high level of illegal water connections and distribution. However, illegal water that is distributed in informal settlements is not sanitised, and this poses a health risk.

Sanitation in informal settlement areas is another problem that is also associated with water accessibility. In South Africa, everyone has the right to access basic sanitation. The White Paper on a National Water Policy for South Africa (Department of water affairs and forestry, 1997) and the White Paper on Basic Household Sanitation (Department of water affairs and forestry, 2001) were published to ensure nation-wide access to basic sanitation as this is a constitutional responsibility of the government” (Source, 2016:7). Although everyone has a right to basic sanitation, water theft causes vulnerability to diseases such as cholera and various other infections as the water that is distributed to informal areas is not sanitised adequately, or

at all. Moll (2009) argues that it is the constitutional responsibility of the local sphere of government to provide basic sanitation services to all people. Local governments must thus take reasonable measures to address this mandate. However, when they fail to do so it is primarily the poor and marginalised who suffer.

In numerous parts of the world the struggle for water resources is ongoing. Challenges to achieve universal access to clean water are likely to persist due to the overuse of water, environmental degradation, and ever-changing climate patterns (Ray & Williams, 1999). The most affected population groups are those who are poor and marginalised in society. In most cases, informal settlement residents in South Africa and around the world have no access to potable water (Felbab- Brown, 2017). Due to the fact that most households are not linked to public water distribution systems, they can only rely on illegal water connections which supply them with polluted water most of the time. However, as much as these illegal and informal distribution systems are easy to connect, they are often inadequate and are supplied at a very costly price with the paradoxical effect that the world's poorest and most marginalised, who most direly lack water, often pay far more for it than the wealthy and the middle class (McKenzie, Siquilaba & Wegelin, 2012).

South Africa is a developing country where development does not occur equitably (Felbab-Brown, 2017). Due to numerous contextual factors, creating an infrastructure that will make it easy for all to gain access to resources is costly and increases in payment rates for water and electricity are thus the bane of law-abiding citizens (McKenzie et al, 2012). Most individuals, and not only those who reside in informal settlements, are often unable to keep up with the pace of development due to financial constraints, and this is the source of deeply rooted problems that affect humankind (Felbab-Brown, 2017). Water inaccessibility is also caused by a warm and dry climate in summer rainfall areas that decreases natural water storage capacity in dams that feed urban areas, while water scarcity is also increased in cities due to changes in precipitation patterns and intensity (Morrison et al., 2009).

Zeitoun's study on climate change and water security shows that reduced precipitation in some arid regions could trigger an exponential drop in groundwater tables, which increases the vulnerability of ecosystems due to temperature increases, changes in precipitation patterns, frequent severe weather events, and prolonged droughts. These factors further diminish the ability of natural systems to filter water and create buffers to flooding, while they also affect

the capacity and reliability of water supply infrastructure due to flooding, extreme weather, and a rise in the sea level (Zeitoun, Lankford, Krueger, Forsyth, Carter, Hoekstra. & Swatuk, 2016).

2.7.3 Corruption

According to Georgieva (2017:49), corruption in South Africa “...includes the private use of public resources, bribery, and improper favouritism”. Entrepreneurs are commonly the cause of corruption in South Africa as they are individuals who enrich themselves by corrupting the awarding of government tender contracts. Their behaviour is mostly based on personal corrupt connections and relationships, although outright bribery may also take place (Lodge, 1998). Democratisation has increased the transparency of government operations, which has helped to minimize corruption in certain sectors while simultaneously raising the risk of misuse in others. The current degree of corruption is primarily inherited, and many government institutions, particularly those involved in security, have a history of habitual official misconduct. (Cloete, 2013).

There is no single definition for corruption because it takes many forms and involves a variety of people. Bribes paid by private individuals or corporations to public officials are the most well-known form of corruption (Amadi & Ekekwe, 2014). However, if corruption has become institutionalised in a nation, it can manifest within the civil service as well. Anti-corruption legislation has been enacted in every country and defines the difference between illicit bribery and legitimate gifts of goodwill. This demonstrates that governments are aware that corruption is a problem they must address, but each country has its own idea of where the line should be drawn (Ades & Tella, 1996). In South Africa, the scourge of corruption is a growing and critical concern as many communities receive poor service delivery due to its prevalence. It continuously inhibits development, especially in townships and rural areas. Corruption in South Africa is a daunting problem that hinders sustainable development and meaningful transformation at all levels of government and society (Khan & Pillay, 2019).

South Africa has a multitude of legal instruments at its disposal to combat corruption, but it seems to lack the political will to do so as corrupt officials and politicians maintain their operations with impunity (Olaniyan, 2014). Although the word corruption is not stated in the South African Constitution, many clauses indirectly address it. The Constitution includes anticorruption provisions that cover a wide range of industries, administration, public services, security services, finance, as well as the obliged openness and accountability of government

officials. Examples are Section 32(1)(a)(b) of the Promotion of access to information Act, which entrenches the right to access information, Section 33(1)-(2) which provides for the right to administrative action that is lawful, reasonable, and procedurally fair, and Section 182(1)(a) that gives the Public Protector the power to investigate any conduct in state affairs or in the public administration of any sphere of government that is alleged or suspected to be improper.

The Act also includes Section 188(1) which requires the Auditor-General to audit and report on the accounts, financial statements, and financial management of all state entities, and Section 188(2) which authorises the Auditor-General to audit and report on the accounts, financial statements, and financial management of any state-funded institution (Rispel, De Jager & Fonn, 2016). Sections 195 and 215 of this Act requires national, regional, and municipal budgets and budgetary processes to foster transparency, accountability, and effective financial management, and Section 217 provides the constitutional foundation for public procurement in the country (Rispel, De Jager & Fonn, 2016). However, corruption can, like an infectious disease, spread to all levels of a government and its administration causing massive revenue losses and eroding public trust in the government's ability to serve the public interest. The fight against corruption in the water sector is part of a larger governance issue that is marked by the complexities of both sector and national reform processes. The water protection of families, towns and cities has been severely harmed by corruption (Stalgren, 2006).

The most visible consequences of water theft occur in low-income areas where service provision is still inadequate. When capital is scarce, any corruption that diverts funds from the public to private pockets decreases the availability and quality of services, especially where there is a great need and money is scarce (Anbarci, Escaleras & Register, 2009). Due to corruption at national level, communities often go for weeks without water and without even being informed about the interruptions. In one incident, Corruption Watch (2020) reported that community members have been without water for more than two weeks, and the local government has provided no openness or information regarding the delay or problem with fresh water supply. There have been no measures taken to mitigate water shortages, such as installing water tanks in each street or taking other measures. In the year 2020, this is the very bare minimum that can be accomplished.

Masiya, Davids and Mazenda (2019) argue that poor communication between community members and local municipalities results in slow responses to service delivery requests. Moreover, a lack of water education has resulted in limited participation by community leaders

in the resolution of water crises. Water service quality can be improved by resolving issues with the involvement of the public. But because this does not happen, it is necessary to rethink local government structuring to strengthen connections between communities and their municipalities. Encouraging public involvement in decision making regarding policies and programs that impact local communities is vital, but anecdotal evidence has revealed that this does not occur and leads to the fact that local governments make decisions that are shrouded in mystery. Communities who are also rate and tax payers remain uninformed and are kept in the dark.

Furthermore, large companies that have corrupt relations with officials in high positions in the water distribution system have been engaged in unnecessary projects and developments for which they have claimed payment regardless of sub-standard work. Corruption Watch (2020, n.p) argues that, “although the behaviour of public sector officials and politicians comes under particular scrutiny, [it is also] clear how the actions of private individuals and businesses, who deliberately exploit weaknesses in the public sector, have an acute impact on water security and the human right to water” (2020: n.p.). Detroz and da Silva (2017) state that water officials are routinely bribed to not disconnect unauthorised water connections or to falsify readings and bills. They argue that such water officials are involved in giving illegal access to water to individuals who bribe them and they thus become complicit in connecting and bypassing the main channels of water. The result is that numerous vulnerable communities experience persistent water shortages that prompt individuals to commit water theft by means of unauthorised, unmetered water connections. The same plumbers who maintain a supply system are often involved, and many use material from their places of work to execute this crime.

Corruption Watch (2020: n.p.) further states the following:

“The extent of corruption in the water sector is measured in dry taps, lost jobs, and polluted rivers. Many, particularly young children, old people, and those with compromised immune systems, have become ill from drinking unsafe water, or their homes and toilets cannot be kept hygienic. Effective strategies to wash corruption out of the water sector could create an environment in which larger water problems can be tackled. Join the discussion and engage with relevant stakeholders in the sector.”

2.8 Effects of Water Theft

Individuals residing in informal settlements are highly likely to have no access to potable water because they are located on unapproved land and they use water from unsecured groundwater or ponds (Department of Water and Sanitation, 2015). Licensed users of water thus often experience shortages of water even if they paid for it. Water quality is also often highly compromised and individuals who commit water theft cause innocent residents to contract waterborne diseases. The local government then devises a larger budget to address citizens' health, which could have been prevented if clean and not polluted water had been distributed (Kok & Collinson, 2006). Moreover, the local government could have allocated that money to something else to better serve the people or to procure additional legal water distributors to service rural or informal communities (McKenzie, 2012).

Unpaid use of water by means of illegal tapping and connections to illegal water pipelines means that a city is not able to collect sufficient payment for the water that is used by citizens (Butler et al., 2005). Thus, large-scale lawbreaking and massive water theft and smuggling can result in inadequate resources for repairing, updating, and enlarging water distribution systems and for finding measures to cope with water scarcity (Falbab-Brown, 2017). Illegal sourcing of water and failure to pay for water use frequently lead to water scarcity, which in turn hurts agriculture and undermines food security as both crop production and grazing are compromised. Similarly, industries regularly overuse water and fail to pay for their water consumption, which is a water theft crime (Namara, Hanjra, Castillo, Ravnborg, Smith & Van Koppen, 2010). Subsequent water shortages may severely affect these and other industries, thus triggering negative economic effects.

The inability of responsible bodies to collect payment for water use, as well as large-scale delinquency and massive water theft and smuggling, means that there are inadequate resources for repairing, updating, and enlarging water distribution systems and for finding measures to cope with water scarcity (McKenzie et al., 2012). Moreover, many cities' water pipeline networks are often more than a century old and designed for much smaller populations, and this causes roughly one quarter of the world's cities to suffer from water stress (Falbab-Brown, 2017). For example, Richmond farmland in the Pietermaritzburg area still does not have full access to water because the city itself does not have enough water to share with the areas around

it. Also, too much water is used by farmers to sustain their agricultural activities in the area (Hope, Gowing & Jewitt, 2008, 2008).

Quite apart from the large-scale theft of water in cities that is commonly committed by industries, water distribution systems are designed to carry only half the water that is demanded in South Africa. (Kok & Collinson, 2006). Meanwhile the country continues to experience population growth every year, which contributes to further demands on its dysfunctional water distribution system. Sadly, only one quarter of South Africa's residents pay their water bills (Moll, 2009) and water theft, just like unregulated or poorly regulated use of water, threatens the water security of licensed users (Kok & Collinson, 2006) as well as unlicensed users and users who violate regulations. This leads to water scarcity and thus to rationing, increased prices, and potentially insufficient availability (Felbab-Brown, 2017). In the worst-case scenario, this can lead to a shortage of water, even for drinking (Hope et al., 2008).

Many cities in South Africa, for example Cape Town, have running water and electricity for only several hours a day. Theft, mismanagement-induced water scarcity, and water smuggling can also lead to political, social, and communal conflict, riots, and instability (Zimmermann, Hoffmann & Moran, 2004). In the past three decades water scarcity has regularly been used to pressure political opponents and instigate political riots, even when a municipality administration was responsible for inadequate water distribution networks (Zimmermann et al., 2004). For example, in Cape Town there was a devastating water crisis and the Democratic Alliance (DA) was put under pressure by other political parties such as the African National Congress (ANC) and the Economic Freedom Fighters (EFF) because it could not control the crimes associated with water security or water shortages across the city and its outlying areas (Zimmermann et al., 2014). Over the past year (2020), water scarcity and the disruption of legal and illegal water supplies have regularly sparked riots. People took advantage of the water shortage to protest by causing blocked roads and railways while increased water prices rocked the city (Moll, 2009). The poor were thus squeezed twice as hard as they suffered from a water shortage and had to pay excessive prices for illegally distributed water (Felbab-Brown, 2017).

Water theft affects the financial status of the suppliers of water resources as well as the stability of the power supply across the country. If water is scarce and expensive it affects and inconveniences businesses and hospitals as well as private and public organisations (Goodwin,

Kaggwa & Malebo, 2013). Water cut-offs are partly caused by increased water consumption through illegal means and, as such, threaten the livelihoods of many households and individuals. Billing irregularities occur in numerous ways, for instance as a result of incorrect meter readings by bribed officials and deliberate incorrect billings by offices in exchange of illegal customer payments (Gowlland-Gualtieri, 2007). Water authorities can also be inefficient in calculating the amount of water used, and often a much higher or much lower figure is used to calculate the amount of water used. It is also likely that certain national staff structures will negotiate higher wages, which means that water rates then escalate (Smith, 2004). In certain situations, workers who have been bribed earn an extra pay check and the customer pays less for water.

Factors such as those discussed above have led to instability in the delivery of water services and are costing the government and tax payers millions of rand.

2.9 Strategies to Curb Water Theft

Crous, Haarhoff, & Buckley (2013) conducted research on water demand characteristics of shared water and sanitation facilities. One finding that was related to ablution blocks in eThekweni Municipality was that, from January to November 2012, the majority of the water supply (60%) had been used for laundry purposes while the water demand for toilet flushing accounted for 16% of the total water supply at each facility under study. It was also discovered that blockages in water supplies caused a high-water demand which then led people to commit water theft. Such situations ironically increase the rate of water inaccessibility and continue to be a crisis in South Africa (Meehan, 2013).

Water theft is difficult to identify along the urban drinking water supply chain; however, this does not mean that the problem of water inaccessibility due to water theft does not exist (Panchal, Dagade, Tamhane, Pawar & Ghadge, 2014). In most areas in South Africa water theft occurs as a result of shortages in the water supply chain which may be caused by some people bypassing water meters, connecting into fire hydrants, the leakage of pipes, a lack of maintaining water pipes, and high-water prices. Goldin (2010) suggests that it may happen in some areas that there is enough water for everyone but, due to criminal activities and greed, people are dissatisfied with the amount of water that they legally receive on daily basis. In 2014, a resident in KwaMashu's Vilikazi Road was forced to repay R633 000 for tapping illegal water over a long period, and a Pinetown resident living in an R850 000 home had to pay back

R108 000 for an illegal connection. City Water head Neil Macleod said that when residents were caught with illegal connections, they always denied knowing it was illegal (Erasmus, 2014).

Mechanisms have been put in place to combat this issue, one of which is to lay criminal charges against those who commit water theft. Donnenfeld, Hedden and Crookes (2018) argue that it is usually farmers who are criminally charged for water theft as they smuggle and steal large volumes of water. This affects a whole lot of people who then do not have access to water and results in water scarcity in the affected areas. For example, the WSD hauled a Clanwilliam farmer to court following allegations of unlawful water activities. The farmer faced five charges which included failure to meet the requirements for issuance of a license before constructing a dam with a safety risk, failure to produce a license to construct a category 2 dam with safety risk before construction, and failure to register and to apply to register a dam with a safety risk within 120 days to the Department after completion of the dam (Adriaanse, 2018). Another mechanism to curb water theft is to cut off the water supply to the dwelling or business of an individual who has committed water theft.

Farmers sometimes misappropriate water to produce crops that help to feed people, but the wider impact of this transgression is the unavailability of this precious resource for users downstream from the farm as well as negative impacts on the environment (Erasmus, 2014). It is suggested by Donnenfeld et al. (2018) that the implementation of water conservation and reduction measures will result in more efficient use of water in South Africa. This can be achieved through a combination of infrastructure repairs, the implementation of new building codes, incentives to install water-efficient appliances, and a tiered pricing structure. Policy measures should be supplemented with campaigns to raise awareness about water use and conservation. Hedden and Cilliers (2014) argue that water theft can be reduced by increasing groundwater extraction, as the DWS estimates that South Africa could significantly expand the use of groundwater. This is particularly important in agriculture where nearly two-thirds of South Africa's water is used. Additional technologies could also play a role in the future, but they are unlikely to be widely applied currently. For individuals and business enterprises to understand how the law and water policies are used to prevent water theft, it is vital to peruse the Acts and policies that formulise water use in South Africa.

2.9.1 Water Policies in South Africa

South Africa's water policy was subject to rapid changes following the country's radical political transformation (Perret, 2002). The law divides the nation into 19 Water Management Areas and prescribes processes for water utilisation to guarantee that each area develops its institutional and administrative frameworks in light of its own circumstances (Karodia & Weston, 2001). There are two core legislative frameworks for transformation in the water sector, namely the National Water Act No. 36 of 1998 and the Water Services Act No. 108 of 1997 (Republic of South Africa 1997; 1998). The implementation of these Acts and associated policies is the responsibility of the DWAF. Both Acts jointly provide for the establishment of institutions that are mandated to manage and distribute water in a legal manner.

The National Water Policy guides an integrated water resource management system (IWRM) on a catchment basis while the National Water Resource Strategy must promote the management of catchments within a water management area in a holistic and integrated manner (Republic of South Africa, 1998). The National Water Act provides for fundamental reforms in the law relating to water resources by repealing certain laws and otherwise providing for matters connected with water management. "Water policies are transformational masterpieces that do not only redress the problems of the past but also help to build a better future" (Department of Water Affairs and Forestry, 1997: n.p). This resolve is embodied in the National Water Act which is to ensure that the nation's water resources are protected, used, developed, conserved, managed, and controlled in ways that take into consideration such factors as, inter alia, meeting the basic human needs of present and future generations, promoting equitable access to water, redressing past discrimination, facilitating social and economic development, and protecting aquatic and associated ecosystems (Republic of South Africa White Paper, 1997).

However, the implementation of these policies has not been easy. Goldin (2010) for instance argues that South Africa is a water-scarce country and water resources are unevenly distributed. The country suffers from extreme weather conditions and unpredictable rainfall patterns and therefore, despite the reversal of the regime and the fact that South Africa is a middle-income country, there is a significant number of people who are still water poor. Moreover, poor governance and a lack of institutional capacity to manage water efficiently exacerbate the issue of water inaccessibility (Kemerink, Ahlers & Van der Zaag, 2011). In 2003, approximately

eight million South Africans lacked adequate water and about 38% of the population was without adequate sanitation. The White Paper on National Water Policy (Department of Water Affairs and Sanitation, 1997) was an attempt to integrate policy positions for the protection, use, development, conservation, management, and control of South Africa's water resources. It did this by explaining in plain English how this would be implemented (Perret, 2002).

The Fundamental Principles and Objectives for a New Water Policy document in turn guided an intensive programme of work involving the Minister, other political leaders, and officials from the DWAF (Kemerink et al., 2011). Government departments, organised user groups, and South Africans from all walks of life and provinces engaged in a process of consultation, research, and synthesis. At the same time, by building on the foundations of the 1994 White Paper on Water Supply and Sanitation and in close consultation with organised local government, a new Water Services Bill that regulates water supply and sanitation services was drafted (Perret, 2002). The purpose of this Bill is to ensure that the pivotal questions of water resource management are addressed and that the needs of all South Africans for access to basic water services will not be forgotten (Perret, 2002). This policy development process was assisted by officials and experts from other countries and international organisations (Goldin, 2010) and the White Paper is a summarised product of this process. It outlines the direction to be given in the development of water laws and water management systems that will be ready for the next century (Department of Water Affairs and Forestry, 1997).

The DWAF implemented key proposals to guide water management in South Africa currently and in the future by addressing all water sources in the water cycle, whether this water is on land, underground, in surface channels and falling on, flowing through, or infiltrating between such systems. This means that all water is treated as a common resource that is subject to the broad objectives of water resource management. To promote the efficient use of water, users are charged the full financial costs of providing access to water, including infrastructure development and catchment management activities. This is done on an equitable basis and according to a realistic and reasonable programme that has been in place for a while. When water is shared in river basins, the government is mandated to consider all users to ensure that the legitimate requirements of neighbouring countries are met (Department of water and forestry, 1998).

The new water policy advocates that farming, including dry land and forestry plantations, is an important part of the economy and sustains millions of people in rural areas. However, as was referred to earlier, it is also the sector that utilises almost half the country's natural water (Goldin, 2013). Moreover, although the mining industry provides valuable revenue by producing the mineral riches that it mines from the earth, it unfortunately also releases many harmful waste products that can threaten our water (Kemerink et al., 2011). Both these sectors will thus have to re-evaluate their use of water and the impact on water resources. It is also argued that they will have to pay the price for water that reflects real economic costs, including the indirect costs to society and the environment. Other sectors, particularly manufacturing industries, will also come under pressure to clean up their activities (Department of Water Affairs and Forestry, 2014). Local governments and the domestic users they serve will have to reconsider the way in which they use and often waste water. Even promoters of the needs of the environment will have to justify the degree of environmental protection they seek (Goldin, 2010).

2.9.2 Water policies that prevent water theft

According to King (2004), the national government funds local governments to ensure that they have the resources to enforce water distribution and conservation programs. The provision of free water for basic use is funded in part by local governments that receive a constitutionally mandated portion of the annual national budget. This monetary allocation is augmented by cross-subsidisation of consumers within a network of the zone of jurisdiction for the supply of water facilities, where applicable (Gowlland-Gualtieri, 2007). Municipalities are expected to implement a block tariff scheme to ensure the financial viability of the provision of free water. According to this scheme, the cost of water rises incrementally with its use, which is subject to the condition that the first block of water should be given free of charge for up to six kiloliters per household per month. With each additional block of water used by a household, the water price then rises to ensure that those who use significant quantities of water subsidise the free supply of six kiloliters of water for all households to some degree.

Perret (2002: n.p.) argues that “the free basic water policy strengthens the ‘consumer pays’ principle by explicitly allowing usage beyond the existing water supply service paid for while enabling free access by the poor to a basic water supply service necessary to sustain life”.

However, Goldin (2010) states that the implementation of the policy has encountered serious obstacles that have prevented it from remedying existing inequalities in regard to water and sanitation provision. Several such shortcomings are mentioned by the DWAF (2014). The first concerns the lack of funding for local governments. Cross-subsidisation has not been a viable source of funding, especially in rural communities where there are not enough high-volume water users to cross-subsidise the provision of free water. Private water companies also do not consider providing a minimum amount of water for free as they deem this economically unviable. Moreover, local governments are facing serious problems in the provisioning of water and sanitation services in general, and this has led them to take drastic cost-recovery measures such as disconnections that deprive residents of access to water, often for extended periods of time. There are also important infrastructural problems in many areas in South Africa, which means that water delivery of any kind is simply not possible there. The implementation of the policy to provide free basic water therefore requires a rapid review and improvement to ensure better water infrastructure and provisioning, especially for the rural poor. The third problem concerns the quantity of free water that has been determined by the government as the minimum quantity necessary for survival. This is often inadequate and leads to misuse and misappropriation.

2.9.3 Water theft detection

Monedero et al. (2015:141) state that “every year a large amount of money in water departments disappear [*sic*] from taxpayers and private water distribution systems worldwide”. This invisible drain on the economy is a problem with which governments and law enforcement agencies around the world have been struggling for decades. While some leakage losses occur, in some cases fraudsters are paid by unscrupulous homeowners or business owners to tap into the water mains and bypass the water meter, resulting in low or no water bills (Vinoj & Gavaskar, 2018). Due to these unlawful practices, water companies and local governments lose revenue every day. In addition, these clandestine taps pose a risk to other innocent users of the water system. When illegal connections are installed in the water mains, dirt and other contaminants may be introduced along with fragments of foreign pipe material (steel, plastic, etc.) into the clean water supply. The tap is usually be underground and is not readily visible, making locating and disabling a real challenge (Khabusi & Jinda, 2019). Water distributors are struggling to find such illegal connections. The most common indication of an illegal

connection is when water usage decreases or ceases in another occupied residence or building (Gouthaman, Bharathwajanprabhu & Srikanth (2011). Depending on how the water metering is monitored, detecting this can take weeks, months, or years.

This problem is not only endemic to South Africa. According to McCullough (2010), in southern Europe a company called One Forward Thinking was keen to fight water theft and decided to test GPR sensors and applications. They tested a mid-sized home in the suburbs of a city in southern Europe that was experiencing diminished access to water. Because the home was occupied, the water company had become suspicious, and they could see from photos on Google Earth that a huge swimming pool was still in operation. The device showed the presence of illegal water tapping and this was investigated. The successful results of this investigation demonstrate that GPR is a useful tool in detecting water fraud. Therefore, when a water company suspects that anyone has bypassed the water meter, GPR offers a non-intrusive method for determining the existence of such an illegal tap before a construction team is called in to check for actual proof (Vinoj & Gavaskar, 2018).

According to Parks (2004: n.p.), the Neptune Technology Group “...introduced the E-Coder Solid State Absolute for water theft”. This encoder is one of other detection methods that are used to detect irregularities in water flow and meter reading. This smart encoder detects reversed meter flows and other forms of unauthorised water usage. It has an 8-digit resolution register that tests flow rates down to a tenth of a gallon, as opposed to a standard 6-digit encoder’s 10-gallon resolution. It is able to monitor a 15-minute interval flow (Parks, 2004). What is vital for water theft detection are the flags that are automatically generated by the register to mark alarm conditions. This device indicates reverse flow and detects if the condition has persisted for a prolonged period of time. Thus, any irregularities that are detected can be investigated and curbed faster with this method than when the old system is used (Cory & Scott, 2004).

Gouthaman et al. (2011) argue that the key reason why consumers exploit water illegally is that the older water meters are based on an oscillating piston or disk that relies on water to physically displace the moving measuring item in direct proportion to the amount of water flowing through the meter. A magnet moving the register is driven by the piston or disc. This type of meter can be controlled to slow down and even stop the magnet which drives the register using an external strong magnet. It is very difficult to detect this form of fraud as it is a non-

invasive technique. There are older meter modules to prevent this kind of fraud as they bypass the magnet system. These newer meters have a magnetic field that registers water irregularities. When they detect one, they will enable an alarm. However, according to Sarangi (2020) the implantation of such detection devices is very expensive and sometimes the installation of a smart meter is cheaper than the installation of the magnetic method. Khabusi and Jind (2019) argue that water theft detection devices are usually installed in gated areas, whereas in townships and rural areas such devices are rarely installed due to poor maintenance of infrastructure and poor service delivery by local governments in these areas. Essam, Ahmed, Abouelmagd and Soliman (2020) further argue that developed countries and urban areas can control water flow and supply because their water revenue is allocated to allow them to install water irregularity devices such as those mentioned above, whereas developing countries do not have enough revenue to install such advanced devices to detect water theft.

2.10 Conclusion

In conclusion, it must be stated that existing literature on water theft is limited and lacks evidence regarding the effectiveness of water theft interventions in townships and informal settlement areas. It is undeniable that the water theft problem is a global phenomenon that has deeply rooted itself in both developed and developing societies. There are numerous steps in place to ensure the worldwide elimination of water theft, and South Africa is no exception. However, the best solutions are highly technical and expensive. It was against this background that the current study proposed to add to the existing literature by filling the gap in knowledge regarding the effective implementation of mechanisms to curb water theft in townships and informal settlement areas. The literature review addressed one of the objectives of the study as it elicited a deep understanding of water scarcity as a global, national, and local phenomenon. The discourse thus highlighted the water theft issue globally and linked these findings with South Africa. Based on the literature, there is clear evidence that water theft is a persistent crime and that it is escalating in South Africa, particularly in townships and informal settlement areas. Different reasons for this practice were explored. However, even if one may to some extent sympathise with deprived and disadvantaged communities who attempt to gain access to water sources without payment, water theft remains a criminal offence that is punishable by law.

CHAPTER THREE

THEORETICAL FRAMEWORK

3.1 Introduction

Theories are used in research to locate a study within a particular frame of reference and to serve as a lens through which one can view the phenomenon under study (Bhattacharjee, 2012). Theories are also used in the design of a study and the interpretation of the data (Bhattacharjee, 2012). The theories that were used to frame the current study were two social structure theories, namely the social disorganisation theory and the general strain theory. These theories bring a sociological rather than a biological or psychological perspective to studies of crime and deviance (Silver & Miller, 2004). This study also adopted the rational choice theory which endorses the assumption that criminals choose to undertake a crime. This means that criminals are not compelled or forced as they choose to commit a crime because they think it will be more rewarding and less costly for them than noncriminal behaviour (Akers, 1990).

3.2 The Social Structure Theories

Emile Durkheim argues that parts of society are interdependent and that this interdependence imposes order on the behaviour of organisations and their representatives. Durkheim is the originator of current sociological references to social structure as he claims that external factors influence individual human behaviour. The social structure theories bring a sociological (rather than a biological or psychological) approach to studies of crime and deviance (Stinchcombe, 2017). Therefore, instead of focusing solely or primarily on individuals, these theories seek to explain how individuals are situated within and experience larger-scale social institutions such as schools, government, the labour market, cultural industries, and the criminal justice system (Silver & Miller, 2004). Over the years theorists have proposed mainstream or consensus theories of social structure as well as critical or conflict theories of social structure (McCulloch, 2001). These theories emphasise how inequality among societies leads to crime, which is thus applicable to water theft (Stinchcombe, 2017).

Stinchcombe (2017) argues that water theft is mainly committed for financial gain or to alleviate financial constraints that prevent individuals from having access to water resources

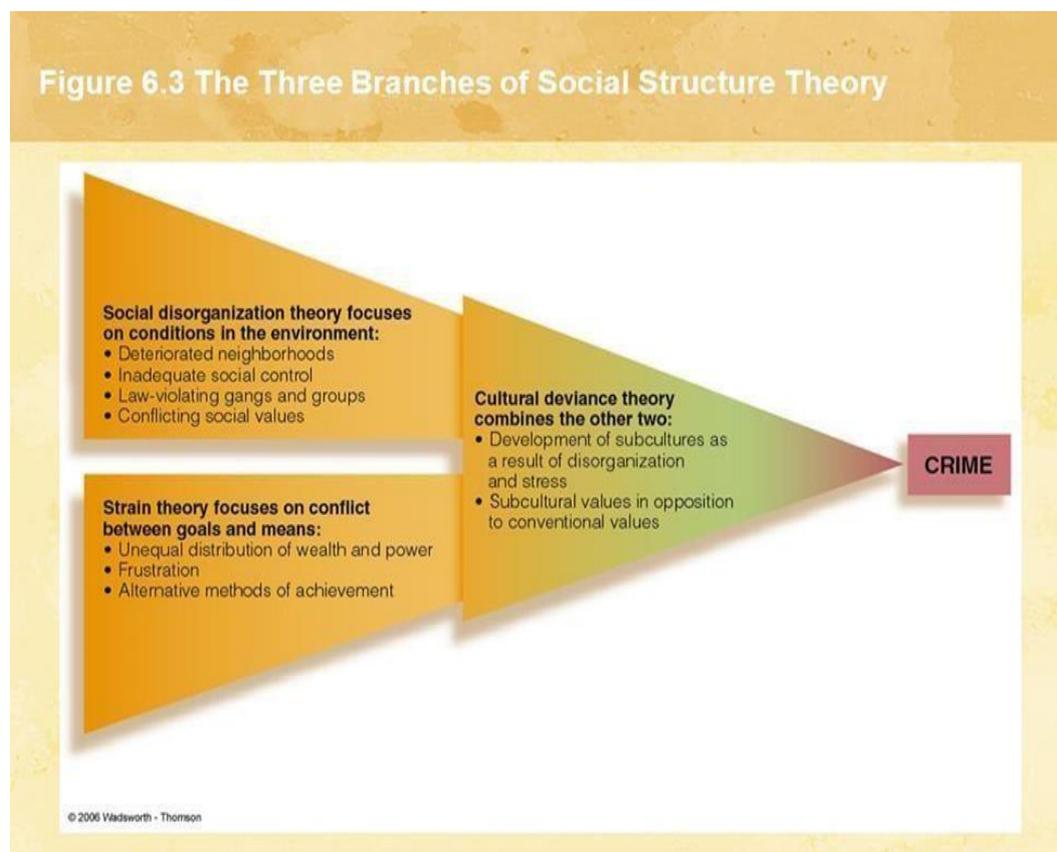
while the poor also need a means of survival. In South African townships, water theft has become a norm due to the inaccessibility of cheap water and other problems that compromise water security, such as water pollution. According to mainstream or consensus theorists, social structures serve to regulate and socialise individuals to conform to dominant social norms. In this process some behaviours are rewarded while some are penalised. Moreover, according to critical social structure theories social, economic, and political power relations serve as barriers that impede, constrain, or shape what is possible for people in specific societal contexts. These distinctions are largely based on characteristics such as class, ethnicity, gender, or sexuality (Andresen, 2006).

Risman argues that “mainstream or consensus-based social structure theories trace their roots to the work of the French sociologist Emile Durkheim (1858-1917)” (2004:430). For Durkheim, crime was a social rather than psychological phenomenon and the product of a specific kind of social order. More specifically, Durkheim argued that a society without shared norms and values will function poorly (Risman, 2004). These theories thus explain how inequality among societies leads to crime, which is of course also applicable to water theft (Stinchcombe, 2017). Stinchcombe (2017) argues that water theft is mainly committed due to financial gain or financial constraints that prevent individuals from gaining access to water resources. Stealing water is thus a means of survival for those who are labelled as ‘poor’. In most areas around South Africa, water theft has become the norm due to the inaccessibility of water and other problems that are associated with the procurement of water and water security issues such as water pollution. According to Emile Durkheim’s social structure theories, crime is identified as a social phenomenon (Leidner & Kayworth, 2006).

Overcrowding occurs in city centres when individuals who migrate from rural to urban areas find lodging here and do not have the means to keep up with developments in urban areas. Many also erect dwellings in informal settlements which contributes to various kinds of social problems such as water theft. Many individuals who reside in informal settlements tend to use illegal means to get access to resources such as water and electricity (Ray & Williams, 1999). Water inaccessibility in these areas is high and water rates are not paid because citizens cannot afford this. When this occurs, municipalities cut off the water supply which leads to additional challenges for these citizens (Butler et al., 2005).

It is argued that water theft is a social phenomenon as most people commit this crime due to the social problems that they encounter, such as unemployment and extreme poverty, and thus water bills are not paid. The poor infrastructure in townships and informal settlements also compels these residents to use illegal means to procure water (Kok & Collinson, 2006). However, even those who have ample means of living commit water theft, which indicates that those in power may misuse their position to exploit basic resources. Such actions, particularly water theft, cause the suffering of the working class or those who are poor. Based on the notions of the social structure theories, this explains how inequality among societies leads to crime (Erasmus, 2014). For instance, Philander argues in most cases in farm areas water in river basins is taken illegally as some farmers do not have water licenses to do (2017). However, Ratau (2009) notes that it is not only individuals who reside near river basins who steal water as farmers who do not have a license also steal water to maintain their livestock and crops for food production and trade. Figure 2 is a diagrammatical representation of the social structure theory.

Figure 3.2.1: The interconnectedness of the social structure theories



Source: Siegel, 2003.

3.2.1 The social disorganisation theory

Kubrin and Weitzer (2003:374) argue that the “origin of [the] social disorganization theory (SDT) can be traced to the work of Shaw and McKay who concluded that disorganized areas marked by divergent values and transitional populations produce criminality”. As an explanation of delinquency, Shaw and McKay (1942) present four basic assumptions: (i) the breakdown of community-based controls cause people living in disadvantaged neighbourhoods to react naturally to their environmental circumstances; (ii) the rapid growth of immigration in urban disadvantaged neighbourhoods [causes a sense of entitlement that leads to criminality]; (iii) businesses located near disadvantaged neighbourhoods are affected by the ecological approach of competition and supremacy; and (iv) disadvantaged urban areas contribute to the emergence of criminal ideals that eventually replace normal societal values.

Shaw and McKay presented the theory of social disorganisation for the first time in 1942. According to Bartollas (2003) and Robert, Sampson and Byron (1989), SDT is dependent on three variables: poverty (low economic status), residential mobility, and racial (ethnic) heterogeneity. These factors can trigger a breakdown in group social organisation which can in turn result in a variety of crimes. The theory of social disorganisation has developed from the Chicago School in the early 1920s when criminology theories shifted from looking at the genetic patterns of criminals to societal factors that affect crime (Williams & McShane, 2004). Jones (2001) assert that disadvantaged neighbourhoods cause social disorganisation because people here lack the means to address their issues. For the purpose of this study only two factors, namely low economic status (also known as poverty) and residential mobility were considered in the analysis of the data.

The origins of the social disorganisation theory (SDT) can be associated with urban research that was conducted by Robert Park and Ernest Burgess who developed the urban concentric ring theory that demonstrates how to create the ideal city or urban area. The theory of social disorganisation notes that the physical and social environments of an individual are largely responsible for a person’s behavioural choices. Rhineberger (2003) argues that, as a fundamental community-level theory, the social disorganisation theory posits that crime and delinquency are more pronounced in areas characterised by persistent poverty, population heterogeneity, and residential mobility, which are factors that combine to disturb the capacity of neighbourhoods to maintain informal social control.

These ideas have been well investigated and empirically supported, resulting in the fact that the social disorganisation theory has become the most well-known theory that explains neighbourhood crime in the field of criminology today. At the heart of the theory of social disorganisation, when it comes to forecasting criminal activity, is the notion that position matters (Agnew, 1992). The social disorganisation theory was advanced by Clifford Shaw and Henry McKay when they observed that high delinquency rates persisted in certain Chicago neighbourhoods for long periods of time despite changes in the racial and ethnic composition of these communities (Kubrin & Weitzer, 2003: n.p.). The social disorganisation theory emerged strongly in the 1980s as one of the major theoretical perspectives in the study of crime. It has been reformulated into a dynamic structural model that integrates intra-neighbourhood and extra-neighbourhood variables and that defines these variables explicitly (Kubrin & Weitzer, 2003: n.p.).

Shaw and McKay observe that there are at least three prevalent issues in communities with the highest crime rates, namely physical dilapidation, poverty, and a high degree of ethnic and cultural mixing. Shaw and McKay believe that, at the personal level, delinquency is not induced but is a natural reaction to abnormal circumstances by normal people (Agnew, 1992). The theory of social disorganisation is commonly used as an effective indicator of violence and crime among young people (Williams & McShane, 2004). In accordance with the aforementioned points, Thomas and Znieckiel (1927) argue that social disorganisation leads to the breakdown of social rules that control or regulate individuals. Their argument primarily focuses on the occurrence of generational culture conflict (Reisig & Cancino, 2004). The social disorganisation theory states that poverty is one of three elements that are linked to higher crime rates such as theft and related offenses (Reisig & Cancino, 2004). Because society often tends to turn a blind eye to crime, water theft can be seen as a social pathology that has become a norm for people and so they deem it natural (and within their rights) to make illegal water connections. In some cases, competition amongst farmers can cause water theft to maintain crops for financial gain (Agnew, 1992).

The social disorganisation theory thus explains the violation of laws that are supposed to control a society. According to theorists, a disorganised community is characterised by normlessness, breakdown, and cultural disputes (Kubrin & Wo, 2016) For instance, where there is a lack of norms, laws that guide individuals' behaviour regarding water are ignored.

This situation is exacerbated in South African society when departments who should provide services to people in both urban and townships areas are unable to meet all the demands of an expanding population and the growth of informal settlements. Because they have been socialised into a modern society that heavily relies on energy, people in these informal settlements often ignore the rules and refuse to in submission to them. They thus break the law which causes disorganisation. This phenomenon becomes rife in townships and informal settlements where law enforcement is often absent. Bernasco and Nieuwbeerta (2005) argue that all forms of theft tend to occur disproportionately in poor, isolated, and socially disadvantaged neighbourhoods.

According to the social disorganisation theory, demographics play a major role in terms of the distribution of crime in an area. This was already explained by Adolphe Quetelet in the mid-1800s, when he stated that “relative deprivation is defined as the greater inequality or gaps between wealth and poverty in the same place which tends to excite temptations and passions” (Tibbetts, 2012: n.p.). In townships there is a mix of working class and deprived, unemployed people who face many psychosocial and physical challenges. This creates a gap between the two classes and leads to the disruption of social control. Individuals who are working and earning an income have much to lose and do not trust the poor, while the poor do not follow the laws of society as they have nothing to lose and commit crimes to make ends meet. In deprived areas and townships there are very few or no white-collar crime offenses compared to advantaged areas. However, violent crimes and theft are high due to social challenges and poor social control. Added to motive and opportunity, the availability of resources encourages individuals to violate important normative and ethical standards while they neutralise or deny any definition of themselves as deviant or criminal (Coleman, 2000:211).

Earlier research has shown that when a neighbourhood has high rates of poverty, theft is high. The social disorganisation theory suggests that slum residents violate the law because they live in areas where social control has broken down (Sampson & Groves, 1989). Martinez, Rosenfeld and Mares (2008) state that social disorganisation theory studies can help government and law enforcement policymakers to make informed decisions from the evidence and to formulate strategies that will help prevent criminal activity in disadvantaged communities. Individuals residing in informal settlements in or near townships are more likely to have no access to water because the land they occupy is generally not approved by the local government and thus lacks basic services. These dwellers then end up smuggling water from

secured municipal groundwater reservoirs or dams (Department of Water and Sanitation, 1997). Their indiscriminate theft of this water depletes the resource and licensed users of this water then suffer shortages even though they pay for it.

3.2.2 The strain theory

Merton (1938) was the first scholar to introduce the strain theory of crime in the midst of the Great Depression, so it is not surprising that it concentrates on strain as a result of the failure to achieve monetary success. To investigate the factors that cause water theft, this study adopted Merton's strain theory to understand what triggers water theft. The strain theory that was developed to explain behaviour in the 1930s proposes that deviant behaviour occurs when people are blocked from using institutionalised means to obtain their objectives, and they are thus likely to seek illegal means to achieve their goal (Baumann & Friehe, 2013). According to this theory, undue strain may lead individuals to commit crimes, for example selling drugs or becoming involved in prostitution to gain financial security (Agnew, 1992). The theory holds that most people share common values and beliefs but the ability to achieve them is differentiated throughout the social structure. The rationale of this theory is its argument that the social system restricts access through valid means to the objective of achievement (Lilly, 2010). The theory thus posits that crime and deviation will be the products of a system that blames many of its people for wrongly holding back. Merton noted that strain could be adapted through innovation, ritualism, retreatism, or rebellion. However, he provided only rudimentary insights into the conditions in which a person would choose one adaptation rather than another (Breetzke, 2010).

Agnew (2015) developed the general strain theory (GST) as an extension of Merton's strain theory. This theory notes that persons participate in criminal behaviour when they undergo certain stresses or stressors. The failure to attain cherished objectives (such as monetary performance and status), the perception of abusive treatment (such as verbal and physical violence), and the loss of valued possessions are part of these stresses. Strains such as rage, resentment, and depression contribute to negative emotions that produce pressure. To alleviate this pressure corrective action is taken, which often manifests in criminal response. In Criminology strain is associated with a severe increase in cases of theft and violence for several reasons. Strain is thus associated with negative feelings and emotions that may lead to criminal behaviour (Galaiti, Russell, Bishara, Durant, Bogle & Huber-Lee, 2016). Agnew (2015)

suggests that, as a means of coping, persons who experience stress due to not fulfilling valued targets in society commit a crime. Frustration and rage are said to be particularly conducive to theft of any kind. Rage energises a person for action, stimulates an urge for vengeance, decreases anxiety about the results of one's actions, and impedes legitimate coping efforts, such as bargaining. However, a felony can also stem from more negative feelings.

Strain that is likely to result in crime and that may be associated with water theft may be caused by poor employment opportunities, a small salary, poor or deprived demographics, little opportunity for advancement, coercive control, unemployment (especially when it is long-lasting) and blaming others for one's demise. Failure to achieve certain goals and experiencing thrills/excitement, high levels of autonomy, masculine status, and monetary goals all cause strain that leads to negativity. Unemployment is particularly rife in black townships and this causes frustration with the government which is blamed for not providing free water to the unemployed. This leads to the act of water theft. Township people, like people all over, have their pride and do not want to be laughed at by their neighbours as competition tends to be high amongst residents in black townships.

The GST proposes that the following causes of strain are especially indicative of the potential for violence: parental rejection; persistent unemployment blamed on others; working in the secondary labour market (jobs that are difficult and poorly paid); having some dignity yet faced with adversity; having few advantages; minimal advancement opportunities; self-employment potential; economic difficulties (e.g., failure to pay debts, having to sell possessions to collect money); and the inability to meet targets (Breetzke, 2010). Such stressors are likely to be experienced as strong and unfair. Affected persons may also relate them to poor social power and they may thus emulate criminal behaviour.

It may be argued that the high unemployment rate in South Africa prompts individuals with financial difficulties to revert to criminal behaviour. Omarjee (2021) reported that unemployment rate in South Africa has reached a new high of 34.4 percent, or 7.8 million individuals without work. On Tuesday, Statistics South Africa issued the second quarter's Quarterly Labour Force Survey (QLFS). Since the poll began in 2008, this is the highest jobless rate ever reported. The youth continue to be burdened by unemployment. Unemployment affects over two-thirds of those aged 15 to 24, and 42.9 percent of those aged 25 to 34. Municipalities often cut off the water supply when bills were not paid, and affected individuals

tend to experience strain as water is a basic need. It is these people who may then commit water theft or succumb to those who offer them illegal access to water. Many households in townships are child-headed as there is either parental rejection or the absence of a guardian. It is hard to address household needs when a young girl or boy is in charge of siblings. This causes enormous strain which they alleviate to some extent by illegally connecting to a water supply for easier access (Galaiti, Russell, Bishara, Durant, Bogle & Huber-Lee, 2016).

One of the most severe social problems that South Africa is facing is unemployment which is the source of numerous other problems (Burger & Von Fintel, 2009). Most individuals tend to commit water theft in order to maintain gardens to sell crops and fruit in order to live a good life as perceived by society. Breetzke (2010) notes that water theft is also caused by individuals who do not have the means to pay their water bills. According to Baumann and Friehe (2013), the strain theory posits that theft is the result of the gap that exists between culturally induced aspirations for economic success and structurally distributed possibilities for achieving it. Agnew (2007) states that Merton predicted that some individuals would respond to the strain between aspiration and the lack of opportunity by engaging in criminal behaviours such as theft.

The strain theory assumes similar success aspirations across social classes and posits that crime is disproportionately concentrated in the lower class because they have the fewest legitimate opportunities for achievement and therefore are the most vulnerable to pressure or strain. Simply put, overemphasis on material success and lack of opportunities to achieve this kind of success lead to crime (Baumann & Friehe, 2013). The lower class in South Africa which consist of unemployed citizens has to make do with limited infrastructure and this makes it hard for these people to satisfy their needs (Crous et al., 2013). The distribution of water as the most basic resource for survival in underdeveloped townships e.g Folweni is lacking and persistent water shortages in these households cause frustration. Affected people thus resort to illegal means in order to realise their needs and desire for possessions (Galaiti et al., 2016).

3.3 Rational choice theory

To investigate the factors that cause water theft, this study also applied the rational choice theory. The rational choice theory (RCT) was developed by theorists in the 18th century and was later adopted by the criminologist Cesare Beccaria in 1767. The theory is based on the

premise that each person in society is actively attempting to maximise their available circumstances in order to benefit themselves. Furthermore, it emphasises that the choices that individuals make contribute to the provision of pleasure and benefits in relation to their self-interested choices. People measure the possible costs and benefits of any action before deciding what to do (Scott, 2000:65). Scott agrees with Baccaria (1967) that everybody in society makes decisions. Akers (1990) supports this argument and argues that the rational choice theory rests on the assumption that criminal behaviour is no different from non-criminal behaviour in that people who do not commit a crime intentionally choose not to do so. The reason that some choose to commit a crime is that they think it will be more rewarding and less costly for them than noncriminal behaviour (Agnew, 1992).

In line with this theory, it is argued that Folweni residents have a choice whether to commit an illegal act or not in order to alleviate their poor socio-economic circumstances. One result of stealing energy and water to ease their livelihoods is that other law-abiding residents suffer. When an individual commits water theft, or any kind of crime, they are arguing rationally as they can understand that when they commit the crime it is going to be beneficial to their life and circumstances. Most individuals who reside in informal settlements in townships that are not properly serviced by a municipality are more likely to have no access to water because the place where they erect their shacks is not officially approved for residential purposes. These people then revert to smuggling water from municipal groundwater or dams (Department of Water of South Africa, 1997). They may also use untreated water from rivers and streams which poses a real health hazard.

In the context of Folweni Township, the act of stealing water has more rewards than the threat of being prosecuted, which is explained by the rational choice theory. Township residents regard their proximity to illegal water and forcing access to it as more rewarding than the implications should they be caught. They thus make a rational, well devised decision to engage in water theft, which is aptly explained by the rational choice theory. This was thus a suitable theory for this research because it provided a prism through which I could examine the data pertaining to water theft. Newman and Clarke (2016) clarify that water prices are unaffordable for low-income populations and it is thus more beneficial for them to bribe water authorities to turn a blind eye to illegal connections and for them to stop paying any water bills. The rational choice approach, according to Petracca (1991:289), suggests that “human action is driven by self-interest, maximization of utility, or, more simply put, achievement of goals”. This

principle explains why citizens rationalise and justify criminal acts and make the decision to behave in acts of self-interest for gain.

Original theories argued that participation in crime relied on two options, namely being trained for criminal involvement and the desire for income or being fuelled by curiosity to live like the wealthy. In modern criminology, Newman and Clarke (2016) add context variables such as temperament and opinions that impair the critical thinking of people and social and democratic influencers that can modify an individual's thinking process to the point where a crime is committed. Peoples' characteristics, personalities and attitude are also viewed as determining variables that drive an individual's decisions and critical thought and contribute to criminal activity based on a rational choice. The paradigm that Clarke and Cornish (2008) developed uses rational choice as a guiding theory as it explains the decision by individuals to commit a crime as an opportunity of choice.

The rational choice theory relies on individuals' behaviour-based hypothesis that can also be implemented into criminological theories that underpin criminal initiatives. Cornish and Clarke (2008) claim that the principle of rational choice extends to a wide variety of illegal choices such as drug use, theft, arson, white-collar crimes, and even murder. The advocates of the philosophy of rational choice assume that individuals are autonomous agents who can make rational choices in virtually all aspects of their lives. In this context, Cornish and Clarke (2008) recommend that the penalty for offences should be based on the concept of pleasure-pain. This theory suggests that the pain of guilt must still outweigh the gratification that the criminal earned by committing the offense. This may help the criminal, who committed the crime by deciding that the possibility of apprehension and retribution was not outweighed by the benefits, understand that committing the illegal act in the first place was not worth it (Lyman & Porter, 2011). Although retribution and penalties for crimes are entrenched in the criminal justice system and part of criminology discourse, it must be stated at this point that the issue of penalties for crimes was not within the scope of this study.

In the context of water theft in the Folweni Township, it may be argued that the individuals who stole water were aware of their actions even if they knew that they broke the law. Similarly, some industries may also regularly overuse water and fail to pay for their water consumption, which is also water theft (Namara, Hanjra, Castillo, Ravnborg, Smith & Van Koppen, 2010). Subsequent water shortages may severely affect these and other industries and

trigger negative economic effects. Matsueda and Kreager (2006) state that individuals who engage in theft calculate the cost and the benefits of committing the crime. In this sense, it can be argued that some industries and farmers also commit water theft in order to ensure productivity for financial gain, whereas people who seek access to water and who do not pay for it may do so for survival.

These points illustrate that individuals and businesses that commit water theft in a form of water meter tampering and illegal pipping calculate what they may gain from the crime. As the penalties may not be very high for the poor, this kind of crime is growing in South African townships. Unfortunately, the outcome is often water scarcity which affects everyone (McKenzie et al., 2012).

3.4. Conclusion

After careful reflection on various theories, it was concluded that the theories selected for this study would be best applicable in the quest to investigate the causes of water theft. The two social structure theories that were selected were the social disorganisation theory and the general strain theory. These theories explain sociological rather than biological or psychological issues in studies on crime and deviance. This study also employed the rational choice theory which is based on the notion that criminals choose to undertake a crime – they are thus not compelled or forced to do it. The reason that they choose to commit a crime is that they think it will be more rewarding and less costly for them than noncriminal behaviour. These theories share a common understanding of crime as they explain the various factors that contribute towards the commission of criminal acts as well as the nature of such acts. The chapter that follows will present the research methods that were utilised in detail.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

The aim of this study was to evaluate the causes, effects, and effectiveness of strategies to combat water theft in the form of water meter tampering and illegal water pipe connections in Folweni Township. The purpose of this chapter is to outline the research approach, the research design, and all the empirical techniques that were used to address the aim and objectives of the study. I thus outline the sampling method that I used and the entire process of data collection and analysis. This study utilised a qualitative approach as a scientific research tool to identify, classify, and analyse the data that were elicited to shed light on the research problem. I utilised the purposive sampling method and conducted in-depth interviews with purposively selected community members. Thematic data analysis was employed to elicit and highlight the themes that emerged from the data. This chapter explains the nature of the study, the location of where the study was the sampling and data collection methods, and the data analysis procedures. The ethical considerations that were adhered to and limitations of the study are also listed.

4.2 Research Paradigmatic Perspective

Kivunja and Kuyini (2017:26) define a paradigm as “a human construction which deals with first principles or ultimates indicating where the researcher is coming from to construct meaning embedded in data”. Establishing a paradigm is vital in academic research as it offer beliefs and dictates what influences scholars are subjected to in particular disciplines. Paradigms direct what should be studied and how it should be studied and impact the interpretation of results. A paradigm thus defines the methodological perspective of a researcher and this has essential consequences for any decision taken in the study process, including the choice of methodology and techniques (Kivanja & Kuyini (2017). Based on our individual perceptions, a paradigm teaches us how significance can be built from the data we receive. The research paradigm, according to Zukauskas (2018), is the strategy or way of thinking about a study, the research process, and the method of implementation. It is a theory and not a methodology and steers the process of research in a specific direction. The three

broad paradigms that underpin research are referred to as ontological, epistemological, and methodological assumptions.

Each paradigm has a particular ontology that is known as “the study of being” (Crotty, 1998). This refers to what kind of universe we are exploring while also addressing the meaning of existence within the structure of reality. Ahmed (2008:2) argues that “ontological assumptions are those that respond to the question ‘What is there that can be known?’ or ‘What is the nature of reality?’”. Epistemology refers to the way of understanding and explaining how we know what we know. The epistemological assumption is concerned with a theoretical framework for determining what kind of knowledge is feasible and how we can guarantee that it is both acceptable and valid (Ahmed, 2008).

In terms of methodology, Kivunja and Kuyini (2017:28) assert that “methodology is the broad term used to refer to the research design, methods, approaches and procedures in an investigation that are well planned to find out something”. According to Snyder (2019), methodology refers to the wide-ranging approach to scientific analysis that contains a system or set of practices, methods, and principles within a given discipline, such as the social and behavioural science. There are three methodological approaches, namely qualitative, quantitative, and mixed methods. This study utilised qualitative research methods.

This study was embedded in the interpretive paradigm, also known as descriptive-interpretive research or hermeneutics. I utilised the qualitative approach to understand the phenomenon under study by eliciting selected community members’ perceptions and experiences of water theft. This form of interpretive research was appropriate as I wanted to understand societal definitions and understandings of the situation/problem under study. Reeves and Hedberg (2003) note that the interpretive paradigm enforces the necessity to put analysis in context. The interpretive paradigm is concerned with understanding the world as it is from the subjective experiences of individuals. Interpretive researchers claim that reality is made up of people’s subjective experiences of the outside world. Thus, a researcher may follow an inter-subjective epistemology and the ontological view that reality is made up of people’s subjective experiences of the outside world.

Utilising this paradigm assisted me in gaining an in-depth understanding of the perceptions of Folweni community members regarding water theft. More specifically, the interpretive research paradigm opened my understanding as I gathered information from people's authentic experiences and perceptions in order to get to the root cause of water crimes in Folweni Township. The specific focus of the study was on water meter tampering and illegal water pipe connections. The ontology of interpretive research asserts that the social world is determined by the subjective perceptions of people rather than by the external world's objective experiences. I thus unearthed the internal realities of the participants. Epistemology assumes that only by interacting with participants in a normal and empathic way from an interactional or inter-subjective epistemology position can persons be understood. The methodology that I employed in the interpretive research paradigm included participant observation and open-ended telephonic interviews that used interactional procedures and qualitative interpretations such as content analysis. Rather than reducing subjects' experiences to numerical data, these methodologies are used in studies of this nature (Kivunja & Kuyini:2017).

4.3 Nature of the Study

This study utilised a qualitative approach to obtain data. I used a qualitative approach because, according to Mohajan (2018:1), "the qualitative approach is inductive in nature and the researcher generally explores meanings and insights in a given situation". The qualitative approach was appropriate for this study as it assisted me in gaining insight into the causes and effects of water theft in the study area. It also supported me in evaluating the effectivity of the mechanisms that were in place to curb water theft. By means of the methodology that was employed, I was able to report and analyse the present manner of community members' and officials' of their day- to-day experiences of water scarcity and shortages caused by water theft in the township where they resided.

According to Hancock (2001), a qualitative approach is concerned with establishing social explanations about occurrences. In other words, it tries to make people understand the social world we live in and why things are the way they are. It explores the social dimensions of our society and tries to answer questions such as "Why do people act the way they do?", "How are beliefs and attitudes formed?" and "How are people affected by social challenges around them in human terms?". I was mindful that the community members who were participants in this study would understand, interpret, and reflect on water theft in different ways. Some might

reflect on this issue in a comprehensive manner while others' understanding might be narrow and therefore more personal. I thus had to contend with this reality as Creswell (2016) argues that "qualitative research assesses intricacy by joining this present reality setting [and by taking] alternate points of view ready.

This particular research approach thus complemented the aim and the objectives of this project as I needed to understand the phenomenon under study from both community members' and officials' perceptions rather than from my own or those of earlier researchers in the field.

4.4 Research Design

Maxfield and Babbie (2009, cited in Maxwell, 2012) state that every research project needs to have a clearly defined research design that explains how data will be gathered and analysed. The qualitative research design aims at asking questions like why, how, and under what circumstances do things occur. The research design deals with the logical problem and not the logistical problem. It is a blueprint or plan that guides a researcher's data collection and data analysis processes (Steyn, 2005). A research design is thus the overall plan for connecting the conceptual research problems to the pertinent empirical research – in other words, the research design articulates what data are required, what methods are going to be used to collect and analyse these data, and how all this is going to answer the research questions (Maree, 2007). Therefore, the research design that I used was a descriptive case study. Heale and Twycross (2018:7) argue that "a case study is...an intensive, systematic investigation of a single individual, group, community or some other unit in which the researcher examines in-depth data relating to several variables". Case studies thus analyse complex phenomena which is a process that increases awareness and knowledge based on a natural setting.

Ridder (2017) concurs with this notion and argues that a case study is a research strategy and an empirical inquiry that investigates a phenomenon within its real-life context. The case study approach helps the researcher to take a dynamic and wide-ranging subject or phenomenon and narrow it down into a manageable study to address particular research questions. Case study design also helps a researcher to carefully analyse the evidence within a given context. In most cases, in a case study approach a particular geographical region or a relatively restricted number of people is selected as the object/s of the study. By adopting this approach, I achieved an in-depth perspective on water theft in a township context as I gathered qualitative datasets about the phenomenon (Zainal, 2007).

This particular research design was useful for this study as it revealed a true reflection of whether the implemented mechanisms in place to reduce water theft in Folweni Township were effective or not. This research design thus assisted in the descriptive analysis of the single case study. Case studies have been viewed as workable methodological tools for three types of research: descriptive, explorative, and explanatory (Elman, Gerring & Mahoney, 2016). Case studies may be approached in many ways depending on the epistemological stance of the researcher – that is, whether she takes a critical stance (questioning her own and others’ assumptions), an interpretivist stance (trying to understand individual and shared social meanings), or a positivist approach (being orientated towards the criteria of the natural sciences such as focusing on generalisability considerations).

4.5 Profile of Folweni Township

The study was conducted in Folweni Township, which is located in KwaZulu-Natal (KZN) province within the eThekweni municipality. It is situated about 71 kilometres from Pietermaritzburg, the capital city of KZN. On the eastern part of the South Coast, the eThekweni Metropolitan Region is the third largest in KZN and the country’s largest metropolitan municipality after Johannesburg and Cape Town. It occupies an area of around 2 555 km² and shares three district boundaries: Ugu to the south, iLembe to the north-west, and uMgungundlovu to the north-east. The metro has 3.9 million residents comprising 34.7% of the total population of KZN. The population escalated by 1.45% between 2008 and 2018 (which is lower than the 1.57% of the national average). The average household in the metro is 3.3 people, which is below the provincial average of 3.8.

Close to 30% of the population is under 15 years of age and 63% of the population is under 35 years of age. In addition, 8 802 households are run by children and young people between 15 and 19 years of age, and 42.14% of households are run by women. Moreover, 2.1 million inhabitants of eThekweni earn below R1 227 (the upper-bound poverty line per person per month), and 17.1% of the population had no income according to 2016 statistics (Statistics South Africa, 2016). Of this population, 16.8% is illiterate whereas only 5.8% has a higher education qualification. The eThekweni metropolitan municipality has 103 wards, and Folweni township is Ward 95.

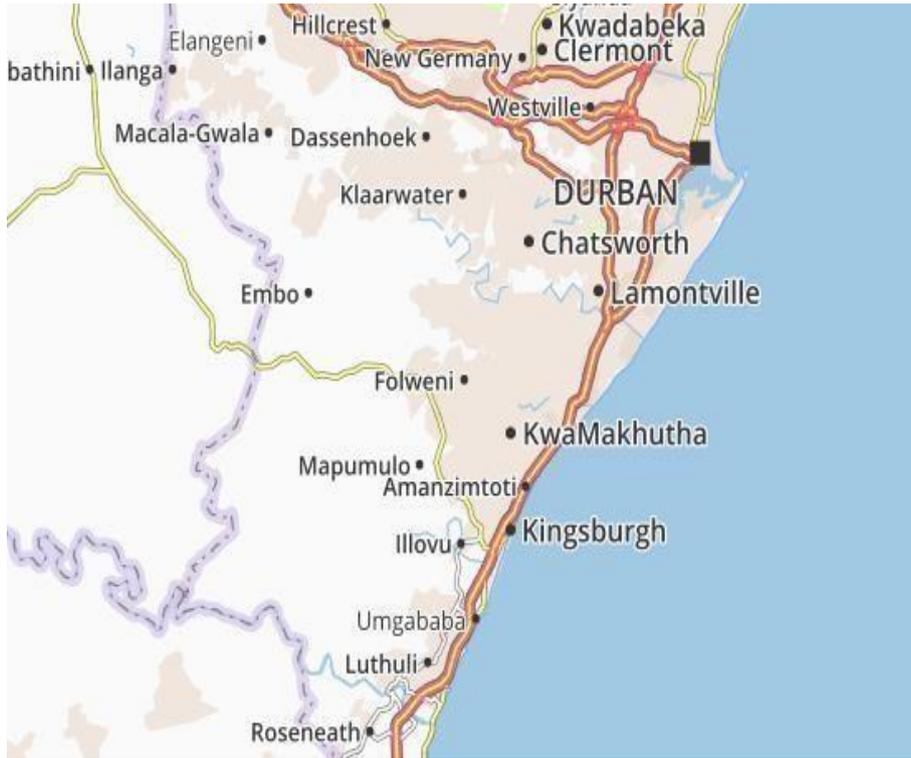
Folweni Township was established in the early 1930s. Before Folweni was formally established, the area was called Ezabelweni. From 1970 to 1980 farmers started visiting

Folweni and building houses there. Some pieces of land were also allocated to big companies such as Ferrodor and Toyota to build houses that they subsidised for their workers. Urban Landmark (2009) argues that, according to Magni et al. (2002), the motivation for establishing Folweni and moving households there was to provide a captive labour force for the nearby Durban South Industrial Basin and Durban proper.

Folweni Township is an under-developed township situated between uMhlabuthi rural area and uMhlabuthi Township. Folweni is divided into three sections, namely A section, B section, and C section. The township has a high crime rate due to unemployment and substance abuse, much like other townships in South Africa. As Folweni township is an under-developed township, residents have few resources and service delivery is at a slow pace. Many residents do not have access to water, electricity, and land for cultivation in order to sell produce and earn an income. This results in some resorting to illegal means to gain access to resources for free in order to avoid paying rates. The high unemployment rate affects the youth of the community and causes an escalation in crime. Water crime is particularly rife as residents want to avoid paying water rates. It is also seen as a quick way to get cash for a better lifestyle.

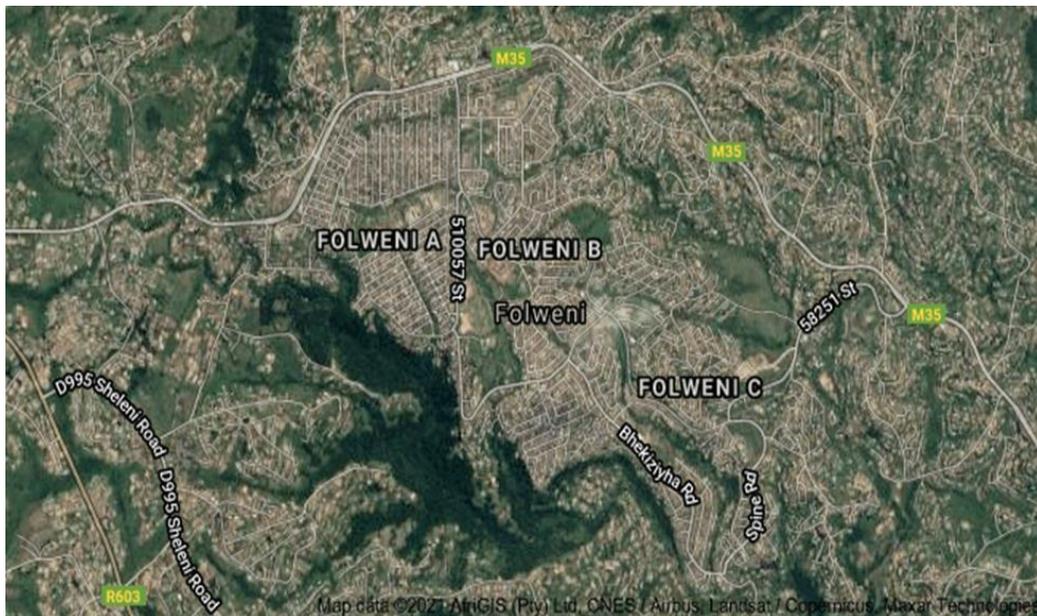
Folweni has a population of around 50 000 people and roughly 6,000 homes. Black Africans make up 99.6% of the population in the area, and IsiZulu is the most often spoken home language (94.3 percent). The majority of the population (52.0 percent) is female, and the bulk of the residents are young. People aged 0 to 14 years make up 31.5 percent of the population, while those aged 65 and up make up 3% of the population. People aged 20 and up have a 6 percent greater education level. The average household size is 4.6, with 46.6 percent of families headed by women. According to studies, 96.3 percent of people live in official settlements, whereas 95.3 percent rely on local water schemes (Statistics South Africa, 2017).

Figure 3: Map indicating the locations of Wards in the eThekweni Metro



Source: Michelin Maps, 2021

Figure 4: Aerial map showing the location of Folweni in the eThekweni Metro



Source: Google Maps, 2020

One aspect that influenced me to conduct this study was both my experience and anecdotal evidence that most townships experience water theft. However, a perusal of the literature revealed that very few studies focused on the root causes of this problem and none recommended strategies that would improve conditions for the Folweni community. This is important as the modus operandi of this type of water crime can differ from one township to another as water is stolen for different purposes. Criminology research tends to focus on violent crimes while environmental crimes are disregarded as they are deemed not to exert such a dire threat on society compared to violent crimes. However, this latter notion is a fallacy because environmental crimes, especially water theft, also have negative impacts on societal well-being. The more people misuse water and commit water crimes, the more water volumes are depleted in our water sources. This results in townships having to go without water for as long as several weeks. This situation not only becomes life-threatening, but some small township businesses such as car washes, salons, and roof tile cleaning services suffer losses that cannot be recuperated. It also becomes a vicious cycle as crime escalates due to loss of income and many people, particularly the youth, cause social disorganisation due to the frustration of not getting enough access to potable water resources.

4.6 Sampling

According to Sharma (2017:749), “sampling is a technique (or a procedure or device) [that is] employed by a researcher to systematically select a relatively smaller number of representative individuals [also referred to as a subset] from a pre-defined population to serve as subjects [data-source] for observation or experimentation as per the objectives of his or her study”. Sampling refers to what the researcher’s unit of analysis is going to be. Researchers usually use sampling because it is difficult to analyse everyone in a population. Although a sample is a sub-set, it is reflective of the population and useful in terms of expense, flexibility, and time allocated for the study. Nevertheless, it is vital to bear in mind that evaluating all individuals to obtain effective, true, and precise outcomes is the ideal scenario, but if it becomes difficult to test all people, sampling techniques are employed (Ghaljaie, Naderifar & Goli, 2017).

4.6.1 Non-probability purposive sampling

I employed a non-probability sampling technique which was purposive in nature. In nonprobability sampling the components that are investigated are based on the judgement of

the researcher, which means that not all the people in a population have an equal probability of being included in the research (Palys, 2008). The purposive sampling technique is a type of non-probability sampling which is also referred to as convenience sampling. According to this sampling technique participants are carefully selected based on the qualities and knowledge they will possess as participants. It is a non-random method that does not require a fixed number of participants. To put it simply, the researcher decides what needs to be clarified and what needs to be done to identify individuals who, by virtue of their knowledge and/or experience, can and are able to provide meaningful data (Tongco, 2007). According to Acharya, Prakash, Saxena and Nigam (2013:332), “the purposive sampling technique is the most commonly used sampling method [in qualitative methodology]. The sample is chosen based on the convenience of the researcher [and] often the participants are selected because they are at the right place at the right time”.

The purposive sampling technique was therefore suitable for this study because it allowed me to select participants on the basis of their ability to provide rich and meaningful data related to the topic under study. This method also allowed me to achieve the objectives of the study as I could select community members from a specific section in Folweni Township where water theft was highly prevalent. The research participants were thus selected on the basis of their complicity with the inclusion criterion which was that they had to be directly or indirectly affected by water meter tampering and illegal water piping.

When the study was conceptualised, it was understood that water scarcity had often been reported as a major problem in Folweni Township. It had also come to my knowledge that community members had been compelled to go for periods of longer than a week without water. When the matter was reported to the eThekweni Municipality, officials in the Water and sanitation offices responded by arguing that, in most cases, this lack of a consistent water supply was due to water theft that caused water shortages. Water had also been regularly cut off by municipal officials due to theft that interrupted the supply of piped water (Head, 2020). As the selected participants resided and worked in the study area, they were deemed highly appropriate for providing the desired data that would address the objectives of the study.

4.6.2 Process of Selecting Participants

The researcher wrote a letter seeking permission to the Folweni township ward councillor. Permission was granted, the researcher approached the participants that meets the criteria that the researcher is using. Criteria being that the participants must be of ward 95 residents, must be affected by water shortages, must have water supply system in their home, must be directly or indirectly affected by water theft and have knowledge of meter tampering and illegal water connections. The researcher then met with the participants and explain the study to the participants. The researcher will explain that participation in the study is voluntary and therefore they should not feel pressured to participate however they will be told that participating will be for the good cause of the community. Upon the participant's approval the researcher, the researcher and the participants arranged the day and time of the interview and place that will be convenient to the participant.

The study sample comprised 14 participants from Folweni Township. I decided on this number as the goal of this study was to obtain in-depth information on the phenomenon of water theft in order to raise awareness of how water crimes contribute to water depletion and how this affects society at large. Vasileiou, Barnett, Thorpe and Young (2018:2) emphasise that “samples in qualitative research tend to be small in order to support the depth of case-oriented analysis that is fundamental to this mode of inquiry”. Furthermore, qualitative samples are purposive, which means they are selected because they can provide quality and richly textured information that is relevant to the phenomenon under investigation.

The study population was members of Folweni Township who resided in section B of the township as well as two officials employed in the water distribution field. I chose this section because there are high levels of squatter settlement and numerous cases of water theft had been reported in this area. I interviewed the 14 participants telephonically as I could not approach them in person due to Covid-19 pandemic level 3 lockdown regulations. The University of KwaZulu-Natal Research office issued a notice that all non-therapeutic or non-interventional research involving contact with human participants should be suspended, with the exception of social science studies involving telephonic or other online/remote methods of data collection. Where feasible, researchers may, with the consent of their participants, switch from face-to-face to remote (e.g. online, telephonic) data collection. If this switch is implemented, the

researcher must record the participant's consent and ensure that the participant's privacy is protected if sensitive information is elicited that might be overheard.

Telephonic interviews gave the participants flexibility in the privacy of their homes and each could appoint an appropriate time for the interview. The collected data will be also useful to community members who are not aware of how severe 'problematic water theft is worldwide but particularly at Folweni Township, also to the eThekweni municipality.

I interviewed 12 community members and two eThekweni Municipality officials employed in the water department. In recruiting the participants, I identified and recruited the participants who met the study criteria and requested them to voluntarily take part in the study. I explained the study in detail and the participants each signed an informed consent form (Appendix 3 and 4). I clarified every aspect in the informed consent form in order for participants to understand their rights and voluntary participation. They were thus assured of their anonymity and the confidentiality of their involvement in the study which contributed to the trustworthiness of the study findings. The participants were also informed of their right to withdraw from the interview without any negative consequences if they felt uncomfortable at any time. I also informed the participants that they had the right not to answer a question that invoked negative emotions of any kind.

This spread was to ensure that different views regarding the severity of water theft in the community were obtained and to determine whether any effective mechanisms were in place to curb water theft. The 12 community members consisted of 6 females and 6 males in order to avoid gender and sample bias. I interviewed Black South African community members as the community comprises only Black Africans. I interviewed both male and female youths and adults who had resided in Folweni Township for over eight years. This age range was taken into consideration in order to gather different views from different age groups about the problem under study. In order to collect information regarding the changes that had taken place over the years in terms of the accessibility of water, I also interviewed two eThekweni officials, a male and a female, to avoid gender bias. Water officials who work in the water department have accurate information regarding the problem of water theft in township communities, and specifically in Folweni Township.

4.7 Data Collection

4.7.1 Qualitative data collection

The study utilised a qualitative research approach which means that qualitative research methods were used to collect and analyse the data. Qualitative approaches to gather data are generally exploratory and typically rely mainly on obtaining knowledge and discovering the fundamental causes of a phenomenon by deep exploration. The methods to be utilised in collecting data are interviews. An interview can be recorded by writing down the words of the participants or by tape-recording their responses (Elmusharaf, 2012). I utilised interviews as a method to collect data because it allowed me to gain a deep understanding of the causes, effects, and measures taken in curbing water theft and to judge the success of these measures. This process also helped me to intensify the credibility of the collected data and the research findings. To further ensure credibility, I made sure that I collected data from a range of community members from both genders to avoid gender and age bias.

The participants who were interviewed had been either directly or indirectly affected by water theft and had knowledge of meter tampering and illegal water connections. The interviews were electronically recorded (I used my cell phone to record the interviews) and the data were then transcribed (from isiZulu into English) and categorised according to the different themes that emerged. I thus made electronic recordings and later transcribed the interviews rather than using field notes because these transcripts were easily accessible and, to a certain extent, the narrated events were much more detailed than field notes. Transcripts have the ability to stop the flow of discourse and allow the researcher to focus on details such as hesitations, restarts, and cut-offs in the participants' speech (Elmusharaf, 2012), and I thus found this method very successful for my purpose.

Tessier (2012) states that digital/tape recorders make the transcript process much easier. I did not use a tape recorder but the voice recorder built into my cellphone, which worked just as effectively. A great benefit is that, over time, digital data do not get corrupted and copies can be quickly saved to maintain a files' integrity. Electronic recorders also have infinite 'replayability'. Digital sound filed software also makes it easy to 'jump' around interviews while looking for a particular excerpt. According to Davidson (2009:38), a tape-recorded file-based transcript allows the data to be accessed and analysed in a versatile way. In addition, the

use of digital files “...ensures that collected data may be replicated and re-analysed as the original data are neither idealised nor restricted by a particular research design or by reference to a specific theory or hypothesis”. This means that a transcript that is produced from the recording after the interview offers completeness and keeps the data ‘fresh’ for analysis (Tessier, 2012).

4.7.2 Research instruments

I utilised an instrument in the data collection process that allowed in-depth understanding, accurate analysis, and reliable interpretations. Most importantly, the instrument that I used to collect data allowed me to gain in-depth understanding of the inner meaning and context of the phenomenon in question. The following research instruments were used:

- Primary data (semi-structured interviews).

4.7.2.1 Semi-structured interviews

Once the identified community members had consented to participate in the study, they were interviewed using an in-depth semi-structured interview process. This process elicited thick data that were essential to address the research questions and objectives. The interviews were conducted by using open-ended questions for the purpose of elaboration. This method was suitable for this type of interview approach as I could probe for more in-depth responses. Ryan, Coughlan and Cronin (2009) assert that interviews are an effective data collection technique as they can illuminate participants’ experiences of and perspectives on the phenomenon with rich explanations and detailed accounts. Parveen and Showkat (2017) suggest that the interview is an effective qualitative analysis technique to directly gather data from participants in a study.

There are many types of interviews in qualitative interviewing, including unstructured semi-structured interviews, structured interviews (Baumbusch, 2010). Unstructured interviews are similar to daily conversations as the interviewer and participant discuss a topic without a set of questions and the interview follows the participant’s response path. In a structured interview there are pre-set questions and the researcher does not waver from the interview guide, except to probe for a deeper answer when this is appropriate. There are also pre-set responses to the questions that the participants choose for their response (Ryan et al., 2009). In the current study the interviews were voice-recorded and later transcribed so that the interviewer was able to

listen to the recordings more than once and without distorting the original material to gather information that might have been missed before.

A series of open-ended questions was used in the semi-structured interviews that allowed descriptive and in-depth answers. The semi-structured and open-ended questions presented me with opportunities to probe for deeper answers. These in-depth interviews thus opened the door to conversations that offered valuable information from the participants that I had not previously considered. A pre-set questionnaire would not have been useful in this study because the participants would not have been able to reveal their true feelings, nor would it have allowed an explanation of how their world made sense to them. DeJonckheere and Vaughn (2019) argue that the goal of using semi-structured interviews for data collection is to collect information from key participants who have life experiences, attitudes, perceptions, and beliefs about the topic of interest, as well as to enter the participant's world and try to understand how it looks and feels from their perspective.

The advantage of in-depth interviews is that they have much more detailed information compared with other methods of data collection in qualitative work.

A total of fourteen (14) semi-structured interviews were conducted in Ward 95 section B of Folweni Township. These in-depth interviews involved both community members (12) and local eThekweni municipality employees (2) who worked in the water department. These interviews were scheduled on days and times that were suitable for the participants. The study was conducted from February to March 2021 with full ethical clearance received on 09 February 2021 from the University of KwaZulu-Natal Research office- Human Social Sciences Research Ethics Committee (HSSREC). The interviews lasted approximately 15 to 20 minutes each. As these interviews were conducted under Covid-19 lockdown protocol, the participants were at home (community members) or in their offices (water department officials).

4.7.3 Administration of the interview schedule

Parveen and Showkat (2017) suggest that interviews are of primary significance as they are goal-oriented in trying to get the desired data from a respondent. Steyn (2015:16) states that “the questions on the interview schedule are typically broad, open-ended, flexible and funnel type”. These questions start from being broad and later become narrower and more explicit.

The interviews were recorded with the permission of each participant and then transcribed and translated into English. Based on the advice of Carpecken (1996), I attempted to:

- generate content about water theft from an insider perspective;
- check the honesty, certainty, and the exact meanings of the subjects' replies during the interviews;
- access the participants' definitions and understandings of concepts and processes that were of interest to me;
- analyse both verbal and non-verbal responses;
- give immediate clarity if the interviewee was uncertain in his or her reply;
- ask follow-up questions to provide detailed and/or specific answers;
- tap into the beliefs, values, worldviews, and perceptions of the interviewees.

Upon the receipt of full ethical clearance from the University of KwaZulu Natal HSSREC, the time frame of collecting data was discussed with the community councillor who served as gatekeeper. Thereafter I discussed the study and scheduled the interview times with the community members and officials.

4.8 Data Analysis

The collected data were analysed using thematic analysis which encompassed analyses of the data to describe the key elements of water theft. This analysis method facilitated comprehensive findings based on the data to address the objectives of the study. The data were analysed with a view to giving meaning to people's subjective experiences. As this study utilised the descriptive interpretive paradigm, the use of thematic analysis was justified. Maguire and Delahunt (2017:352) argue that "thematic analysis is the process of identifying patterns or themes within qualitative data". Clarke (2006) and King (2004) emphasise that thematic analysis is a useful method for examining the perspectives of different research participants as this process highlights similarities and differences and generates unanticipated insights. As a researcher, I was able to identify patterns that were important to address the key research questions. Some studies suggest that it is a method for identifying, analysing, organising, describing, and reporting themes that emerge from information gathered during research fieldwork or from data collected from the participants of the study (Braun & Clarke, 2006; Nowell, Norris, White & Moules, 2017).

The purpose of thematic analysis is to identify patterns of meaning across a dataset and these patterns provide an answer to the research questions. The data analysis process commenced shortly after I had completed the 14 interviews. The interview data were thematically analysed per individual using the six-step approach to extract clear, useful, trustworthy, and insightful information required for the study. The information was analysed using the themes that were elicited by means of the six-step framework, namely becoming familiar with the data, generating initial codes, searching for themes, reviewing themes, defining themes, and writing up the report (Braun & Clark, 2006).

I thoroughly perused the data that were transcribed to elicit meaningful codes. The information was then organised in a clear system (word document) to assist me in understanding the data that I had collected. I thus organised the data by extracting useful information from the participants interviews and participant observation to determine how this information related to the research objectives. Once the themes had been organised, I double-checked to discover which themes were related and combined these. This resulted in themes being reviewed for consistency and relevance which led to a summary of all the reviewed themes. Based on this summary, I reviewed the meaning of each theme by writing down all the findings and relating them to the research questions in order to judge whether the objectives of the study had been achieved.

4.9 Ethical Considerations

Prior to the commencement of the interview process, I had to request permission to conduct the study from the Folweni Township Ward 95 councillor. I explained the nature and aim of the study to him and also gave him a copy of the study proposal to furnish him with the purpose of the study. I also highlighted the problem under study with suggestions of its severity to the community and the eThekweni Municipality as a whole. Permission to conduct the research in Folweni Township was granted by the Ward councillor and a gatekeeper's letter was received (Appendix 1). I also applied to the University of KwaZulu-Natal Humanities and Social Science Research Ethics Committee (HSSREC) in order to obtain ethical clearance and to commence the data collection process. Permission was granted on 9 February 2021 (Appendix 2).

4.9.1 Anonymity and Confidentiality

Wiles, Crow, Heath, and Charles (2006: n.p.) argue that “all ethical guidelines for social researchers are clear that confidentiality is an important element of social research and that research participants should be made aware of who will have access to their data as well as being provided with details about the processes of anonymization”. I thus told the participants that their safety and anonymity would be safeguarded verbally and in writing. They were told that the data obtained from the interviews were going to be ethically protected and that their names would remain secret. In addition, the study was done telephonically and participants were interviewed in the privacy of their own homes. The participants were interviewed at times that were convenient for them. They were informed of their right to stay anonymous and that pseudonyms would be used to protect the information that they shared. This approach worked well because the interviews were conducted without the risk of being overheard. The only people who had access to the cellphone recordings were the researcher and the study supervisor.

The responses to the questions in the interview scheduled (Appendix 5,6,7 and 8: Interview Questions) for the semi-structured interviews were recorded with the consent of the participants. In the process of gathering information from them, I used communication skills such as active listening, polite and non-threatening tone and language, clarification, and probing to prompt meaningful and clear-cut responses. I also remained non-judgmental and had a positive mindset throughout the course of the interviews. This was done to receive valuable information. I built trust with the participants and they were comfortable enough to provide in-depth information to meet the objectives of the study. The research fieldwork was recorded digitally using my personal cellphone and the conversations were transcribed within 24 hours of each interview. Transcripts of the cellphone recorded data were member checked by the participants to ensure that they contained no inaccuracies, and the information was protected using a cell phone password only known to me. The participants were informed that they had a choice to include or not include their real names during the time when they signed the consent form.

Ryan et al. (2009) emphasise that it is important to gain precise responses, whether a video, tape, or cellphone recording is made of the interview. This is necessary to analyse the data

accurately to ensure the validity and reliability of the data and the findings. The interviews were conducted in IsiZulu, which was the language that all the participants were comfortable with. The interviews were subsequently transcribed and translated into English. Using the participants home language during the interviews ensured that there is no language barrier. The only people who had access to the cellphone recordings were the researcher and the study supervisor. The information and transcripts are kept in a locked office on the University of KwaZulu-Natal premises. Electronic data that were recorded on my cell phone and these files are stored in a password-protected file that only I and the supervisor have access to.

Wiles, Crow, Heath, and Charles (2006: n.p.) argue that “all ethical guidelines for social researchers are clear that confidentiality is an important element of social research and that research participants should be made aware of who will have access to their data as well as being provided with details about the processes of anonymization”. I thus informed the participants verbally and in writing that their safety and anonymity would be safeguarded. They were told that the data obtained from the interviews were going to be ethically protected and that their names would remain secret. In addition, the study was done telephonically and participants were interviewed in the privacy of their own homes. The participants were interviewed at times that were convenient for them. They were informed of their right to stay anonymous and that pseudonyms would be used to protect the information that they shared. This approach worked well because the interviews were conducted without the risk of being overheard.

4.10 Research Trustworthiness

Anney (2014) argues that qualitative research needs to address the criterion of trustworthiness which includes the elements of dependability, credibility, transferability, and confirmability. Meeting these criteria ensure the reliability and validity of qualitative research findings.

4.10.1 Credibility

Anney (2014:276) argues that “credibility establishes whether or not the research findings represent plausible information drawn from the participants' original data and are correct interpretations of the participants' original views”. In order to maintain credibility, I utilised credibility strategies such as prolonged telephonic interview experience, sufficient time spent

with the participants, appropriate sampling, reflexivity (keeping a field journal), member checking, peer examination, appropriate interview technique, establishing the authority of the researcher, and structural coherence.

4.10.2 Transferability

This refers to the degree to which the results of qualitative research can be transferred to other contexts with other participants. Loh (2013) suggests that transferability is the generalisation of the study findings to other situations and contexts. It is in other words the interpretive equivalent of generalisability. To achieve this, I provide a detailed description of the inquiry and the participants who were selected purposively in this dissertation, and this facilitates the transferability of the inquiry (Anney, 2014). Transferability is not considered a viable naturalistic research objective. The contexts in which qualitative data collection occurs define the data and contribute to the interpretation of the data. For these reasons, generalisation in qualitative research is limited, as was the case in this study.

4.10.3 Dependability

Achieving dependability is a process that involves addressing the issue of reliability. This requires techniques to show that, if the work were repeated in the same context using the same method and the same participants, similar results will be obtained. However, Marshall and Rossman (1999) note that the changing nature of the phenomena that are scrutinised by qualitative researchers renders such provisions problematic. This study achieved dependability as the processes were similar to those of earlier studies and were verified by a close scrutiny of the literature.

4.10.4 Confirmability

This refers to the degree to which the results of an inquiry could be confirmed or corroborated by other researchers. Confirmability is concerned with establishing that data and interpretations of the findings are not figments of the inquirer's imagination but are clearly derived from the data (Anney, 2014). Furthermore, the researcher has to attain the goal of the analysis and ensure that the conclusions are not biased. This was achieved as the participants were asked questions that were compatible with the topic of the analysis. Moreover, these questions and the research

priorities were formulated before the field study commenced with reference to findings and recommendations by earlier studies.

4.11 Challenges Experienced and Limitations of the Study

The first challenge that I encountered was that the response from the University of KwaZulu-Natal took longer than anticipated. This resulted in the interviews having to be done during Covid-19 level 3 national lockdown. As full ethical clearance had not been received due to level 3 lockdown protocols, I had to change the interview method from personal face-to-face interviews to conducting them telephonically. This was a challenge because some participants had poor service networks during the course of their interviews, which meant that some interviews had to be re-scheduled as a clear interview was required for transcription purposes. The telephonic interviews were not only challenging in terms of poor audibility, but they were also costly. Significant airtime was required in order to obtain in-depth data. However, this challenge was overcome when I bought useful voice bundles from a specific network which allowed me to talk with anyone using any network. Conducting these telephonic interviews was also time-consuming. Due to bad network reception some participants did not want to reschedule their interviews, and I had to process the data regardless of poor reception quality.

A limitation of the research was the comparatively small sample size when considering the large population residing in the township of Folweni. I thus acknowledge that the findings should not be applied to the wider population, but it is worthy to be a foundation of further research in the area.

4.12 Conclusion

This chapter reflected on the use of the qualitative research approach and its techniques in achieving the aim of this study. This chapter comprehensively described the geographical context of the study and the research design that was used. Furthermore, the sampling strategy and the data collection methods and processes were discussed. The data collection methods that were used were intended to address the objectives of the study and answer the research questions. This chapter also focused on data analysis procedures and ethical considerations and referred to the small sample size as a limitation of the study.

CHAPTER FIVE

DATA ANALYSIS AND FINDINGS

5.1 Introduction

Water theft is one of many factors that contribute to water shortages that numerous communities in South Africa are currently experiencing in their daily lives. In this chapter I present, discuss, and analyse the data and the findings based on the semi-structured interviews that were conducted with participants from Folweni Township and the eThekweni Municipality in KwaZulu-Natal Province. The aim of the study was to evaluate water meter tampering and illegal water pipe connections and the impact of these acts on water scarcity in the area. The discussion of the data and findings in this chapter is presented under the themes that emerged from the data. In my discussion of these themes, the findings are integrated with the literature to enrich the discourse on the phenomena of water meter tampering and illegal water pipe connections. The social disorganisation theory, the strain theory, and the rational choice theory are referred to in my efforts to integrate the water theft experiences of the Folweni community members with the theories that framed the study.

I present the unedited (verbatim) responses of the participants in italics and pseudonyms are used for ethical reasons. While many of the themes overlap, the discussions are clustered to address the objectives and aim of the study. The purpose of the discourse is to present a comprehensive view of the experiences and perceptions of Folweni Township community members with regards to illegal water usage and water meter tampering. In my analysis of the data I highlight corresponding and, where relevant, contradictory information and insights that emerged from other scholarly studies and reports.

Based on a detailed literature review, four imperative research questions were formulated to guide this study, namely:

- What is the nature and extent of water inaccessibility in Folweni Township?
- What are the causes of water theft in Folweni Township?
- What are the effects of water theft on the community and the eThekweni Municipality?
- What current strategies are used to curb water theft and how effective are they in Folweni Township?

I address these research questions in this chapter by unpacking water theft as a common criminal act in South Africa, but with specific focus on this phenomenon in Folweni Township. I envisaged that, by unpacking the factors that the participants revealed as contributing to water theft, I would be able to discover the root causes of this crime and that this knowledge, in turn, might direct more effective strategies to curb water theft in this township setting. The process of analysis was accomplished by utilising the qualitative data that I had obtained during the semi-structured interviews with community members and water department officials.

5.2 Profile of the Participants

The table below (Table 5.1) represents the demographic composition of the participants. The study utilised a sample of 14 participants (12 Folweni section B residents and 2 officials from the eThekweni Municipality). All the participants were Black Africans while seven were female and seven were male. The participants had all been living in Folweni for more than eight years. Some were unemployed and some were self-employed.

Table 1: Demographic data of the participants

No.	Pseudonym	Gender	Employment Status	Years residing in Folweni
1	Zinhle	Female	Employed	28
2	Magret	Female	Employed	32
3	Fakazi	Female	Unemployed	8
4	Dolis	Female	Employed	12
5	Bongiwe	Female	Unemployed	18
6	Fikile	Female	Unemployed	10
7	Jabulani	Male	Employed	40
8	Chris	Male	Unemployed	15
9	Siphesihle	Male	Unemployed	20
10	Khehla	Male	Employed	9
11	Vusumuzi	Male	Unemployed	15
12	Zwelakhe	Male	Unemployed	30

Table 2: Demographic data of the municipal participants

No.	Pseudonyms	Gender	Employment Sector
1	Gratia	Female	eThekwini-Municipality Department of Water and Sanitation
2	Zenzele	Male	eThekwini-Municipality Department of Water and Sanitation

The following sections provide the identification, analysis and interpretation of the data according to the identified themes based on data provided by the participants.

5.3. The Nature and Extent of Water Inaccessibility in Folweni Township

5.3.1 Poor and Unequal Water Supply

The first theme that emerged responded to the first objective of the study that was “to assess the nature and extent of water inaccessibility in Folweni Township”. The majority of the participants highlighted that, over the years, the water supply in Folweni had been poorly and unequally supplied. They agreed that households in the area experienced frequent water supply interruptions and that the water pressure was erratic. Water supply interruptions thus occurred haphazardly and the water pressure was not the same for every household. The following are some of the verbatim responses with regards to poor and unequal water supply in the area:

“Folweni township as whole does not access adequate or enough water because our water gets interrupted on a daily basis. Due to unequal water supply interruptions, households that end up not having water during that period tend to illegally connect water from households that hardly experience water supply interruptions. In most cases, water interruptions often last for a whole week or even a month” (Vusumuzi, 2021).

“The confusing part is that some households in my area hardly experience water supply interruptions. But for me it is a different story. I reported the matter about my water supply system not working but I was

told by the local municipality office that they will install a water tank in my yard.

However, till today that has not been done. I had to resort to other measures to access water so I connected my pipe to the main water supply system which is the main pipe from the municipality” (Bongiwe, 2021).

The responses above are in line with the strain and rational choice theories as the participants argued that, due to the poor water supply from the main distribution system, they made the deliberate (thus rational) choice to connect their pipes illegally. This behaviour is underscored by the strain theory which argues that delinquent behaviour will be triggered by persistent strain. It was thus strain and frustration that were the underlying factors that caused some members in the community to commit water theft by tampering illegally with the water connections. According to Baumann and Friehe (2013), the strain theory suggests that when people are barred from obtaining what they need by institutionalised means, they are likely to seek illegal means to achieve their goals. In this case, the poor water supply caused strain on the individuals and this encouraged them to commit water theft in order to achieve uninterrupted water supplies. Lilly (2010) supports this statement by arguing that the rationale of this theory is that if the social system restricts access through legal means, the objective then becomes to achieve a goal by illegal means.

Furthermore, Folweni is characterised as a developing township that experiences various socio-economic issues such as poverty, unemployment, and lack of infrastructure. The rationale of the social disorganisation theory posits that demographics play a major role in the commission of crime in such an area (Tibbetts, 2012: n.p), and the theft of water can be directly linked to the disorganisation and disruptions that are caused by limited water supplies.

Another participant commented as follows:

“Our water supply is very poor. As we are doing this interview right now, we have no water and unfortunately for my household things have been like this for a while now. Our water supply gets interrupted every week. When water comes back it always comes back during odd times – usually it comes back at night” (Chris, 2021).

The views that were expressed above concur with Detroz and Silva's (2017) argument that persistently poor water supplies in communities will result in the decision to commit a crime such as water theft. In South African townships, water theft is mostly committed in the form of water meter tempering and illegal water connections. The participants' responses also corresponded with the argument by McConnachie, Skelton and McConnachie (2012) that many municipalities are not served by water boards and do not have the money and skills to increase their sources of supply. This limits municipalities' ability to respond to the demand for additional water and improved service provisioning. Current institutional arrangements in many municipalities are unable to deliver effective or sustainable services that meet residents' needs.

Another participant offered the following argument:

“The supply of our water is so erratic and poor because some known individuals in the community are friends or related to the municipality personnel. They make deals and agreements to access high volumes of water at our expense. This results in some households accessing water with low pressure. In most cases, these municipal personnel illegally connect a water supply system for their friends' households directly to the main water supply system and bypass the main water meter, which is not allowed from my understanding. This results in these households accessing water that has high pressure and they hardly get affected by frequent water interruptions that we experience almost every day. This act aggravates us a lot, and some of us got tired of this and ended up connecting our pipes directly to the main supply system also” (Zwelakhe, 2021).

Detroz and da Silva (2017) state that water officials are routinely bribed to make unauthorised water connections by bypassing the main water supply to a dwelling or they falsify readings of meters., which are earlier findings that this study corroborated.

5.4 The Causes of Water Theft in Folweni Township

5.4.1 Unemployment

This theme addressed the second objective of this study which was to understand the causes of water theft in Folweni Township. The participants pointed out that most residents in their area were unemployed and that paying their water bills thus tended to be difficult because they did

not have a steady income per month. It was highlighted that expensive water made this situation worse and that it was for this reason that residents resorted to accessing water illegally. More specifically, by bypassing official water meters they avoided paying for water. The participants agreed that unemployment was a driving force that compelled people to connect water illegally and to tamper with water meters to avoid paying water bills.

5.4.2 Poverty

One participant offered the following insight:

“I think a cause of water theft is that people do not have money to pay their water bills. It is also caused by an unfair water distribution system which creates frustration because water shortage is a problem in every area in Folweni. However, A section’s water pressure is good, whilst our water pressure in the B section is very low” (Magret, 2021).

The literature corroborates the above comment, as Hemson (2016) highlights that South Africa is facing a high rate of unemployment which leads to poverty and is a main cause of various crimes in the country. Due to a high rate of unemployment, people are not able to pay their utility bills and this results in bypassing the official meter system to avoid paying for water usage (Hedden & Cilliers, 2014).

Another participant offered the following argument:

“...payment of water bills can be said it is one of the core causes of water theft because some of us are unemployed and we do not have the money to pay up” (Vusumuzi, 2021).

Other participants agreed:

“Water meters are bypassed to avoid paying bills. Most of us are not working and we do not have money to pay the utility bills. One thing that you must know is that illegal water connections are mostly done to have enough water when one needs it and also it saves cost as meters are not connected to those [official] connections” (Fakazi, 2021).

“Unemployment and poverty are causes of illegal water connections. We do not have the money to pay water bills and most plumbing businesses that we establish are helping us with these connections because we are poor, and people are trying to make ends meet with these businesses” (Zwelakhe, 2021).

The social disorganisation theory states that poverty is one of three factors linked to higher crime rates in the form of theft and other related offenses (Reisig & Cancino, 2004). As society in poor areas tends to turn a blind eye to crime, water theft can be seen as a social pathology as it has become the norm among people who connect water illegally. The social disorganisation theory suggests that slum and township residents violate the law because they live in areas where social control has broken down (Sampson & Groves, 1989). Folweni township is a mix of informal settlements and standard houses as it is still developing. In section B where the research was conducted, there is a number of informal settlements with illegally connected water systems. This behaviour affirms the notion of social disorganisation as, due to a lack of social control in the area, the law is violated with impunity as people who so easily gain access to water illegally are hardly ever brought to book.

The participants confirmed that illegal water connections were easy but that this often-involved bribery:

“The reason why we connect our pipes illegally is because it is easy to do that and we do not pay a cent at the end of the day” (Bongiwe, 2021).

“The main reason why I connected water by my rules is because I am unemployed; I do not have money to pay water bills. If I was to ask municipality personnel to connect the water supply system for me, I would be required to pay lot of of money that they charge for their services; money that I do not have” (Khehla, 2021).

The above comments depict that these residents had taken a conscious and rational decision to gain illegal access to the water system for their households. This argument is in line with the rational choice theory which posits that people intentionally choose to undertake an illegal act (they are thus not compelled or forced to commit a crime). The reason that they choose to

commit crime is that they think it will be more rewarding and less costly than noncriminal behaviour (Agnew, 1992). The social disorganisation (or disobedience) that was evident in Folweni township caused individuals to commit water theft as they knew there would be no repercussions and that their act would be rewarding in the sense that they would have access to water for their households without paying for it.

Another participant shared the points already made and added the fact that connecting water pipes had become quite a lucrative business:

“Another cause is that most people in this area are unemployed and many people want to connect water to the main supply pipes. Most individuals have an open business of connecting illegal pipes to the main water supply” (Zinhle, 2021).

Clarke (2016) clarifies that water prices are deemed costly for low-income populations and that it is more beneficial for them to bribe water authorities to make illegal connections so that they may stop paying for their water rather than adhering to legitimate procedures. The above excerpt aligns with the assumption of the strain theory which suggests that when individuals are barred from obtaining their goal by means of institutionalised means, they are likely to seek illegal means to achieve culturally defined goals (Baumann & Friehe, 2013). The theory assumes that there are similar success aspirations across social classes, and argues that crime is disproportionately concentrated among the lower class because they have the fewest legitimate opportunities for achievement and are thus the most vulnerable to pressure or strain due to the social problems that they face on a daily lives.

According to Felbab-Brown (2017), the socio-economic conditions that prevail in a community contribute to the fact that individuals commit crime. Folweni is a developing township and residents are faced with numerous social issues such as unemployment, poverty, and crime. Therefore, achieving the institutionalised goal of accessing water in a legal manner is considered a blockage as it stops them from attaining the goal of access to free water. The strain that comes with this blockage then leads to water crime or water theft. This social disobedience behaviour underscores the strain theory which argues that, as a means of coping, persons who experience strain when their goals are not fulfilled tend to commit crime (Agnew, 2015).

5.4.3 Desperation to Access Water

This theme also addresses the second objective of the study. The participants highlighted that the water supply system was frequently interrupted but that no communicate of any form was ever issued by the municipality. They agreed that this resulted in desperation as the community needs water for survival. However, some participants who paid their utility bills were concerned that the high-water bills were caused by desperate residents who committed water theft. The following responses were shared in this regard:

“I have been a Folweni resident for the longest time and water shortage is not something that is new. We have been having water shortages for years. Not a week goes by without water with low pressure or no water at all. I am not amazed that people resort to stealing water” (Jabulani, 2021).

“Ever since I moved here eight years ago the frequency of water supply is not consistent as most people access water only once per week, or once per month, and others don’t have access to water at all. No one notifies us about these water irregularities, and everyone finds means that are suitable for themselves to get access to water” (Fakazi, 2021).

The above comments align with Kruger and Landman’s (2008) argument that the living conditions of the poor who reside in townships and rural areas have not been developed in several ways. Numerous individuals in poor township areas do not have adequate infrastructure such as roads, electricity, and a potable water supply. Theft thus tends to be high in these places because of the poor service and support that they receive from the municipality. Water theft was also seen as frustrating as it caused escalating water bills:

“Folweni township as whole does not have access to adequate water because water interruption occurs on a daily basis. The reason for some illegal connections is due to unequal water supply interruptions. The households that do not have water during that period tend to seek water from households who did not experience water supply interruption. However, this can be very daunting because the more water you use, the more expensive the water bills get” (Vusumuzi, 2021).

“The reason behind people accessing water illegally is because we constantly experience water interruptions. Water will come back after a week, then after two or one days we will experience another water supply interruption and with no one from the municipality informing us. However, as much as the issue of water theft is frustrating at times, water theft is not an answer because now I have to pay high bills due to people who have connected water illegally” (Siphehile, 2021).

The experiences of the participants affirm the argument by Coleman (2000) that the social disorganisation theory applies to townships where there is a mix of working class and a class that is considered highly deprived. The latter class is faced with numerous psychosocial and economic challenges that create a wide gap between the two classes and lead to diminished social control as individuals in the working class do not trust the poor, while the poor do not adhere to the laws of society and commit crimes to make ends meet. Based on the participants’ comments, it may be argued that frequent water supply interruptions cause individuals with a limited sense of social obedience to commit water theft in their desperation to access water, or for personal gain. The rational choice theory asserts that individuals intentionally choose to commit criminal acts based on their perception that the rewards will outweigh any punishment should they be caught and brought to justice.

5.4.4 Corruption

This theme emerged in response to the third objective of this study. The participants highlighted that, due to corruption in the water sector at both local and district level, frustrating water shortages occurred and this resulted in some residents’ decision to steal water. The following comments were shared by the participants and highlight their perceptions of corruption among water officials:

“eThekweni Municipality is one of the most disorganised offices that I know. [This is] due to corruption that is committed on a daily basis. Service delivery is very poor due to corruption. Some water personnel go to the extent of being paid a huge amount by certain people to bypass the water meter” (Dolis, 2021).

This comment corroborates Detroz and da Silva's (2017) argument that water officials are routinely bribed not to disconnect unauthorised water connections or to falsify readings. Some water officials are also actively involved in illegal water access for individuals/households as they bypass water meters by illegally reconnecting water pipes. Smith (2004) concurs and argues that, in certain situations, workers are bribed and thus earn an extra pay check while the 'customer' pays less, or nothing, for the water he receives. This form of corruption leads to instability in the delivery of services and is costing the tax payer millions.

Other participants also commented on corruption:

"The government first needs to fight and deal with corruption at national water sector level from where funds are distributed to municipal level. Corruption must be dealt with decisively at national level according to water laws and those implementing it can fight water theft at municipal level" (Zwelakhe, 2021).

"The tenders that water officials award to their friends through illegal channels are what costs us the most. We end up not being supplied with adequate water and ... there is a delay in the installation of water tanks. I think that project will never continue because chances are they have eaten all the money for that project" (Chris, 2021).

"I am even thinking of buying three Jojo water tanks because the municipality is taking forever to instal the free tanks. I am starting to think that there was corruption going on with the money that was supposed to be used to install water tanks. The reason I am saying this is because Covid-19 stopped the process of water tanks but they should have found ways during level one of the lockdowns to install water tanks because they are aware of the severe situation of water shortages" (Dolis, 2021).

Corruption Watch (2020: n.p.) argues that "...although the behaviour of public sector officials and politicians comes under particular scrutiny, the report also makes clear how the actions of private individuals and businesses, who deliberately exploit weaknesses in the public sector, have an acute impact on water security and on the human right to water". This results in

numerous communities experiencing water shortages that aggravate individuals who then decided to commit water theft by installing unauthorised, unmetered water connections. These connections are often made by the same plumbers who are tasked to maintain the supply system. They run this ‘businesses on the side and use materials from their workplaces which makes it a very lucrative enterprise as their overheads are nil.

The rational choice theory aptly explains corruption as a result of a conscious decision to benefit financially from a criminal act. Such acts range from officials who are bribed to bypass meters to those who gain by awarding a tender to someone whose main focus is financial misappropriation. Such ruthless people become wealthy without actually installing tanks or fixing the water supply system in different areas.

5.5 The Effects of Water Theft in Folweni Township

5.5.1 Waterborne Diseases

This theme also emerged in response to the study’s third objective, which was to determine the effects of water theft on the community and the eThekweni Municipality. Many participants highlighted the fact that, due to unauthorised water access through illegal channels, pollutants easily infiltrated their water and resulted in dirty water that caused waterborne diseases. The participants who admitted that their households had illegal water connections revealed that waterborne diseases were indeed experienced as a result of such illegal water connections. The participants offered the following comments in this regard:

“Since people are illegally connecting pipes, I would say that the result of this practice is illness because they drink unsafe water and are re-connected by people who do not have water connection certificates, which eventually causes germs to enter the water pipes and even the main supplier people. This puts us all at risk of contracting waterborne diseases” (Zinhle, 2021).

“The outbreak of waterborne disease is also common in this area as it is known that people have done illegal water piping. The illegal installation tends to leak and the water is exposed to harmful pollutants.

This means harmful water is used by human beings, especially if that water does not go under a sanitation process” (Jabulani, 2021).

“Some of the effects are that we tend to experience getting sick. Water that we are accessing is not properly connected and pipes get exposed to germs, and there is tension between the people who do not have illegal water connections and people who commit this act and the local municipality office for not mediating and finding ways to deal with this issue” (Dolis, 2021).

“Connecting [and illegal] water supply system in my own terms was very beneficial since I do not have to pay water bills. However, the water that we have access to in my household tends to have bugs and eventually we get sick due to it being polluted. But we have no choice – we have to continue with the water supply systems that we have because if the municipality was to connect the system properly then that would mean I will be forced to pay water bills. Unfortunately, I cannot afford that since I am unemployed” (Zwelakhe, 2021).

The literature corroborates these comments made by the participants. For instance, Kok and Collinson (2006) state that water theft leads to poor water quality as illegal water pipe connections may cause water to be highly polluted. Individuals who live in dwellings that are illegally connected to water sources often contract waterborne diseases. This compels the government to allocate a larger budget to the health system which could have been prevented if polluted water from illegal water distributors had not been consumed. The government could also allocate such funds to something more pressing or it could use these funds to facilitate the operations of more legal water distributors for the people (McKenzie, 2012). This argument suggests that water theft has a profound impact on the country’s economy, but specific data and findings pertaining to this issue were beyond the scope of this study.

5.5.2 High Water Bills

This theme emerged in response to the third objective of the study. The participants who did not use illegal water connections argued that illegal connections and tampered water meters in other households resulted in high water bills that they were expected to pay at the end of each month. They also highlighted that water theft had a negative impact on their daily water use because, when others tampered with the main meter and connected water pipes directly to the main water supply, their legitimate meters recorded high water usage for which they were billed unfairly. The following are some of the verbatim responses that addressed this issue:

“The saddest part about illegal water connections done by other people is that when the utility bill comes at the end of the month, the prices of water usage are sky high and you end up paying high prices knowing very well that the utility bill will be of low price if it was not for illegal water connections. The frustrating part is that those committing illegal water piping do not pay any water bill as they bypass the system of water meters” (Zinhle, 2021).

“Water theft contributes to increment of water bills due to high demand and supply of a scarce resource. A scarcity of water is caused by water theft. Water theft causes a rift between perpetrators of water theft and people who do not commit water theft because water theft causes a water shortage that affects everyone, even those who do right by the law by not committing water theft” (Dolis, 2021).

“The reason why I ended up also connecting my water system illegally is because I realised that those who commit water theft are thinking only of themselves. I was paying on behalf of them each and every month and you will find that the water bills will require you to pay a whole lot of money for a quantity of water you know very well that you did not use” (Vusumuzi, 2021).

The literature is also in agreement with the above statements. Kok and Collinson (2006) argue that water theft causes licensed users of water to experience shortages even though they pay exorbitant amounts for water. Furthermore, Gowlland-Gualtieri (2007) argues that water cut-offs are partly caused by increased water consumption by illegal means and this threatens the livelihood of many households and individuals. Billing irregularities occur in numerous ways,

including incorrect meter readings by bribed officials and deliberate billing by offices in exchange for illegal customer payments (Gowlland-Gualtieri, 2007). The government could allocate the money that is wasted in this manner to something else that is highly needed by the people of South Africa, or it could appoint more legitimate water distributors to serve deprived communities (McKenzie, 2012).

Some participants argued that, due to water theft, the municipal budget was over-stretched and there was thus not enough revenue to repair the damage caused by water theft. For example, they argued that water trucks could have been hired to deliver water when there were shortages in areas and main supply systems that had been tampered with could have been repaired more quickly.

“I think the municipality ends up having to settle a high bill for the water it is distributing, and that causes problems on their yearly budget from the national level of water distribution. The high-water bills do not only affect the municipality, they also affect individuals who pay their monthly water bills and who do not engage in water theft” (Chris, 2021).

“Water theft does not only cost us as a department of water and sanitation, but it is also a problem in the national sector allocated budget. Every year there is a shortage of revenue to provide enough water and to maintain water distribution due to such acts as water theft because the allocated amounts end up being used to solve problems that arise which are mostly caused by unauthorised access to water. Already as a country we are facing less rain which causes our water basin to have a less than average amount of water. The department always informs people about shortages of water that we already have but in our communities water theft is still prevalent” (Gratia, 2021).

The literature also refers to the issue of high costs of water and limited revenue. The inability of municipalities to collect payment for water use is exacerbated by large-scale corruption, massive water theft, and smuggling, which means that there are inadequate resources for repairing, updating, and enlarging water distribution systems and for finding measures to cope with water scarcity (McKenzie et al., 2012). In this regard, Zenzele offered the following insights:

“Water theft affects mostly the revenue allocated to provide clean and enough water for all, but due to many leaks that are caused by false connections done by individuals in Folweni, the department is required to fix those leaks as they cost the country a lot of water that is needed to be saved at all costs in order to avoid day zero as a country. The burning issue that we really need to sort out in that area is the issue of illegally connected water pipes, which is why that township experiences severe water shortages” (Zenzele, 2021).

Falbab-Brown (2017) and Butler et al. (2005) also argue that unpaid use of water by means of illegal tapping and water pipelines results in the inability of water service agents to collect sufficient revenue to sustain water supplies. Such large-scale lawbreaking and massive water theft and smuggling can result in inadequate resources for repairing, updating, and enlarging water distribution systems and for finding measures to cope with water scarcity. Furthermore, water theft affects the financial status of the suppliers of water resources and threatens the stability of power supplies across the country. This affects and inconveniences businesses, hospitals, private and public organisations, schools, and many more (Goodwin, Kaggwa & Malebo, 2013).

5.5.3 Water Shortages

This theme emerged in response to the third objective of this study. The participants who had legal water supply systems in their households argued that, due to the usage of water by individuals who connected illegal water pipes and tampered with water meters, they experienced frequent water shortages. The following are some of the responses of participants who indicated that water shortage was one of the effects of water theft:

“Paying utility bills can be frustrating at times because we do pay for water but due to these illegal water connections in our area, we end up having water shortages that can last for a period of a week without access to water from our taps. Water trucks come and go, and sometimes they never show up to deliver water for our area during water cut-offs” (Jabulani, 2021).

“Water shortages are still a problem. I highly doubt that people will stop stealing water. We also do not know who to liaise with when we have issues relating to water provision or supply. The municipality does not take time to come and explain to us with regards to the protocol to be followed to report water supply issues” (Zinhle, 2021).

The literature agrees with this argument. For instance, Kok and Collinson (2006) argue that water theft, just like unregulated or poorly regulated use of water, threatens the water security of licensed users. Moreover, it also ultimately threatens the water security of unlicensed users and users who violate regulations as water scarcity leads to rationing, increased prices, and potentially insufficient availability for all residents in affected areas. In the worst situations, this leads to a lack of water even for drinking (Hope et al., 2008).

The issue of water shortages was also addressed by other participants who commented on this issue as follows:

“I think due to numerous illegal water connections, water shortages continue to be a problem because many people tend to use water illegally without paying for it and in most cases without saving it because of not paying water utility. For this reason, I think not only this area gets affected by water shortages due to water theft, but other areas get affected by this as well” (Bongiwe, 2021).

“In actual fact, illegal water connection is not something that is well organised and systematic. This result in water shortages because most water supply systems are illegal. The main pipe ends up supplying pipes that are not know by the Municipality that they exist and this causes water shortages. The amount of water distributed ends up not being enough. Water theft also results in leakages due to pipes not being connected by qualified people, and this also causes water shortages” (Khehla, 2021).

“Water theft results in low water pressure and not accessing enough water, because these standpipes end up supplying several households. Water theft also causes tension between people because when you are

sharing the main water system, it means you are sharing water supply. If household use water non-stop then it means the water pressure ends up being low in the other household” (Bongiwe, 2021).

In line with the above comments, Kurbrin and Wo (2016) argue that where there is a lack of norms, there are no laws in place to guide individuals on how to behave when it comes to water theft. In the South African society, the departments in charge of providing services in urban areas are unable to meet all the demands of an expanding general population. As a result, the number of informal settlements grows and, because the people living in these areas have been socialised into a modern society that heavily relies on energy, people in these informal settlements often disobey the rules and regulations to gain access to amenities. As a result, water theft causes disorganisation in such affected communities. Bernasco and Nieuwebeerta (2005) argue additionally that all forms of theft tend to occur disproportionately in poor, isolated, socially disadvantaged neighbourhoods.

5.6 Current Measures/Strategies that are used to Curb Water Theft in eThekweni Municipality

5.6.1 Ineffectiveness of Mechanisms to Address Water Shortages

5.6.1.1 Lack of effective strategies to curb water theft

This theme emerged in response to the fourth objective of this study which was “to assess current measures/strategies that are used to curb water theft in eThekweni Municipality”. Most participants argued that there were currently no strategies in place to curb water theft. The participants highlighted the point that in their community coping mechanisms rather than strategies were implemented to deal with water shortages and to curb water theft. They also argued that the mechanisms to assist the community when there were water supply interruptions were inconsistent. The lack of communication between the community and the local municipality office exacerbated the situation and made it unbearable at times.

The first subsection below presents the participants’ comments regarding the strategies that were implemented in the area to curb water theft. In the following section this subtheme is

discussed with reference to the participants' comments and arguments in light of literature findings.

“There are no strategies that are there or implemented to curb water theft in this area. The only thing that the municipality provides us with is the delivery of water-by-water trucks, but even those are not consistent because sometimes they come and sometimes they do not come” (Jabulani, 2021).

“There are no strategies in place to curb water theft in this area because, as a community, we are still experiencing the issue of water shortages and water theft on top of that” (Zinhle, 2021).

“If there are any strategies put into place to curb water theft, I would be the first one to know, trust me. Currently there are no strategies that are there to help fight this problem. As we are still having this problem it shows that there are no strategies put into place to curb water theft. The worst part is water theft is now starting to be regarded as a normal act around the community” (Magret, 2021).

“There are no strategies that are put to curb water theft in this area. I do not even remember when last I saw municipal personnel in our area to inspect the main water supply system. Years have passed without them inspecting and maintaining the water supply system” (Chris, 2021).

The social organisation theory posits that disadvantaged neighbourhoods cause social disorganisation because they lack the means to address their issues and thus revert to illegal means (Jones, 2001). Thomas and Znieckiel (1927, in Reisig & Cancino, 2004) argue that social disorganisation leads to the breakdown of social rules that control or regulate individuals. This was undoubtedly the case in the study area as was demonstrated by the participants' responses regarding the lack of strategies to curb water theft. It can be argued that, due a lack of communication between community members and the municipality, the breakdown of social

control that was detected by this study may continue and even escalate as these two parties do not work together as a team to devise strategies to curb water theft in the community.

Other comments were as follows:

“There are no strategies that the Municipality put in place to curb water theft. We are on our own. The Municipality hardly attends to us when we report issues in relation to water or any other need we require as a community” (Vusumuzi, 2021).

“There are no strategies that are there to stop us from accessing water in our own way. If there were any strategies, trust me, most of us would not have resorted to connecting our pipes to the main supply system. The reason why we connected to the main supply system is because when there is water interruption, that system is hardly affected and if it does, water gets interrupted for only a few hours and then comes back” (Zwelakhe, 2021).

Khabusi and Jind (2019) argue that water theft detection devices are usually installed in gated areas whereas they are hardly ever installed in townships and rural areas due to poor maintenance, limited infrastructure, and poor service delivery by local governments. Essam, Ahmed, Abouelmagd and Soliman (2020) further argue that water flow and supply can be controlled in developed countries and urban areas because their water revenue is sufficient to install devices that detect water irregularities. Developing countries, however, do not have enough revenue to install these devices to detect water theft. Those who commit this crime thus often do so with impunity.

5.6.1.2 Inconsistency in water truck deliveries and lack of communication

The participants highlighted the point that when there were water supply interruptions the municipality should arranged water delivery by special water trucks to affected sections/areas. However, they agreed that the arrival of water trunks was inconsistent as they sometimes arrived and were sometimes nowhere to be found. Another concern that the participants raised in conjunction with the inconsistency of water trucks was the issue of a lack of communication between the municipality and community members. Most participants argued that when there

were water interruptions they were not notified of this prior to the interruption or even during the interruption. It is noteworthy that the residents commented that water services had been better in earlier years. The fact that many emphasised this point indicates a definite deterioration of the municipal services in this area regardless of the Constitution (Republic of South Africa, 1996) that proclaims that all people should have equal access to clean water. The participants commented on these issues as follows:

“Years back the municipality would put up notices informing us that in a certain period there will be no water in the area. The notice would also inform us when the water would be back. The municipality also provided trucks to deliver water to community members during the period when we had no water. However, nowadays no notices are put up and the eThekweni Municipality does not provide trucks anymore to deliver water when it is cut off in our area. This is becoming a big problem for all of us in the community” (Zinhle, 2021).

“Each and every week we experience water cut-offs. Water can be cut off for weeks without the Municipality giving us an alternative way to have access to water during this period. In the past the Municipality, together with the local councillor would notify the community with full details on when water will be interrupted, they would also organize for us water trunks to deliver water in every section or areas that currently have water cut-offs” (Magret, 2021)

“Back then the municipality made sure they informed us that the water would be cut off at some point. But that was a thing of the past, nowadays water is interrupted every week without any notices from the Municipality alerting us. As I am talking to you right at this minute, there is water interruption, but no one notified us” (Dolis, 2021).

“Due to the reason that even the water trucks were not committing to supply the water standpipes, that made us realise that actually we have a water problem as a community. Not accessing water at all due to water trucks not arriving to supply made us aware of the problem of

water shortage. And we do not get any form of communication as to water shortage problems that we face” (Fikile, 2021).

“In the past we used to wait for water trucks to deliver water in our area. However, over some time we have realised that even the water brought in by trucks was dirty and not good for drinking because sometimes it made us sick and depending on water trucks can be very stressful because sometimes, they come and sometimes they don’t come to supply us. This is where people started connecting pipes illegally, taking water from other citizens’ pipes and even tanks” (Jabulani, 2021).

“Most of us who have unauthorised access of water in our household were not only pushed by high water bills, but it was also the frequent water interruptions that were experienced daily, with no one from the Municipality informing us about the issue. Notices of interruptions are hardly posted. What is more frustrating is that even the trucks that are organised to deliver water during the interruption of water supplies do not come anymore to deliver water” (Zwelakhe, 2021).

The comments of the participants correlated with earlier findings in the literature. The lived experiences shared by the participants suggested high inconsistencies in water truck deliveries in areas that frequently experienced water supply interruptions and cut-offs. Corruption Watch (2020) argues that transporting water by road is much more costly than providing a piped supply. However, private tanker operators utilise such opportunities to run lucrative water supply operations. Surprisingly, there have been instances when city authorities collaborated with tanker owners to disrupt the public water supply in order to run their businesses for personal gain (corruption watch, 2020). When municipalities provide tankers to deliver water, it is normal for drivers to claim payment for the water that is supposed to be delivered free of charge and to sell it to more privileged families or households at the expense of the poor (Corruption Watch, 2020).

Masiya, Davids and Mazenda (2019) argue that poor communication between community members and local municipalities results in a slow response to service delivery requests. Moreover, a lack of water education has also resulted in limited community participation in water services. Water service quality can thus be improved by resolving issues collaboratively

through public involvement. These points illustrate that it is necessary to rethink local government structures and responsibilities in order to devise ways to strengthen connections between communities and their local municipalities. One measure is to compel public involvement in municipal decision-making so that policies and programs are jointly owned.

5.7 Suggestions for Curbing Water Theft

The study participants were asked to offer suggestions to curb water theft involving the community, municipality, and government in the Folweni Township. The following suggestions were offered:

- The community and local municipality must have a good relationship and effective communication in order to report people who are committing the crime of water theft (Zinhle, 2011); (Vusumuzi, 2021); (Dolis, 2021); (Jabulani, 2021)
- The municipality must notify people timeously about water interruptions (Fakakazi, 2021); (Zwelakhe,2021); (Magret, 2021)
- The municipality must make sure that there is equal water distribution to all households and they must engage water inspectors that will keep track of water suppliers' operations. (Chris, 2021); (Zwelakhe, 2021); (Magret, 2021)
- The municipality, in collaboration with the government, must launch awareness programs in communities to educate them about water saving strategies in order to avoid reoccurring water supply interruptions. (Khehla, 2021); (Jabulani, 2021); (Gratia, 2021); (Zenzele, 2021)
- The municipality should work together with the government to install water tanks in every household so that clean, potable water is available during water supply interruptions (Fakazi, 2021); (Bongiwe, 2021), (Fikile, 2021)
- Municipal officials must be barred from giving favours to some community members. The community and municipality must work together to stop corrupt tendencies, devise effective strategies to solve water theft, and bring perpetrators to book (Fakazi, 2021); (Dolis,2021); (Khehla, 2021)
- Individuals who engage in water theft for any reason must face legal punishment in the form of fines and even imprisonment. (Siphesihle, 2021), (Jabulani, 2021)

- Community members must maintain their household water supply systems in order to check for illegal connections on their systems and to avoid water leaks. (Gratia, 2021); (Zenzele, 2021); (Chris, 2021)

The participants were aware of the negative impact of water theft on their community. They urged community leaders, the municipality and the government to work together to devise and implement effective strategies to curb illegal water connections and water meter tampering in Folweni Township.

5.8 Chapter Summary

Various findings that effectively addressed the objectives of the study emerged based on the analysis of the data that were collected from Folweni residents and eThekweni Municipality officials. Thematic analysis was used to analyse the data and this revealed eight themes and two subthemes that addressed the causes, effects, and effectiveness of strategies/measures in place to combat water theft in Folweni Township. The enquiry focused on water meter tempering and illegal pipe connections.

Based on the experiences shared by the study participants, it was evident that most participants had experienced water shortages on a regular basis and that most of them had resorted to water theft out of frustration and for survival. Some adhered to legal access to water and were paying their water bills, but the fact that they were frustrated because of water interruptions, poor water quality, limited or no support by the local municipality, and water theft in the community was highlighted. Based on the findings, this study was able to confirm that the socio-economic conditions in Folweni led to a breakdown in social control and that this had a direct impact on water shortages as people continued to commit water theft. This chapter highlighted a lack of strategies to curb water theft although it was found that mechanisms to deal with water shortages were available but seldom effective.

The next chapter concludes this study report by providing an in-depth discussion of the key findings and offering recommendations.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This case study was conducted to investigate water meter tampering and illegal water pipe connections as forms of water theft in Folweni, KwaZulu-Natal. This chapter summarises the research study and addresses the study's contribution to the body of scholarly knowledge in the Criminology field. Recommendations are offered for the community under study and the municipality responsible for water services in the study area as well as for potential studies. The findings will be addressed with emphasis on the study objectives and aim. The data that were presented and discussed in Chapter Five will again be referred to for conclusion purposes in this chapter.

6.2 Overview of the Study

The first chapter mainly focused on what this study was about and I explained the main ideas and the key concepts that were drivers of the study. The overview was presented in a discussion of the background to the study, the problem statement, and the rationale for the study. Furthermore, the aim and objectives of the study were presented while the research questions and the significance of the study were also addressed. The first chapter also briefly outlined the research methods that were utilised and summarised the structure of the entire study report.

In Chapter Two I provided a review of related literature and focused on the nature and extent of water inaccessibility, the causes of water theft, and the effects of water theft on communities. The review also focused on current strategies to curb water theft and their effectiveness.

Chapter Three focused on criminological theories that explain why water theft is committed. The theoretical framework was described in some depth as it was my intention to explain the phenomenon of water theft more aptly from a scholarly perspective. The social disorganisation theory was used to explain environmental and social issues that contribute to delinquent behaviour. This theory was utilised to better explain and understand the nature and extent of water inaccessibility and the resultant causes of water theft. The second theory that was utilised

and discussed in Chapter Three was the general strain theory that was used to explain that stressors are contributing factors that drive individuals to commit water theft. The third theory that was used in this study was the rational choice theory which was used as a psychological theory to help me to better explain the criminal mindset of people who revert to water theft for financial or survival purposes. I explained that this theory views every individual as a rational being who consciously make the choice to commit a crime. The theory assumes that individuals who commit a crime of any kind understand that they are committing a crime, but the only thing that they care about is to earn benefits from the crime they commit.

Chapter Four focused on the research methodology that was utilised to bring this study to fruition. In this chapter I discussed the research paradigm, the nature of the study, and the research design. I presented a profile of Folweni Township and maps to orientate the reader towards its location in the eThekweni Metro. I also explained the sampling method I used and the data collection process and I introduced the thematic data analysis method that I employed to analyse the data.

In Chapter Five I presented the findings based on the thematic analysis process that I had employed to analyse the data. When the data that had been collected by means of semi-structured telephonic interviews had been transcribed and coded, themes were developed that related to the aim and objectives of this study. These themes and the findings were discussed in relation to the literature and the theories that framed this research project.

6.3 General Conclusions

The general conclusions that are presented and discussed in this chapter met the objectives of the study which were to:

- assess the nature and extent of water inaccessibility in Folweni Township;
- determine the causes of water theft in Folweni Township;
- determine the effects of water theft on the community and the eThekweni Municipality.
- assess current strategies to curb water theft and determine how effective these are in curbing water theft in Folweni Township.

The above objectives needed to be achieved in order to attain the study aim, which was to evaluate the causes, effects and the effectiveness of strategies to combat water theft in Folweni

Township. Eight themes emerged from the data analysis process and these findings effectively responded to the objectives of the study and answered the research questions. The key conclusions are presented below.

6.3.1 Nature and extent of water inaccessibility in Folweni Township

This objective was achieved as it emerged that water supplies in the study area were poor, erratic, and unevenly distributed. The study found that people living at Folweni Township experienced consistent challenges to access water due to numerous unexplained water interruptions. Furthermore, the water pressure and interruptions were erratic as they did not affect every household in the area in the same manner. This problem was so severe that the participants agreed that water interruptions had actually become the norm. The unequal access to water caused frustration and concerns to the extent that some normally law-abiding residents reverted to water theft. This behaviour widened the gap of mistrust among community members and between them and community municipal officials, thus exacerbating poor service delivery and the unfair distribution of water resources through the official water supply system.

Due to a poor and unequal water supply that was experienced by community members often for weeks on end, this inefficient service may be deemed a contributory factor to individuals' decision to seek easier and more affordable ways of accessing water that would be more consistent and cheaper. Water is a basic need for people and thus water meter tampering and illegal water pipe connections to the eThekweni Municipality's main water distribution pipeline was the only option they had to attain water security for their households. Chapter Two of this study report highlights that fact that townships experience water issues because many municipalities are not served by water boards and do not have the money and skills to increase their sources of supply. These factors limit municipalities' ability to respond to the demand for sufficient water distribution and improved service levels. However, the literature confirms that current institutional arrangements in many municipalities are unable to deliver effective or sustainable services that meet people's needs.

The study also revealed that, apart from the fact that the municipality might not have had sufficient revenue to deliver effective resources, cases of favouritism and corruption also resulted in the unequal distribution of water and low water pressure in the community. It was stated that water officials were routinely bribed not to disconnect unauthorised water

connections or to falsify meter readings and bills which then resulted in a poor and unequal water supply to the area.

6.3.2 Causes of water theft in Folweni Township

Three themes emerged that addressed this objective, namely unemployment, desperation for water, and corruption. One subtheme was evident under this theme, namely bypassing the water payment system. The findings indicated that water theft was primarily caused by social and financial factors, and it was found that unemployment was a driving force for many people to commit water theft. Several participants were unemployed and they agreed that they did not have enough money to pay for water. Due to unemployment and poverty, they found it difficult to access basic requirements such as water because they simply did not have the money to pay monthly water bills. It was noted that many participants actually committed water theft due to their financial situation as they were either unemployed or did not earn enough money to pay their bills. In Chapter Two it is noted that South Africa is currently facing a high rate of unemployment and that this results in escalating criminality due to the desperation of people to access basic services that require money (Hedden & Cilliers, 2014).

Water is a basic need that is required for necessities such as bathing, drinking, cleaning, cultivation, and maintaining small businesses (car washing, plumbing, tile cleaning, etc.). However, it was noted that individuals who were unemployed and faced difficulties in meeting their basic needs found the unsupervised water system in Folweni township an opportunity to connect to the main water system illegally. They also tampered with water meters to access water without having to pay for it. Bypassing the metered system to avoid paying for water was prevalent in the community due to high rates of unemployment as well as persistent water shortages because people accessed water illegally. Furthermore, unemployment created opportunities for people to use their plumbing skills lucratively by illegally connecting water to households that paid them to bypass the water system and these residents thus avoid paying for water.

Chapter Two also highlights the fact that water prices are high, especially for low-income populations and that it is thus beneficial for them to bribe water authorities to make illegal connections (Clarke, 2016). The study corroborates this finding as it was found that the

socioeconomic condition of the community contributed to individuals' decision to commit water theft in order to have access to water.

The second theme that addressed this objective was people's desperate need for water. It was found that water interruptions occurred frequently in the Folweni community and that residents were often left with no water to drink or wash. It was mentioned that the community had experienced few water irregularities in the past and the situation had gone from bad to worse. The participants confirmed that weeks might go by without people having access to water at home due to frequent interruptions. Moreover, they were never informed by the municipality that this would happen and they could thus not prepare for such an eventuality. Due to their desperation for water, people resorted to illegal water connections as the main supply line was deemed more consistent than home connections. It was also found that desperation due to an unequal water supply caused those who were affected to seek water from those with more regular supplies during these daily interruptions.

It was also noted that those who used water legally ended up having to pay high water bills as they helped their neighbours who were experiencing water interruptions. Desperate for water, individuals also connected water pipes illegally to the supply systems of households who hardly experienced water interruptions. Chapter Two of this study highlights that the living conditions of the poor in townships and rural areas have not developed over the years. Numerous residents in poor township areas do not have adequate infrastructure such as roads, electricity, and a water supply, and theft tends to be high in these areas because of poverty and the poor services that they receive from their local municipalities (Kruger & Landman, 2008).

The third and final theme that addressed this objective was corruption. Corruption is a controversial issue in South African politics and has been viewed as a daunting barrier to sustainable development and meaningful transformation at all levels of government and society (Khan & Pillay, 2019). The study found that corruption was rife at local and municipal levels in the water distribution sector and that this contributed to severe water shortages that resulted in water theft. It was suggested that some eThekweni municipal water personnel received huge amounts in bribes in order to assist people to bypass the water system and access water illegally. It was also alleged that tenders were awarded by corrupt officials through illegal channels to particular friends, and this caused more water problems for the community as water supplies were diverted and they were then left with an inadequate supply and poor water pressure. It

was also alleged that tenders that were awarded to certain companies delayed the process to install an efficient water infrastructure and it also impacted the maintenance of and delivery of water by special trucks. The participants argued that this caused people to illegally connect water for themselves due to prevalent social disorganisation and a lack of social control. The lack of law firm enforcement initiatives and the complicity of police officers in corruption were also alluded to by the participants.

6.3.3 Effects of water theft on the community and the eThekweni Municipality

Three themes emerged that addressed this objective namely waterborne diseases, high water bills, and water shortages. It was found that individuals who had accessed unauthorised water supplies had been exposed to waterborne diseases. The cause of the outbreak of such diseases was traced back to illegal water connections. Local plumbers who were probably not properly trained were paid to connect and tamper with water systems in order to access free water for their customers. This act caused leaks and the water in these pipes was thus exposed to numerous pollutants and germs that are harmful to the human body. It was also alleged that unauthorised water connections accessed water that was not sanitised by the municipality as their existence is of course not recognised and serviced by the eThekweni Municipality Water and Sanitation department. In this regard, the literature suggests that poor water quality indicates a high rate of pollution. Individuals who commit water theft thus consume such water and contract diseases. This requires government to allocate a larger health care budget to the Department of Health which may be prevented if polluted water coming from illegal water distributors is not consumed (Kok & Collinson, 2006).

Another theme that emerged was high water bills. It was found that participants who stated that they paid their water bills experienced high water readings every month due to the increasing prevalence of water theft in the community. The participants argued that when individuals tampered with the main meter and connected water pipes directly to the main water supply, this caused meters to detect and record high water usage by those who were authorised to accessing water from that main supply. When tampered with, meters fail to record the water usage of other households who channel water to their dwellings illegally. Furthermore, it was found that in some cases high water bills were incurred by households when others illegally connected their water pipes to theirs. Thus, law-abiding citizens carried the burden of high-

water bills when their water supply systems had been accessed by others without their knowledge. Thus, ruthless manner of stealing water should be eradicated.

Some participants surmised that water theft had a negative impact on the revenue collected by the municipality to maintain water infrastructure in their community. They all agreed that illegal water connections and water meter tampering caused severe water leakages, and they hypothesised that this created shortages in the budget of the municipality as repairs of such damages would be costly and outside the budget. The literature suggests that budgetary constraints are experienced as a result of large-scale water theft and smuggling. When expenditure exceeds the budget, there are inadequate resources to repair, update, and extend water distribution systems and it becomes impossible to devise measures to cope with water scarcity (McKenzie et al., 2012). The literature also reveals that water theft affects the financial status of the suppliers of water and that it threatens the stability of power supply in affected areas and even beyond (Gerlak & Wilder, 2012).

The last theme that addressed this objective was water shortages. It was found that, due to the increasing prevalence of water theft, high levels of water shortages were experienced, particularly by individuals who were law abiding and paid their water bills regularly. These residents became frustrated and pointed the finger at those whom they deemed guilty of this crime and this caused conflict and enmity among residents. During water shortages, the expectation was that water trucks would deliver water to affected areas, but these deliveries, that had been trustworthy in the past, had become erratic and even non-existent. This further created conflict and widened the level of distrust in the municipality. It was argued that most participants then resorted to water theft for survival as the water from the main distribution system was hardly ever interrupted.

The literature proposes that water theft ultimately threatens the water security of unlicensed and legitimate users alike as water scarcity is experienced by all. This also leads to rationing, increased prices, and potentially insufficient availability. In the worst-case scenario, water theft can deprive entire communities of drinking water (Hope et al., 2008), which may have negative repercussions that will be difficult to remedy.

6.3.4 Current strategies to curb water theft and their impact on water theft in the eThekwini area

The participants were unanimous that there were no strategies in Folweni to curb water theft. They highlighted that the municipality only utilised certain mechanisms to deal with water shortages such as delivering water by water trucks and installing water tanks. However, it was noted that these mechanisms ranged between inconsistent to non-existent and thus limited help was provided for people to have access to water during the long periods of water supply interruptions that occurred weekly and often daily. The water trucks rarely showed up and the installation of water tanks by the municipality took forever or was interrupted without any explanation. A serious gap was found between the community and the municipality as there was no mechanism for communication. For instance, prior to or during water interruptions the municipality failed to put up notices to inform the community of impending interruptions or the period it would last. The participants argued that this caused distrust and frustration as the municipality never communicated with them about the nature of water interruptions.

It was also found that the community was reluctant to report cases of water theft to the municipality or the police as they had become so accustomed to it that it was regarded as the norm. The irregularity of water truck deliveries caused residents to resort to water theft instead of waiting forever for water trucks to deliver limited quantities of water to households. Some participants highlighted the fact that community members got sick from drinking stored rainwater when trucks did not deliver clean water during water shortages. Chapters Two iterates that poor communication between community members and local municipalities results in slow responses to service delivery requests while a lack of water education results in limited community participation in efforts to solve the problem. Water service quality can be improved by resolving issues and inviting public involvement. It is thus necessary to revisit the role of local governments in order to strengthen connections between communities and their municipalities and to encourage public involvement in decision-making exercises so that policies and programs are jointly owned.

The community participants and the eThekwini water department personnel offered suggestions for curbing illegal water connections and water meter tempering. These recommendations may not only benefit Folweni township but similar communities who experience the same problems as well. The measures that were proposed were the following:

- A good relationship should be created and maintained between the municipality and community leaders to ensure regular and effective communication.
- Trust should be built so that people who commit water theft are reported and prosecuted.
- The municipality must be compelled to notify communities when water interruptions will occur.
- The municipality must make sure that there is equal water distribution to all households in residential areas, particularly in townships and informal settlements.
- Trained and incorruptible water inspectors should keep regular track of how water supplies are distributed and used.
- Awareness programs should be launched to educate the community about water saving strategies in order to avoid re-occurring water supply interruptions.
- Favouritism, corruption and nepotism in the water department must be rooted out. Municipal officials who favour certain members of the community must be taken to task.
- Community leaders and municipal officials must work collaboratively to devise effective strategies to solve water theft.
- Community members must maintain their household water supply systems and regularly check if illegal connections have been made. Water leakages must be reported immediately.
- The municipality must also maintain and check the main water supply system regularly because it is to this system that water pipes are connected illegally.
- Individuals who are found guilty of water theft must face legal action and punishment in the form of fines and even imprisonment. Only if this happens will water theft be deconstructed and regarded as a crime rather than the norm in townships and other communities.

6.4 Limitations of the Study

- Telephonic interviews were not only challenging in terms of poor network experienced by participants, but they were also costly and expensive. The researcher had bought a lot of airtime in order to have good and in-depth interviews with the participants. The researcher decided on buying R10 airtime, the airtime was converted to 60 minutes

voice bundles to talk with anyone using any network, for each interview in order to cut off the costs.

- Conducting telephonic interviews was also time consuming, due to bad network and some participants not wanting to re-schedule the interview.
- The fourth objective of this paper (What are the current strategies to curb water theft and how effective are they in Folweni Township?), intended to look if there are any strategies implemented in curbing water theft committed in a form of water tempering and illegal pipping connections, and evaluate the effectiveness of the strategies. However, the findings of this study have shown that there are no strategies implemented in curbing water theft at Folweni Township, the effectiveness of the strategies could not be evaluated due to that.

6.5 Recommendations

After considering the findings of this study, the following recommendations are offered:

- There is an unquestionable need for both the eThekweni municipality, the local councillor office and the community to engage in constructive communication. The concerns that were raised by the community members must be sent to local councillor that that they can be sent to the district office of the municipality. Community members must have a trustworthy channel through which they can report any cases of water theft.
- Local police stations must be informed of water theft cases and trustworthy officers must be deployed in 'hot spot' areas to make arrests when illegal water connections are detected.
- The eThekweni municipality, local councillor office and the community must work together to devise and implement strategies that will be effective in curbing water theft in affected areas.
- There is a need for internal investigations into water sector departments at national and local levels. These internal investigations must be conducted to combat corruption that occurs at the expense of community members who face water problems on a daily basis. Bribes must be detected and eradicated and so must irregular tenders that are allocated to certain individuals for personal financial gain.
- Community members need to be educated about the necessity to save water. They must be informed of the damages caused by water theft and how much harm it causes at

economic, social, health, and infrastructural levels. Water theft must be addressed as a crime and not as the norm or part of ‘township culture’.

- To fight poverty and unemployment, there is a need for the local councillor to have a list of every individual that is unemployed in the area. This office must follow up to determine whether these people receive their government grant regularly. They need to be prioritised and selected when a development project is launched in the area and they need to be eligible for local job opportunities. These people also need to be prioritised to access training opportunities offered by the ruling political party. In this manner they will be eligible for a stipend which will enable them to pay their monthly water bills.
- Due to the expansion of unauthorised informal settlements in the Folweni area, the councillor and community members must work together to be on guard that people do not illegally connect pipes or otherwise tamper with the water system.
- The eThekweni municipality must maintain the water supply system and monitor it regularly in order to detect illegal water connections. The municipality must deploy trustworthy water inspectors who should check water meters and pipe connections at every household. In this manner illegal connections will be detected and disconnected timeously and perpetrators will face legal repercussions.
- Due to the normalisation of water theft in developing townships, the government should impose strict legal sanctions on those who are guilty of water theft. The community, the councillor, and municipal officials must work together to make sure that everyone who is guilty of water theft or who is guilty of facilitating water theft by handing out favours is brought to book.

6.6 Conclusion

Water theft is not limited to illegal water connections and water meter tampering as there are many other ways in which people use or access water illegally. These acts not only have a negative impact on the economy of the country, but they also contribute to water shortages in the resources that are used for the distribution of water to all communities. Water resources need to be sustained for the well-being of current and future generations. Sanctions for water theft must be consistent and effective to make it hard for individuals to benefit from this crime. Incidences of water theft are high in developing townships which is an alarming phenomenon as the country faces severe water scarcity problems. Against this background, there is an urgent

need for future studies to conduct research into the root causes of other forms of water theft in order to devise strategies that will be effective in curbing and even eradicating water crimes.

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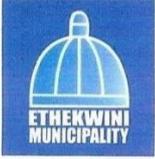
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APPENDIX 1: Letter of permission by the Folweni Councillor



Councillor

Mezzanine Floor Shell House
Cnr. Anton Lembede & Samora Michell Street, Durban, 4001
P O Box 1014, Durban, 4000
Tel: 031 322 7030, Fax: 031 311 3827
www.durban.gov.za

17 August 2020

Our Ref: Cllr. T.V. Xulu
Your Ref:
Enquiries: 083 517 7923

PERMISSION TO CONDUCT A RESEARCH

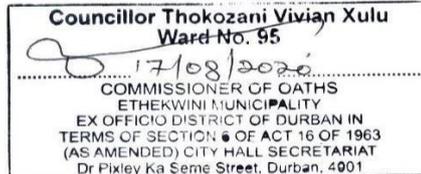
Dear Sir / Madam

This letter is serving to grant **Ngcobo Nompumelelo, ID Number 971215 0889 08 8** is residing at House No 404982 Dodoza Area at Ward 95. She is a student at UKZN (Howard College)

She will be conducting an investigation of water meter tempering and illegal pipe connection at Folweni Section A, B & C .

I therefore request your co-operation whilst she is conducting her research.

Thanking you.



Cllr T. V. Xulu (Ward 95)

APPENDIX 2: Ethical clearance from the University of KwaZulu-Natal's Humanities and Social Sciences Research Ethics Committee



09 February 2021

Miss Nompumelelo Ngcobo (215062692)
School Of Applied Human Sc
Howard College

Dear Miss Ngcobo,

Protocol reference number: HSSREC/00000875/2019

Project title: An investigation of water meter tampering and illegal piping connections: Case study of Folweni, KwaZulu-Natal.

Degree: Masters

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 26 November 2019 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 09 February 2022.

To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,

Professor Dipane Hlalele (Chair)

/dd

Humanities and Social Sciences Research Ethics Committee

Postal Address: Private Bag X54001, Durban, 4000, South Africa

Telephone: +27 (0)31 260 8350/4557/3587 Email: hssrec@ukzn.ac.za Website: <http://research.ukzn.ac.za/Research-Ethics>

Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

INSPIRING GREATNESS

APPENDIX 3: Informed consent form in English

Informed Consent to Participate in a Research Study

Topic: An investigation of water meter tampering and illegal piping connections: case study of Folweni, KwaZulu-Natal Contact number: 084 4661 296

Researcher: Nompumelelo Ngcobo

A. PURPOSE AND BACKGROUND

You are being invited to consider participating in a study that involves research on water theft focusing more on water meter tampering and illegal piping connections which this study will be investigated at Folweni, KwaZulu-Natal. The aim and purpose of this study is to investigate the cause, effects and the effectiveness of implemented strategies to combat water theft in a form of water meter tempering and illegal piping connection at Folweni Township. The study is to enroll 14 participants in total. The study will involve conducting interviews with 12 community members residing at Folweni Township and 2 eThekweni Municipality officials under water department. Interviews will be recorded and submitted in as academic work in the form of a research and submitted. The duration of your participation if you choose to enrol and remain in the study is expected to be for +- 20 minutes maximum unless if the researcher needs clarity of which by the participant's permission, can reschedule a meeting. The study is self-funded.

B. PROCEDURES

If you agree to participate in this research study, the following will occur: you are asked to participate in an interview with the researcher, the interview will take place in a conducive environment agrees upon by both the interviewer and participant .The interview will be one on one, this way privacy and confidentiality is ensured, the interview will take no longer than 20 minutes max

C. RISKS

There are no major risks that will affect the participants. Apart from that they may maybe feel uncomfortable with some of the questions that the researcher asks, however if this is the case the participant can state that they feel uncomfortable and the researcher will move on to the next question.

D. CONFIDENTIALITY

The records from this study will be kept as confidential as possible. No individual identities will be used in any reports or publications resulting from the study. Data which will be collected in this proposed research will be stored in genuine academic databases and the data can be disposed after 5 years by shredding the data. The researcher will insure that she uses pseudonyms instead of participant's actual names at the dissemination, oral presentation or publication of the proposed research. To achieve the confidentiality, this research and findings from participants will be placed in secured academic databases and will be accessible by people who will agree to keep the document safe from misuse and abuse. All questionnaires, tapes, transcripts, summaries will be given codes and stored separately from any names or other direct identification of participants. Research information will be kept in locked files at all times. Only research personnel will have access to the files.

E. BENEFITS OF PARTICIPATION

There will be no direct benefit to you from participating in this research study. The anticipated benefit of your participation in this study is new knowledge and information.

F. VOLUNTARY PARTICIPATION

Your decision whether or not to participate in this study is voluntary and will not affect your relationship with the University or the organization. If you choose to participate in this study, you can withdraw your consent and discontinue participation at any time without prejudice.

G. AUDIO RECORDING

As a participant you should be aware that the researcher will be recording the interviews in devices in the form of a tape recorder and cell phone recording.

Do you as the participant agree to be recorded YES NO

H. QUESTIONS

In the event of any problems or concerns/questions you may contact the researcher at 0844661296 or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557- Fax: 27 31 2604609

Email: HSSREC@ukzn.ac.za

CONSENT:

I have been informed about the study entitled: An investigation of water meter tampering and illegal piping connections: case study of Folweni, KwaZulu-Natal by Miss Nompumelelo Ngcobo. I understand the purpose and procedures of the study.

1. I have been given sufficient information about this research project. The purpose of my participation as an interviewee in this project has been explained to me and is clear.
2. My participation as an interviewee in this project is voluntary and I am allowed to withdraw at any time, without given reason.
3. I allow the researcher(s) to take written notes during the interview. I also may allow the recording (by audio/video tape) of the interview. It is clear to me that in case I do not want the interview to be taped I am at any point of time fully entitled to withdraw from participation.
4. I have the right not to answer any of the questions. If I feel uncomfortable in any way during the interview session, I have the right to withdraw from the interview.
5. I have been given the explicit guarantees that, if I wish so, the researcher will not identify me by name or function in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure.
6. I have read and understood the points and statements of this form. I have had all questions answered to my satisfaction, and I voluntarily agree to participate in this study.
7. I have been given a copy of this consent form co-signed by the interviewer.

Name of Participant _____

Signature of Participant _____

Date _____

Name of Researcher _____

Signature of Researcher _____

APPENDIX 4: Informed consent form in IsiZulu

Kwaziswa Ngemvume Yokubamba Iqhaza Esifundweni Sokucwaninga

Isihloko: Uphenyo lokuphazanyiswa kwemitha yamanzi nokuxhunywa kwamapayipi ngokungemthetho: ucwaningo lwe-Folweni, KwaZulu-Natali

Inombolo yokuxhumana: 084 4661 296

Umphenyi: Nompumelelo Ngcobo

A. INJONGO NOMSUKA YALOLUCWANINGO

Uyamenywa ukuthi ubhekele ukubamba iqhaza ocwaningweni olubandakanya ucwaningo lokwebiwa kwamanzi okugxile kakhulu ekuphazamisweni kwamamitha amanzi nasekuxhumeni ngamapayipi ngokungemthetho okuzophenywa ngalo lolu cwaningo eFolweni, KwaZulu-Natali. Inhloso nenhloso yalolu cwaningo ukuphenya imbangela, imiphumela kanye nokusebenza ngempumelelo kwamasu wokulwa nobusela bamanzi ngendlela yokufikelwa kwamamitha okuhamba kwamanzi nokuxhumeka kwamapayipi ngokungemthetho elokishini laseFolweni. Ucwaningo lukubhalisa ababambiqhaza abayi-14 bebonke. Lolu cwaningo luzobandakanya ukwenza izingxoxo namalungu omphakathi ayi-12 ahlala eFolweni Township kanye nezikhulu ezi-2 zeTheku ezingaphansi kweTheku ngaphansi komnyango wamanzi. Kuzoqoshwa izingxoxo bese zingeniswa njengomsebenzi wokufunda ngendlela yocwaningo futhi uhanjise. Isikhathi sokubamba kwakho iqhaza uma ukhetha ukubhalisa nokuhlala ocwaningweni kulindeleke ukuthi sibe semuva kwemizuzu engama-20 ngaphandle kokuthi uma umcwaningi edinga ukucaciswa ukuthi iyiphi imvume yomhlanganyeli, angahlehlisa umhlangano kabusha. Ucwaningo luyazikhokhela.

B. IZINHLELO

Uma uvuma ukubamba iqhaza kulolu cwaningo lokucwaninga, kuzokwenzeka okulandelayo: ucelwa ukuthi ubambe iqhaza kwinhlokokhono nomcwaningi, inhlokokhono izokwenzeka endaweni evumayo evumelana nalowo oxoxayo nalowo obambe iqhaza. Ukuxoxisana naye uzoba munye. kokukodwa, ngale ndlela ubumfihlo kanye nokugcinwa kwemfihlo kuqinisekisiwe, ingxoxo ngeke ithathe isikhathi esingaphezu kwemizuzu engama-20.

C. IZINGOZI

Azikho izingozi ezinkulu ezizothinta abahlanganyeli. Ngaphandle kwalokho bangazizwa bengakhululekile ngeminye imibuzo ebuzwa ngumcwaningi, kodwa uma kunjalo, loyo obambe iqhaza angasho ukuthi azizwa engakhululekile futhi umcwaningi adlulele komunye umbuzo olandelayo.

D. UKUZIVIKELA

Amarekhodi avela kulolu cwaningo azogcinwa eyimfihlo ngangokunokwenzeka. Akukho ubunikazi obuthile obuzosetshenziswa kunoma yimiphi imibiko noma ukushicilelwa okuvela ocwaningweni. Idatha ezoqoqwa kulolu cwaningo okuhlongozwayo izogcinwa kwimininingwane eqondile yokufunda futhi imininingwane ingafakwa ngemuva kweminyaka eyi-5 yokwaba imininingwane. Umcwaningi uzoqinisekisa ukuthi usebenzisa amagama abizwa nge-pseudonyms esikhundleni samagama wabamba iqhaza ekusakazeni, ethula ngomlomo noma kushicilelwa ucwaningo oluhlongozwayo. Ukufezekisa imfihlo, lolu cwaningo kanye nokutholakele kwabahlanganyeli kuzobekwa ezinqolobaneni eziphephile zezemfundo futhi kuzotholakala ngabantu abazovuma ukugcina lo mbhalo uphephile ekusetshenzisweni kabi nasekuhlukunyezweni. Onke amaphepha emibuzo, ompompi, okubhaliwe, izifingqo azonikezwa amakhodi futhi agcinwe ngokuhlukile kunoma yimaphi amagama noma okunye ukukhonzwa kwabahlanganyeli. Imininingwane yocwaningo izogcinwa kumafayili akhiyiwe ngaso sonke isikhathi. Abasebenzi bocwaningo kuphela abazokwazi ukufinyelela amafayela.

E. IZINZUZO ZOKUQHAWULA

Ngeke ube khona usizo oluqondile kuwe ngokubamba iqhaza kulolu cwaningo lokucwaninga. Inzuzo okulindelwe yokubamba kwakho iqhaza kulolu cwaningo ulwazi olusha nolwazi.

F. UMNIKELO WOKUXHUMANA

Isinqumo sakho sokuthi ubamba iqhaza noma cha ukubamba iqhaza kulolu cwaningo singokuzithandela futhi ngeke buthinte ubuhlobo bakho neNyuvesi noma inhlango. Uma ukhetha ukubamba iqhaza kulolu cwaningo, ungakhipha imvume yakho futhi uyeke ukubamba iqhaza nganoma yisiphi isikhathi ngaphandle kokubandlulula.

G. UKUDLULA ISIVIVINYO

Njengomuntu obambe iqhaza kufanele wazi ukuthi umcwaningi uzoqopha izingxoxo ezisebenza ngamadivayisi ngendlela yerekhoda le-tepi nokuqoshwa komakhalekhukhwini. Ngabe wena njengomhlanganyeli uyavuma yini ukuthi urekhodwe YEBO CHA

H. IMIBUZO

Uma kwenzeka kunezinga noma ukukhathazeka / imibuzo ungaxhumana nomcwaningi ku0844661296 noma e-UKZN Humanities & Social Sciences Research Ethics Committee, imininingwane yokuxhumana ngale ndlela elandelayo:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604557- Fax: 27 31 2604609

I-imeyili: HSSREC@ukzn.ac.za

ISIVUMELWANO:

Mina bazisiwe ngalolu cwaningo olunesihloko esithi: Uphenyo lokuphazanyiswa kwemitha yamanzi nokuxhunywa kwamapayipi ngokungemthetho: ucwaningo lwe-Folweni, KwaZulu-Natali nguMiss Nompumelelo Ngcobo. Ngiyayiqonda inhloso nezinqubo zocwaningo.

1. Nginikezwe imininingwane eyanele mayelana nale phrojekthi yocwaningo. Inhloso yokubamba kwami iqhaza njengophenathi kulo msebenzi uchazwe kimi futhi icacile.
2. Ukubamba iqhaza kwami njengomhlanganyeli kule projekthi kungokuzithandela futhi ngiyavunyelwa ukuhoxisa nganoma yisiphi isikhathi, ngaphandle kwesizathu.
3. Ngivumela umcwaningi (abafundi) ukuthi athathe amanothi abhaliwe ngesikhathi sokuxoxisana. Ngingavumela nokuqoshwa (nge-audio / video tape) ye-interview. Kuyangicacela ukuthi uma kwenzeka angifuni ukuthi ingxoxo ithwetshelwe ngizoba ngasiphi isikhathi ilungelo lokuhoxa ekubambeni iqhaza.
4. Nginelungelo lokungaphenduli eminye imibuzo. Uma ngizizwa ngingakhululekile nganoma iyiphi indlela ngesikhathi sesikhathi sokuxoxisana, nginelungelo lokuhoxa kwinhloko.
5. Nginikezwe iziqinisekiso ezicacile zokuthi, uma ngifisa kanjalo, umcwaningi ngeke angikhombe ngegama noma ngisebenze kunoma yimiphi imibiko esebenzisa imininingwane etholakala kulolu hlololvo, nokuthi imfihlo yami njengomhlanganyeli kulolu cwaningo izohlala iphephile.
6. Ngifunde futhi ngawaqonda amaphuzu nezitatimende zaleli fomu. Nginayo yonke imibuzo ephendulwe ngokweneliseka kwami, futhi ngiyavuma ngokuzithandela ukuthi ngibambe iqhaza kulolu cwaningo.
7. Nginikezwe ikhophi laleli fomu lokuvuma elisayinwe ngumdliwanondlebe.

Igama Lombambiqhaza_____ Isiginesha Yomhlanganyeli_____

Usuku_____

Igama Lomcwaningi

Isiginesha yoMseshi

**APPENDIX 5: Interview schedule for the Folweni participants
(English)**



Interview Schedule (Community Members- Folweni Township)) Demographic questions

1. Age:
2. Gender:
3. Language:
4. Years of being Folweni Resident:

QUESTIONS

1. Do you have access to water in your household?
2. If no, where do you get water from?
3. Are you of the opinion that your area is accessing adequate water supply?
4. When did your area start experiencing water shortage?
5. How did it come to the attention of the community that there is water problem?
6. How do you cope with water scarcity?
7. How do people commit water theft within Folweni township community?
8. In your own opinion what are the causes of water theft in Folweni Township?
9. What are the effects of water theft in the area?
10. How do you overcome the barriers that comes with water theft within the community?
11. Are there any strategies put into place to curb water theft around this area?
12. How can the community, Municipality and government intervene to curb water theft within your community?

13. How would you feel about the removal of illegally connected water piping and tampered meters within the community? Why?

**APPENDIX 6: Interview schedule for the Folweni participants
(IsiZulu)**



Isheduli Yezingxoxo (Amalungu Omphakathi- Idolobha laseFolweni)

Imibuzo yobuntu

1. Ubudala:
2. Ubulili:
3. Ulimi:

Iminyaka yokuba yisakhamuzi saseFolweni:

IMIBUZO

1. Uyakwazi yini ukuthola amanzi endlini yakho?
2. Uma kungenjalo, ngabe ubuthola amanzi?
3. Ingabe unombono wokuthi indawo yakho ithola amanzi anele?
4. Indawo yakho iqale nini ukuntuleka kwamanzi?
5. Kwenzeka kanjani ukuthi umphakathi wazi ukuthi kunenkinga yamanzi?
6. Ubhekana kanjani nokushoda kwamanzi?
7. Iziphi izindlela abantu abazisebenzisayo ukweba amanzi lapha emphakathini waseFolweni?
8. Ngokubona kwakho yini izimbangela zokwebiwa kwamanzi elokishini laseFolweni?
9. Iyini imiphumela yokwebiwa kwamanzi endaweni?
10. Unqoba kanjani imigoqo eza nokwebiwa kwamanzi emphakathini?
11. Ngabe akhona amasu enziwe ukunqanda ukwebiwa kwamanzi azungeze le ndawo?

12. Ungangenelela kanjani umphakathi, uMasipala kanye nohulumeni ukunqanda ukwebiwa kwamanzi ngaphakathi umphakathi wakho?
13. Ungazizwa kanjani ngokususwa kwepayipi lamanzi elixhunywe ngokungemthetho futhi kuphazanyiswe amamitha ngaphakathi komphakathi? Kungani?

APPENDIX 7: Interview schedule for the EThekwini Municipality personnel's (English)



Interview Schedule (eThekwini Municipality Department of water officials) Demographic questions

1. Age:
2. Gender:
3. Department
4. Job description:

QUESTIONS

1. As eThekwini municipality what effects does water theft around townships has on the economy of South Africa and also on eThekwini district?
2. How often do you hear about water theft around this area (Folweni Township)?
3. Are there any strategies put into place by the eThekwini municipality to curb water theft around Folweni township in particular?

APPENDIX 8: Interview schedule for the EThekweni Municipality personnel's (IsiZulu)



ISheduli Yokuxoxisana (UMnyango Wezamanzi weTheku)

Imibuzo yobuntu

1. Ubudala:
2. Ubulili:
3. Umnyango
4. Incazelo kaJobe:

IMIBUZO

1. Njengomasipala kaMasipala weTheku unamiphi imiphumela ukuntshontshwa kwamanzi ezungeze amalokishi kube nomthelela emnothweni waseNingizimu Afrika nasezifundeni zeTheku?
2. Kukangaki lapho uzwa ngokwebiwa kwamanzi kule ndawo (endaweni yaseFolweni)?
3. Ngabe akhona yini amasu abekwe ngumasipala weTheku wokunqanda ukweba kwamanzi ikakhulukazi elokishini laseFolweni?