

**WATER RESOURCE MANAGEMENT IN THE ERA OF FISCAL
AUSTERITY: AN EXPLORATION OF THE CHALLENGES OF
MANAGING THE RIETVLEI DAM AND CENTURION LAKE IN THE
CITY OF TSHWANE, SOUTH AFRICA**

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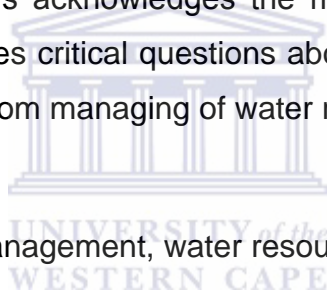
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ABSTRACT

The strain brought to bear on fiscal resources of municipalities in South Africa has had a negative effect on the ability by these municipalities to fulfil their obligations; that of delivering quality services to residents, especially the poorest of the poor. Inability to collect adequate revenue; the general hardships related to the global economic recession; competition over resources, all these form an interplay of factors that have a bearing on the City of Tshwane' ability to manage and deliver water resources. Successful efforts to maintain good quality water resources have not been balanced with the ability to increase access to poorer sections of the municipality. The lack of an integrated approach to the management of water resources, which should be guided by the Integrated Water Resources Management (IWRM) framework has led to a top-down and bureaucratic approach to the management of the resources, leading to both the exclusion of communities and other stakeholders. This thesis acknowledges the municipality's ability to manage quality issues. It however raises critical questions about ability to deliver services to the poor, and their exclusion from managing of water resources.

Keywords: fiscal austerity, management, water resources



DECLARATION

I declare that 'Water Resource Management in the Era of Fiscal Austerity: An Exploration of the Challenges of Managing the Rietvlei Dam and Centurion Lake in the City of Tshwane, South Africa' is my own unaided work. All sources, used or quoted, have been indicated and acknowledged by means of completed references. This thesis has not been submitted for a degree at another university.

Lekgantshi Console Tleane

November 2011

Signature



Supervisor: Associate Professor Mafaniso Hara (University of the Western Cape, South Africa)

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Many will agree that undertaking post-graduate studies while in full-time employment is one of the most challenging journeys. It is impossible to complete this journey without the support of those around you.

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Many thanks to my colleagues within the City of Tshwane who agreed to be interviewed for this study and assisted me with materials and information.

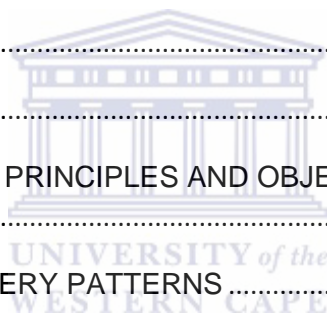
I dedicate this thesis to the memory of my late family members: elder brother, Oupa, and youngest sister, Pearl, who both passed away during their infancy; my younger brother, Fortune (2000), a gentle giant and always my pillar of strength; my mother, Margaret (2009), always supportive through thick and thin, especially for my studies; and my dad, Elias (2011), a great man who taught me life's lessons, and, as someone said, a saint. They might be departed physically, but they live in me.

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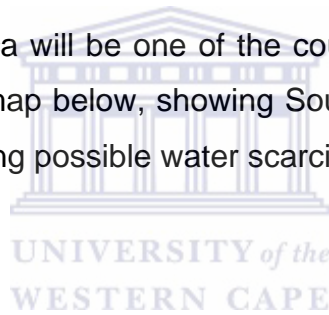
CHAPTER 1: INTRODUCTION TO THE STUDY AND OUTLINE

1.1 Context of the study

South Africa is ranked the thirtieth (30th) driest country in the world (Mtolo 2008). This is largely due to an uneven rainfall regime, combined with high evaporation rates and approximately nine-year wet and dry climatic cycles. Within these climatic cycles there is a level of unpredictability characterised by extreme weather conditions that range from droughts through to floods (ibid).

The country's average annual rainfall is estimated at 470 millimetres, which equals to almost half of the world average at 860 millimetres (ibid). Some have estimated that, as a result, 60% of South Africa is either semi-arid or arid (Nomquphu *et al* 2007).

It is projected that South Africa will be one of the countries that might face a major water scarcity by 2025. See map below, showing South Africa at the southern tip of the African continent, and facing possible water scarcity in 2025.



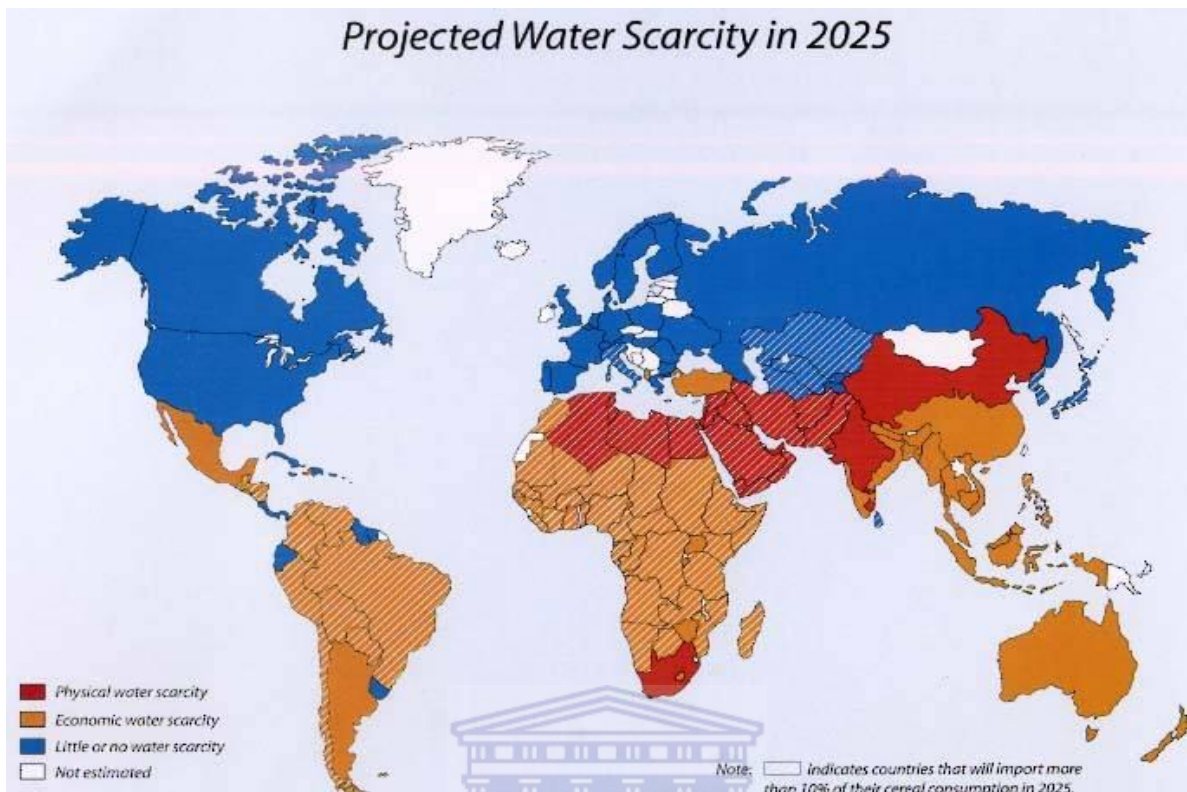


Figure 1: Projected global water scarcity in 2025.

Source: <http://www.watmunc.com/gb/map2025.htm>. Accessed 1 December 2011

Resource scarcity, with regards to water, has engendered a consciousness within officialdom to treat water as a valuable natural resource. To this end the need for the efficient management of water resources has been recognised by the government as being critical for a number of reasons.

Addressing the above point the former minister of water affairs and forestry¹, Lindiwe Hendricks, had this to say about the need to conserve water resources:

South Africa is classified amongst the driest countries by world standards. We have to therefore ensure that the water we have is protected from pollution, is conserved and used efficiently. This requires the careful management of this valuable resource so that we are able to ensure universal access to basic water services to every citizen (this is a basic human right in terms of our

¹ The department was called Water Affairs and Forestry at the time when Lindiwe Hendricks was the minister – 2006 till 2009. The name was changed after the 2009 general elections, to the department of Water Affairs

Constitution) whilst also meeting the needs of economic growth in a way that does not threaten the environmental integrity of our water resources. We constantly have to balance the increasing and competing demands on the country's limited water resources, ever mindful of the fact that water for social development, economic growth and environmental sustainability are all equally important for success and prosperity (Hendricks 2009).

South Africa's precarious water resource condition contrasts with the fact that it is the most powerful economy on the African continent, in many ways sharing similarities with a country such as the United Arab Emirates (UAE)² which is one of the fastest developing countries in the world and one of the countries with the highest income levels.³ Yet, within its relative wealth when compared to other African countries, a 2010 research paper titled *Trends in South African income distribution and poverty since the fall of apartheid*, released by the Organisation for Economic Cooperation and Development (OECD), suggests that inequality has risen between different racial groups, and also within the groups themselves, especially within the black population (Leibbrandt *et al* 2010).

The report by the OECD was released against the backdrop of a global recession that originated within and affected most developed countries. From the onset there were predictions that developing and under-developed countries would also be affected, largely due to their intricate trade links to developed countries (Massa and te Velde 2008). This held for many countries including South Africa. South Africa's political leadership maintained that the recession had had a negative effect, with the loss of 900 000 formal jobs during 2009, although the worst had been averted due to prudent fiscal policies (Zuma 2010; Gordhan 2010).

² The UAE is Middle East country which is a federation of seven emirates: Abu Dhabi, Ajman, Dubai, Fujairah, Ras al-Khaimah, Sharjah, and Umm al-Quwain. Abu Dhabi and Dubai are the two emirates known to many throughout the world, largely because of the oil and therefore wealth.

³ Source: http://en.wikipedia.org/wiki/United_Arab_Emirates (Accessed on 26 February 2012)

Fiscal policy has always been a highly contested terrain – at least within a democratic environment – and has been in South Africa since 1994 when the country held its first democratic elections after many years of apartheid rule.

Some analysts have long differed with the view that South Africa's fiscal policies are good for the country's development, arguing instead that the fiscal austerity measures that have been implemented largely since 1996 hold no bright future for the country (Heintz 2003; Bond 2005).

The alternative view – with regards to the macro-economic texture and landscape of the country – held by those on the left of the political spectrum, mainly trade unions and radical academics, is that the austerity measures that are part of the official Growth Employment and Redistribution (GEAR) fiscal policy (Department of Finance RSA 1996) have led to jobless growth (Vavi 2010). Others have however argued that instead of it being viewed simplistically as being on a jobless growth path, the South African economy has rather experienced poor employment growth (Bhorat 2004).

The above view makes it clear that debates around macro-economic policy choices remain heavily contested. This contest is beyond the scope of this thesis. What is of importance for this study though is how the fiscal austerity measures that are implemented under the broader rubric of the GEAR policy affect the management of natural resources in general and water resources in particular.

The GEAR policy outlines, amongst other measures, the need for the country to adopt and pursue austerity measures with the aim of achieving growth, and therefore employment and distribution (Department of Finance RSA 1996). The stated long-term vision of this policy is to build:

a competitive fast-growing economy which creates sufficient jobs for all work seekers; a redistribution of income and opportunities in favour of the poor; a society in which sound health, education and other services are available to all; and, an environment in which homes are secure and places of work are productive (Department of Finance RSA 1996).

The GEAR policy is a macro-economic framework that is viewed by many as having adopted the neo-liberal policies of fiscal austerity – the sub-text of this study – as opposed to the social democratic and therefore distributive thrust of the post-1994 Reconstruction and Development Programme (RDP) policy (Bond 2005).

It would seem though – taking a cue from the earlier observations drawn from the OECD study and both the 2010 State of the Nation Address by the state president, and the 2010 Budget Speech by the Minister of Finance – that the country is struggling to meet the first two objectives of the GEAR policy: creating employment and reducing the inequality levels. Equally, it would appear that the third objective, which is to create an environment where homes are secure and places of work are productive, has also been difficult to achieve (Zuma 2010; Gordhan 2010).

Whereas it may be too early to argue that the GEAR policy is a complete failure it is fair to make the observation that emerging data and accompanying analyses suggest there are challenges that have been brought on in part by the policy (Bond 2006). It is against this background that this study is located.

Central to this study is an examination of how fiscal austerity measures at a local government level may have had an effect on the management of water resources. Specifically, this study critically examines the extent to which the City of Tshwane is able, or unable, to provide water services to poor and vulnerable communities, using the Integrated Water Resource Management (IWRM) framework.

1.2 Background

The City of Tshwane Metropolitan Municipality – located within the Gauteng Province, South Africa – was founded on 5 December 2000 through the proclamation of the Gauteng Provincial Gazette (No. 6770 of 2000) and the North West Provincial Gazette (No 330 of 2000), both amended and provided for by the Local Government Municipal Structures Act, Act 117 of 1998. The new municipality

was an amalgamation of fourteen (14) former municipalities that were founded after the 1994 first general elections⁴.

The municipality's borders were expanded after the 18 March 2011 local government elections, when it incorporated the Metsweding District Municipality and its two constituent local municipalities – the Kungwini Local Municipality and the Nokeng tsa Taemane Local Municipality. This was done in terms of the 2007 Municipal Demarcations Board recommendation for the municipality's borders to be expanded (City of Tshwane 2011).

The above recommendation was implemented through the Gauteng Provincial Government Gazette (1866 of 2010), as amended, issued in terms of Section 12 of the Municipal Structures Act, Act 117 of 1998 (Gauteng Provincial Government 2010).

Tshwane is the capital city of the Republic of South Africa. For the purposes of this study the unresolved issue about the name of the city will not be addressed (Magome 2011). To this end the City of Tshwane shall be understood to be the registered name of the Metropolitan Municipality duly gazetted as above. Where required, Pretoria shall be used to refer to one of the cadastral areas within the City of Tshwane.

The City of Tshwane is a Category A municipality – in terms of Section 155.1.A of the Constitution of Republic of South Africa, Act 108 of 1996 – that is, 'a municipality that has exclusive municipal executive and legislative authority in its area'. It is one of six metropolitan municipalities⁵ in the country and, as indicated earlier, was established in December 2000 through the Municipal Structures Act, Act 117 of 1998, which outlines the executive and legislative competencies of different types of municipalities.

⁴ The fourteen (14) were: Greater Pretoria Metropolitan Council; City Council of Pretoria; Town Council of Centurion; Northern Pretoria Metropolitan Substructure; Hammanskraal Local Area Committee; Eastern Gauteng Services Council; Pienaarsrivier Transitional Representative Council; Crocodile River Transitional Council; Western Gauteng Services Council; Winterveldt Transitional Representative Council; Temba Transitional Representative Council; Mabopane Transitional Representative Council; Ga-Rankuwa Transitional Representative Council; and, Eastern District Council (Source: <http://www.tshwane.gov.za/AboutTshwane/Pages/default.aspx>. Accessed on 14 November 2011).

⁵ The others are: City of Johannesburg; Ethekewini Metropolitan Municipality; City of Cape Town; Nelson Mandela Bay Municipality; and City of Ekurhuleni.

The city covers an area of 6 368 square kilometres, making it the third largest metropolitan area in the world in terms of landmass – after New York and Tokyo/Yokohama (Ramokgopa 2011). It has the geographic coordinates 25° 40' 0" S, 28° 10' 0" E.

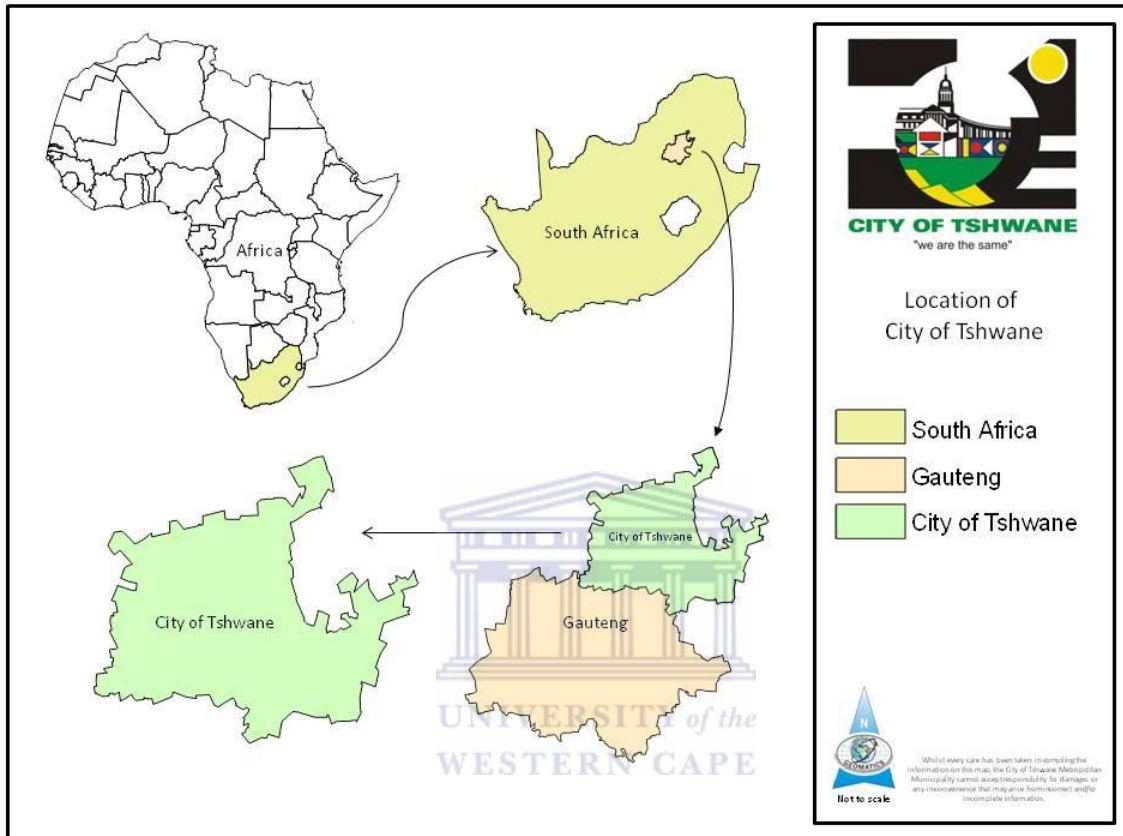


Figure 2: Location of the City of Tshwane.
Source: City of Tshwane City Planning Department (2011)

The municipality has a population of 2, 5 million residents, and a projected annual growth of 4.1%. The rapid population increase is due to high levels of immigration, which results in an increase of informal settlements. An estimated 26.8% of all households reside in informal housing (City of Tshwane 2011).

The population is scattered all over the municipal boundaries, with some of the areas in the East, especially those from the former Metsweding District Municipality being sparsely populated and comprising mostly of either agricultural or empty tracts of land.

On the other hand there is high density in the black townships of Atteridgeville, Mamelodi, Olivenhoutbosch, Soshanguve, Ga-Rankuwa, Ekangala, Zithobeni, Refilwe, Onverwacht, and Jakaranda Park.

These population patterns mirror levels of service delivery, especially in the areas of the provision of water, sanitation, and electricity. Refer to Addendum 2 for figures on service delivery backlogs within the municipality.

Addendum 2 in this thesis shows the levels of service delivery amongst Tshwane residents. These levels manifest themselves in racial terms in that all of the areas that are indicated as having backlogs are in the black townships, thus confirming the view held by some that class inequality in South Africa still manifests itself in terms of race, gender and geography (Kingdom and Knight 2004). The study therefore examines the extent to which the City of Tshwane manages its water resources to address the needs of its residents, especially the poorer sections of the community.

As a Category A municipality the city must manage its resources and generate revenue from the services that it renders to both businesses and residents. Water forms part of the resource base that the municipality must manage.

Apart from generating its own financial resources the city also receives grants from the National Treasury; the Municipal Infrastructure Grant, which must be used solely for infrastructure development; and some support from the Gauteng Provincial Government through its various departments (Municipal Infrastructure Task Team 2005).

1.3 Focus and aims of the study

This study seeks to explore the management of water resources by the City of Tshwane. Principally, it examines how the municipality manages its water resources in the current climate of fiscal austerity, imposed largely by the global economic recession on the one hand and the country's fiscal policies as encapsulated in the GEAR policy on the other. The municipality's inability to collect adequate revenue through municipal services is also examined. The study explores the interface of interlocking, competing and conflicting interests in the management of two sites within the city – Rietvlei Dam and Centurion Lake.

In terms of theoretical approach, with regard to water studies, the study uses the Integrated Water Resource Management (IWRM) approach. Through this approach water resources are viewed as an integral part of the ecosystem; as a natural resource; and as a social and economic good (Al Radif 2001). Against this understanding the quality and quantity of water resources determine the nature of utilisation. Correspondingly, the IWRM approach incorporates policy considerations that must be made or chosen for, and about the allocation and use of water resources (ibid).

The IWRM can in turn be viewed as an integral part of the broader Natural Resources Management (NRM) approach that adopts an integrated understanding and treatment of the ecosystem and the interface with human society as influenced by varied developments in the society (Bruschweiler 2003).

The theoretical framework of the IWRM approach is elaborated on in Chapter 2, while the applications or otherwise thereof are considered in Chapters 5 and 6.

1.4 Rationale and significance of study

Integrated Water Resource Management (IWRM) is proffered as one of the ways in which water resources can be used and managed for both consumptive and non-consumptive uses of water resources.

The dominant influence of this approach is reflected in the South African policy and legislative framework which influences the practice of water resource management in the country. The objectives of this approach are that: water should be managed in an integrated way; water should be managed at the lowest appropriate level, in this case at municipal level and, more importantly, at a community level; water allocation should take account of the interests of all who are affected; and, water should be recognised as an economic good (Calder 2005: 268).

Against the above theoretical background and perspective the study will seek to examine the application of water resource management approaches against the background of current challenges that might militate against effective management.

It is common knowledge that the world went through a global financial recession that found expression through the collapse – or near-collapse – of several European and United States' financial institutions – mainly banks and insurance companies. The effects of the recession were felt all over the world and had negative consequences on the ability of states to offer basic services.

It is again common knowledge that all spheres of the South African state – national, provincial and local – have felt the effects of the recession and that the recession has forced the state to introduce fiscal austerity measures in order that expenditure by the state organs can be contained to the minimum (Gordhan 2010).

The recession has significance for this study in that there is a strong link between the municipality's ability to raise revenue through rates and taxes and, on the other hand, the ability of both residents and businesses to pay such rates and taxes. This in turn has an effect on the municipality's ability to offer services, such as water.

Finally, it is common knowledge that all municipalities in the country experience the added challenge of not being able to collect adequate revenue from the resources that they offer.

As of 30 June 2011 – the end of June being the financial year end for local government in South Africa – metropolitan municipalities were owed a total of R36.6 billion by consumers (National Treasury 2011). This figure represents an increase of R6 billion or 19.7 per cent from the fourth quarter of the 2009/10 municipal financial year.

Of the above figure the City of Tshwane was owed R3.6 billion⁶. It is for this reason, it can be argued, that the City of Tshwane, like other metropolitan municipalities – as will be demonstrated later in Chapter 6 – is at times forced to borrow from financial institutions to augment its revenues.

On the other hand four related considerations emerge with regards to water resource management – water quantity, access, quality and affordability. In a collection of essays – which will be referred to again later in this thesis – writers Easter and

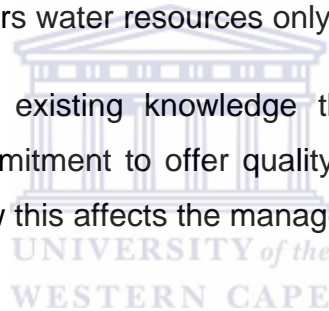
⁶ Figure provided by the City of Tshwane Finance Department to the author (30 November 2011).

Renwick (2004) highlight the centrality of water quality issues in the management of water resources.

There are contested claims about the quality of water in the city. It is an established fact that the in-stream that supplies the two sites – the Hennops River – suffers a great deal of pollution (Clements and Haarhoff 2004). Thus, issues of quality are central to the management of water resources in the municipality.

The municipality has an obligation to ensure a supply of quality water to the end-users, whether for consumption or non-consumption purposes. The study will examine how the municipality is managing this critical mandate against the backdrop of, and in the era of, fiscal austerity. This will be done through two case studies: the Rietvlei Dam, which offers water resources for consumption – household and industrial use – and non-consumption uses – recreational purposes for instance; and the Centurion Lake, which offers water resources only for non-consumption uses.

The study will contribute to existing knowledge through the exploration of the relationship between the commitment to offer quality water and the existing socio-economic challenges, and how this affects the management of the water resources.



1.5 Objectives of the study

The study has three main objectives. Firstly, it explores the impact of fiscal austerity on water resource management as caused by the interplay of the global economic recession, the country's fiscal policies, and the failure of the municipality to collect adequate revenue that can enable it to offer requisite levels of service delivery. Secondly it explores the impact of the austerity measures on two sites within the municipality – Rietvlei Dam and Centurion Lake. Thirdly, it examines the extent to which the municipality applies the principles and guidelines of the IWRM framework.

The study is therefore premised on the hypothesis that fiscal austerity has a negative effect on the management of water resources, especially on the provision of the resource to the poorest section of the society. In addition, the approach is that in order to effectively manage water resources for equitable and efficient service delivery the IWRM framework must be implemented.

1.6 Research questions

The following are major research questions that are explored:

- What is the impact of the fiscal austerity measures on the municipality's water resource management, and the municipality's ability to provide basic water services, especially for the poor?
- What are the challenges that the municipality has had to deal with in responding to the need to maintain water quality standards for consumption, especially from the Rietvlei Dam?
- What are the challenges that the municipality has had in dealing with and responding to the needs of the tourism and hospitality sector with regards to the use of water resources for non-consumptive – i.e. recreational and aesthetic – purposes, especially in the case of Centurion Lake?
- How is the municipality striking a balance between – what would be interlocking and yet competing and conflicting interests of fiscal austerity – the legislated obligation to provide water to the poor, and the use of water resources for recreational and aesthetic purposes?

1.7 Methodology

The study focused on two water resource sites – Rietvlei Dam and the Centurion Lake – that belong to and are located within the City of Tshwane. Qualitative research methods were employed (Neuman 2000).

Neuman states that researchers who use the qualitative approach ‘... emphasise conducting detailed examinations of cases that arise in the natural flow of social life. They usually try to present authentic interpretations that are sensitive to specific social-contexts’ (Neuman 2000: 122).

In applying the qualitative method the study examined the complexities of water resource management; test the responsiveness and value of stated national and

municipal policies; examine the congruence – or lack of – between policy and practice; and analyse the nature of relations between different stakeholders.

The data sources for the study included local and international literature on the subjects of fiscal austerity and water resources management, national and municipal policy documents, the municipality's Integrated Development Plans and annual budgets, newspaper reports, interviews, and field observation.

The literature study assists in establishing and gaining an understanding of existing theories and research findings from other studies. Having gone through the literature the student sought to test the arguments, claims, and observations made above against actual practice. Information about the latter was gathered using interviews, municipal document reviews, newspaper reports and field observations.

Detailed semi-structured interviews were conducted with a sample of respondents from within the municipality and the community. A purposive sampling approach was employed to identify respondents. Elements of a snowball approach (Neuman 2000: 122-200) were also employed as the research unfolded, especially in cases where some of the respondents mentioned or referred the student to other individuals who held crucial information.

The decision to choose the two case studies was informed by a number of factors. The first reason was that the two sites' water resources are being used for different reasons. As already indicated in the previous section, the Rietvlei Dam water is used for consumption – both domestic and industrial – purposes, while the Centurion Lake is used for non-consumptive – recreational and aesthetic purposes. As shall be demonstrated in Chapters 4 and 5, the lake was also constructed to address the problem of the wetland.

The second set of reasons for choosing these sites were informed by the nature of the two case studies. There are three dams within the municipality's boundaries that supply water for consumption purposes, these are: Roodeplaat, Leeuwkraal, and Rietvlei dams. While located within the boundaries of the municipality Roodeplaat

and Leeuwkraal are owned by the national Department of Water Affairs. The other dams, Bon Accord and Nooitgedacht, are not used for water supply.⁷

In addition to the above, the focus of the study is to examine water resource management by the City of Tshwane. This could not be done while focusing on dams that are not owned by the municipality. Rietvlei was therefore chosen for the study as it is the municipality's only wholly-owned major dam for water supply.

On the other hand, Centurion Lake was chosen for the study largely because it is the only artificial lake in the municipality. Another reason for choosing the Centurion Lake was the media attention drawn to it because of its deterioration. The site was also chosen so that the municipality's priorities in terms of water resource management can be examined; to determine whether their focus would be on – what is later in this thesis, Chapter 5 in particular, referred to as – elitist interests in trying to salvage the lake, or on supplying water to poor communities.

The aggregated data from the sources mentioned earlier – literature review, policy documents, interviews and field observations – was analysed by way of testing claims and arguments against existing knowledge, and reconciling converging viewpoints into solid statements and analysis.

1.8 Limitations of the study and an ethical statement

As a partial contribution to the fulfilment of the Master of Philosophy degree in land and agrarian studies this thesis has limited length. The issues involved are complex and cannot therefore be summarised simplistically; an attempt has been made though to ensure that even within the limited length of this thesis the most critical issues are still examined.

Three major ethical challenges were faced by the student. First, as a senior (executive) employee of the City of Tshwane the student is privy to internal

⁷ Information provided by Phillip van der Walt, Water and Sanitation division, City of Tshwane (28 November 2011).

discussions and documents that may be confidential in nature. Thus, the student had to sift through the materials and ensure that the confidentiality of the documentation and other internal processes were not compromised.

The second ethical consideration, which flows from the first one, is that the student did not struggle to gain entry to different sites and access to documents. The student had to ensure though that the integrity of the university in particular was not compromised; although he enjoyed easy access he still had to lodge the necessary applications so that the university would be protected.

Lastly, the student had to make sure that he remained independent of internal influences that might want the study to be positively biased in favour of the municipality. This is critical given the fact that the student is a senior executive employee for the municipality.

With regards to the actual scope of this thesis it must be stated that whereas the study touches on aspects of service delivery, especially for the poor, the focus was not on that subject. Instead, the focus was on how austerity affects or impacts the management of water resources. Consequential reference and arguments on service delivery must therefore be treated as an arising dynamic of enquiry and not a focus in and of itself.

1.9 Thesis outline

Chapter 1: Introduction to the study and outline.

Chapter 2: Water resource management in the era of fiscal austerity: A literature review.

Chapter 3: Contested policy terrains: water management in the era of fiscal austerity.

Chapter 4: Description of sites of study: Rietvlei Dam and Centurion.

Chapter 5: Research findings.

Chapter 6: Discussion and conclusion.



CHAPTER 2: WATER RESOURCE MANAGEMENT IN THE ERA OF FISCAL AUSTERITY: A LITERATURE REVIEW

2.1 Towards an understanding of fiscal austerity

The near-collapse of the Greece economy in 2010 led to the adoption as of austerity measures by that country's government. Similar measures were adopted by the Conservative Party government in the United Kingdom. Both developments happened in the year 2010 following the global recession. Through these turn of events the harsh realities of neo-liberal policies, especially austerity measures, have been brought into focus.

The above developments led to outpourings of anger on the side mainly of workers and students in the two countries (BBC 2010; Jessen 2010; Booth *et al* 2010).

Fiscal austerity measures are generally viewed, at least by those on the left, as part of a set of economic reforms known as structural adjustment programmes (SAPs), promoted by the two Bretton Woods institutions – the International Monetary Fund and the World Bank – as being necessary to take those countries with struggling economies out of their misery (Hammond and McGowan 1993; Danaher 1994; Mosley 1995).

Since the 1980s developing countries started receiving structural adjustment loans that often came with conditions that the recipient countries would have to implement and adhere to in order to continue receiving assistance.

An extensive body of literature exists that demonstrates that these loans have, instead of helping to rescue and grow the economies of developing countries, led to many failing to fulfil their citizens' needs (Bello 1994; Danaher 1999; Payer 1974; Payer 1982).

Central to the imposition of SAPs on most developing countries and with specific reference to fiscal austerity – including sub-Saharan Africa – are two arguments. The

first is that the state is in most cases a failed platform to initiate and lead development. The state is seen as being wasteful and therefore not the best vehicle to achieve developmental goals necessary to advance any country's economic growth. The conclusion is therefore that state intervention and investment is undesirable (Mengisteab and Logan 1995).

The second related argument is that the markets are in most cases best placed to bring about the desired development; better than the state. The pervasive logical conclusion of this argument is that privatisation is often the best option to achieve progress. In certain instances corporatisation, which means the management of state-owned agencies along commercial lines, is promoted.

One of the conclusions from the above arguments is that the state's allocation of budgets to certain sectors must be reduced (austerity) in favour of private sector investment.



2.1.1 Structural adjustment programmes as neoliberal path

Structural adjustment programmes are a component part of the dominant neo-liberal thinking and macro-economic policy regime. Margaret Little and Lynne Marks (2010) describe neoliberalism as follows:

Neoliberalism is a popular philosophy with roots in classic liberalism that prioritises economic growth over all other goals, emphasising privatisation, deregulation, marketisation, decentralisation, and fiscal austerity (Little and Marks 2010).

John Williamson, the political economist who coined the term neo-liberalism, identified some of its elements as including: maintaining a tight fiscal discipline – meaning austerity measures; liberalising financial controls until these are determined by the markets; privatising state-owned enterprises; and reducing regulatory barriers to enable foreign investment (Williamson paraphrased by Purdy 2004).

Fiscal austerity is therefore part of the broader overarching regime of neoliberal policies that are dominant in most countries, including South Africa. Some argue that these reforms have brought development in sub-Saharan Africa through the promotion of private sector involvement in development projects (Yeboah 2000).

Others however point out that what neo-liberal policies have done instead is to exacerbate poverty and inequality by allowing the profit motive of the market forces to reign supreme, while disabling states to intervene in development programmes (Sadasivam 1997).

2.2 Post-apartheid South Africa and fiscal austerity

The fall of the Berlin Wall and the collapse of the Soviet Union in 1989 ushered in a new era; an era that not only changed the macro-economic policies of Eastern European countries but also in all countries that might have had aspirations to follow a non-capitalist path (King 2000).

In South Africa the post-apartheid state turned into a sphere of contestation between those who had preferred a state-led economy and those who preferred a market-led dispensation (Bond 2005).

A simplistic view is to think that the contestation was going to be between those aligned to the apartheid state and capital on the one hand, and those aligned to the liberation movement and its constituent parts on the other. Yet, a critical reflection on the transition period from apartheid rule to a democratic state reveals a much more complex picture.

Some have argued that the African National Congress, which had emerged as the dominant component within the liberation movement during the 1980s and 1990s, was outmaneuvered by big business into abandoning social democratic ideals for post-apartheid South Africa and instead adopting neo-liberal policies. In turn, the ANC outmaneuvered components of the Left within the broader liberation movement

to emerge as the dominant party after the 1994 general elections, and to impose neo-liberal policies (Terreblanche 2002).

Said to have been led by former president Thabo Mbeki, the pro-capitalist group within the ANC triumphed over other tendencies. What emerged was, the resuscitation of the South African capitalist system, which was in crisis during the late 1970s through to the late 1980s, with a strong white base joined as it were by a small black elite group (Bond 2005). As Mbeki himself put it:

As part of a realisation of the aim to eradicate racism in our country, we must strive to create and strengthen a black capitalist class.... I would like to urge, very strongly, that we abandon our embarrassment about the possibility of the emergence of successful and therefore prosperous black owners of productive property and think and act in a manner consistent with a realistic response to the real world (cited by MacDonald 2004).

Reflecting on this growing phenomenon Pallo Jordan, a respected left-wing thinker within the ANC itself had this to say about the emergence of the black bourgeoisie:

Whereas in the past there were no captains of industry in the leading organs of the ANC; today an NEC [National Executive Committee] member leads one of the largest conglomerates trading on the Johannesburg Stock Exchange. This corporation, moreover, employs thousands of other ANC members as well as ANC supporters (cited by MacDonald 2004).

As shall be demonstrated later, the shift by the ANC towards a neo-liberal economic policy was influenced by a multiplicity of factors. One of those factors was the changed world political and economic geography. As William Smaldone notes ‘...the collapse of the Soviet bloc cast a long shadow over the option [of state-led economy] and the long-standing lack of internal debate on economic policy hindered socialists within the ANC from responding effectively to neoliberal hegemony in the 1990s’ (Smaldone 2007 [emphasis added]).

The negotiated settlement that led to the formerly banned component of the liberation movement, the African National Congress (ANC), winning the first democratic elections in 1994 demonstrated that ‘... (the) ANC leadership was ready to appease South Africa’s powerful conglomerates, US-dominated institutions such as the World Bank and the IMF, and the NP and move toward a free trade and privatisation model even if this policy met with criticism from Cosatu and other elements of its coalition (Smaldone 2007).

Others have termed the policy direction adopted by the post-apartheid state a ‘shift to the right’ of the political spectrum, away from the ANC’s social democratic policies of the early 1990s, while at the same time maintaining radical rhetoric; what political economist Patrick Bond terms ‘talking left, walking right’ (Weber 2002; Bond 2005).

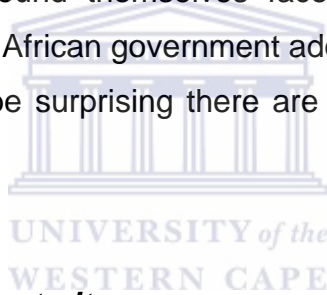
The question that has pre-occupied scholars and activists alike is as to the main reason, or reasons, why the post-apartheid government in South Africa – led as it were by the ANC that had historically advocated social democratic policies – adopted neo-liberal austerity measures while these were not imposed by multilateral institutions such as the IMF and World Bank, as happened in other countries.

The first reason that can be discerned from the literature is what has been referred to earlier, that is, Terreblanche’s argument that the ANC was outmaneuvered by big business into abandoning social democratic ideals for post-apartheid South Africa and instead adopting neo-liberal policies (Terreblanche 2002). This led to a shift to the right by the dominant element within the ANC. Bond (2005) chronicles how financial institutions and research organisations aligned to the free market thinking in terms of economic policy also played a critical role in swaying the ANC towards the neo-liberal way of thinking.

On the other hand Michael MacDonald (2004) makes the observation that ‘austerity packages usually are forced onto governments that are sinking in debt and are running out of options’, (MacDonald 2004). He elaborates on how countries are forced to adopt austerity measures. The author is quoted at length below as this captures the puzzle of why post-apartheid South Africa chose austerity measures:

Needing hard currency for imports, governments look to borrow money abroad, where they find that banks are loathe to throw good money after bad. The IMF then steps in, offering to give its open sesame to credit markets on condition that governments make certain structural adjustments. They must shrink budget deficits, adopt monetarist policies, and open trade, but mostly they must shift the locus of economic decision making from themselves to markets. In exchange for surrendering much of their authority over economic policy, governments get the loans they need. But they also get unwanted political problems. Their hands are tied by the IMF, just at the time when governments are forced to cope with a public angered by the loss of jobs, subsidies, and social spending (MacDonald 2004: 641).

Unlike other countries that found themselves faced up with the conditionalities imposed by the IMF the South African government adopted austerity measures on its own. Although this fact may be surprising there are several reasons why this path was chosen.



2.2.1 South Africa adopts austerity measures

The debt the post-apartheid government inherited was huge when compared to that faced by other countries (MacDonald 2004). What is surprising, and of course beyond the scope of this thesis, is that the post-apartheid government agreed to repay the debt incurred by the apartheid government, even though there were strong sentiments that the post-apartheid government was not supposed to honour the debt incurred by an illegitimate regime (Ashley 2003).

In his first budget speech (March 1997) the former finance minister, Trevor Manuel, advanced the following reason for the repayment of the debt:

The first charge against government revenue is interest on government debt. The bigger our deficit, the more we have to borrow, the higher the interest bill and the less money there is available to invest in social development, in poverty relief and

in the development of our human resources. It is for this reason that reducing our debt burden is important. It is important because it will free up the resources we need to create a better life for all (cited by Ashley 2003).

MacDonald (2004) advances two reasons why the post-apartheid government chose the neo-liberal economic path. First, the government accepted the neo-liberal economic logic; poverty is solved through growth, and growth in turn results from giving capital incentives to invest. Second, the government believed that the country would be better off adopting austerity measures on its own without such being imposed on it (MacDonald 2004).

It is possible that the unstated preoccupation might have been the notion of sovereignty, that is, choosing to 'do things on our own instead of such being imposed on us'.⁸

The other reason for the self-imposition of austerity measures had to do with anxiety on the side of the ANC leadership to secure the confidence of both local and international capital; South Africa would not go down the path of other African countries where states have failed. The country's economy would be managed along the lines of modernity (Purdy 2004).

There was a nationalist sentiment to the path chosen by the ANC. For the former president, Thabo Mbeki, the emergence of an efficient and prosperous black bourgeoisie managing a strong and prosperous economy would prove that black people could advance a modernist project (MacDonald 2004). This argument is of course contestable. It should not necessarily be the case that modernism is equated to a capitalist path.

Mbeki seemed to think that the black bourgeoisie and the black working class would have the same interest. By adopting the neoliberal policy of GEAR the South African

⁸ This point was in fact made to this student in a discussion with the former Minister of Education, Professor Kader Asmal, 1999. Asmal argued during that discussion that the ANC chose to adopt the GEAR policy on its own, instead of having SAPs imposed on it by the IMF and World Bank.

government might have wanted to resolve the 'dilemma' that Darko K Opoku (2008) highlights when he argues that the post-colonial leadership in Africa has failed to create conditions that are conducive to the emergence and prosperity of the African capitalist class (Opoku 2008). This argument however fails to acknowledge the classical analysis of the character of class distinctions and struggles in all societies throughout history; the nature of the relationship between the bourgeoisie and the working class is that of exploitation by the former of the latter (Marx and Engels 1998).

Recent research studies demonstrate that the expected support for the black bourgeoisie by the black working class based simply on historical links and racial solidarity is limited. The condition of wage labour, which is still largely black, suggests that this class still finds itself in a precarious condition after the demise of grand apartheid (Barchiesi 2008; Nattrass and Seekings 2001; Nattrass and Seekings 2001; Guy 2004).



2.2.2 Opposition to the post-apartheid neoliberal project

The above differences have led to the emergence of groups that challenge the state and capital, and often to tensions between them. Such struggles have often taken the form of demands for affordable water and energy – electricity – resources for working class communities, Soweto for instance (Wafer 2008).

Some are more critical of the policy shifts adopted after 1996; from the promises contained in the ANC's pre-liberation mission statement, the Freedom Charter (1955), through to the 1994 state's policy intention under the auspices of the Reconstruction and Development Programme, and finally to the GEAR policy of 1996. The latter policy is described as follows by Jeff Guy:

It advocated a conventional economic strategy whereby fiscal austerity, wage restraint, financial discipline, the reduction of corporate taxes, and the opening of the economy to capital flows would attract the foreign investment needed to

stimulate growth and increase employment. GEAR placed South Africa's macroeconomic strategy on a neo-liberal path (2004: 74).

The rhetoric of the post-apartheid state's leaders is often likened to that of some of the Latin American leaders during the 1990's who were said to use populism to mask their adoption and practice of '... neoliberal prescriptions for economic austerity and market-oriented structural adjustments' (Roberts 1996); what others, as already pointed out earlier, term a 'talk left, walk right' approach by the state (Bond 2004).

It is clear from the above that the economic policy trajectory followed, adopted and implemented by the post-apartheid government is that of neoliberalism. This would have a bearing on the management of water resources. In certain areas, such as in Soweto, the adoption of neoliberal policies and their effects on services such as the provision of water has led to vigorous protests against the state (Wafer 2008).

2.3 Water resources management and fiscal austerity

The importance and precariousness of efficient water resource management in the era of fiscal austerity is articulated by Postel when she writes:

Shrinking groundwater reserves, falling water tables, increased flooding and droughts, and water budgets that are badly out of balance are tangible indicators that the imperatives of efficiency and ecological integrity have been ignored (1992: 37).

This articulation is important in the case of South Africa, which, as shown in Chapter 1, has a low rainfall regime (Mtolo 2008). The two sites of the study fall within areas that do not enjoy high rainfall patterns.

Integrated Water Resource Management (IWRM) is proffered within mainstream water studies as the preferred framework for the management of water resources.

According to Biswas (2004), quoting from a 2000 Global Water Partnership report, the definition of IWRM that seems broadly acceptable is one that defines the approach as:

a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. (2004: 249)

The emergence of IWRM can be viewed as a response to the stresses that water resources came under as a result of the problems identified by the Global Water Partnership (Agarwal *et al* 2000). Perry and Vanderklein understand these stresses as ‘... significant shifts in ecosystem attributes or characteristics’ (1996: 289).

Urban water resources are often under stress (degradation) as a result of harmful chemical properties. As will be elaborated on in Chapter 4 the Centurion Lake has come under these stresses as a result of silt that has accumulated in the bed of the lake and has since led to degradation of the lake, and an inability of the nearby silt lake – into which the silt must be dredged – to receive more deposits.

While the situation at Rietvlei Dam is largely under control there have been instances, again as will be demonstrated in Chapter 4, when pollution had threatened the quality of the water drawn from the dam.

Budget allocations come out prominently as being critical for the maintenance of particular standards in the quality of water resources. Yet, as again demonstrated in this chapter and other chapters, there have been disturbing instances of budget constraints.

An inability on the side of the authorities to heed the warning with regards to the stresses that water resources come under often makes ‘... the consequences hit home sooner and more harshly’ (Postel 1992: 37).

In its attempt to provide solutions to the challenges of water resources management the IWRM programme is ambitious, if not at times ambiguous. This ambiguity can be located and understood within the tension that seems inherent in the way water resources must be managed in the face of the problems outlined below. This tension is articulated by Postel (2000) who captures its tension by making the following observation:

Two of water's most fundamental functions – its role as a prerequisite for life, on the one hand, and its use as a commodity or economic resource on the other – are increasingly in conflict (Postel 2000).

The two functions respond directly to the observation made in Chapter 1, which is that the state – in this case the municipality – has the constitutional responsibility to provide basic services. This service in turn is treated as a commodity that cannot be provided completely free but must be paid for by the users.

The IWRM approach is based on an attempt to address four problems that have been identified as a threat to water resources throughout the world (Agarwal *et al* 2000).

First, the IWRM approach acknowledges and seeks to address the problems that have been brought to bear on freshwater resources. Central to these pressures are: population growth; increased economic activity which requires amongst others, water resources and may in turn lead to the pollution of such water resources in the form of industrial waste; and, conflict over limited resources caused by improved standards of life.

The second problem that the approach acknowledges and seeks to address is the strain on the population, which, as pointed out above, is increasing while water resources decrease. On the other hand, according to the United Nations, the demand on water resources worldwide is said to have increased six-fold in the last century; twice the rate of population growth (Larson *et al* 2009).

Water resource management is also complicated by the migration of people from rural areas to urban areas which causes the densification of cities. Simply put, water resources cannot match increasing population numbers. In economic terms the problem can be said to be one of supply – of water resources – not meeting demand – increased population. The growth in population numbers in urban areas creates high demands on municipal water. In a study of Phoenix in the USA researchers found that commercial and industrial water uses remain high, while residential uses are even higher (Larson *et al* 2009).

The third problem is that of pollution of water resources from and by varied sources. This ranges from household pollution through to, and mainly, industrial waste pollutants.

Finally, and central to this thesis, is the problem of water management and governance. As demand, pollution and other variables go up so will the problems and challenges of managing the resources.



2.4 Addressing the challenges of water management

The above problems pose challenges that must be addressed. These are: securing water for people; securing water for food production; developing job creating activities; protecting vital ecosystems; dealing with the variability of water in time and space; managing risks; creating public awareness and understanding of water resource management issues; forging the political will to act on water resource management challenges; and, ensuring collaboration across sectors and boundaries.

For the purposes of this thesis we limit ourselves to only a few of the above challenges that are relevant to the topic at hand. The first one is securing water for people in general – for residential, industrial and recreational/aesthetic uses. The second one is the protection of vital ecosystems. The third is the management of risks thereby securing supply for the multiplicity of uses. The last is forging the political will to act on water resource management challenges.

2.5 Securing water for human use

Water resources for varied uses must be of a particular quality, as determined by water quality authorities. Therefore quality assurance is key to the management of water resources. For Perry and Vanderklein:

...water quality management serves largely as an intermediary or interpreter between any water body and its users, balancing the biophysical capabilities of the water resource against the multitude of uses that may affect it (1996: 2).

The emergence of the IWRM can be viewed as a response to the stresses that water resources come under as a result of problems identified by the Global Water Partnership (Agarwal *et al* 2000). Others understand these stresses as ‘...significant shifts in ecosystem attributes or characteristics’ (Perry and Vanderklein 1996: 289).

Urban water resources are often under stresses (degradation) as a result of chemical properties. In the case of the Centurion Lake the water has come under pressure because of silt and the effluent caused by deposits from the Hennops River (Mangcu 2010).

In the section below reference is made to the management of risk, especially security of supply. Here the emphasis is on quantity. It is important though to ensure that quality levels are also kept in check in order to minimise risks. Low quality levels lead naturally to displeasure on the side of consumers (Howe and Smith 1993).

Another critical aspect of water supply is what can be termed equity of supply. There might be differentials between some of the areas with regards to security of supply. These differences may be brought about by the water sources, between groundwater and surface water. The authors argue that an integrated system will lead to security of supply.

Integration is clearly an attractive option especially when considering issues of equity. The Rietvlei Water Treatment Works takes in water from various sources – the dam itself, boreholes and springs.

The question that needs to be asked is whether the Rietvlei Water Treatment Works supplies all districts in the City of Tshwane. If the answer is that it does not then that gives rise to a fundamental challenge of history, geography and class.

The challenge is the perpetuation of historical inequity between formerly white areas supplied by the dam and black areas. This takes the form of spatial inequity, that is, the difference between the centre – the Central District and adjacent suburbs – which will benefit from a secure supply, and the periphery, which are black townships that may be relegated to some form of second class citizenship.

2.6 Protecting the ecosystem

South Africa is estimated to be the third most bio diverse country in the world (Shackleton 2009). Water forms part of this biodiversity and therefore the country's overall ecosystem. Water resource management is crucial not only for livelihood but also for ecological security (Reddy 2002).

Environmental degradation, including that of water resources, is attributed by Van Eeden (2008) to a number of possible reasons. Those relevant to this thesis are outlined below.

First, the government is failing to implement the widely praised and acknowledged constitution of the country, read together with various Acts and Regulations that aim to preserve the environment to secure healthy communities. Second, government departments are either not well organised or strict enough to enforce the legislation. Third, local government (municipalities) do not always have the money or a mandate to address environmental concerns in a correct manner (van Eeden 2008). The latter point relates directly to the focus of this thesis, which is fiscal austerity.

2.7 Managing risks and securing water supply

One of the central features of the management of water resources is the reliability of supply. Howe and Smith (1993) argue that urban users have a sense of entitlement to reliable supply; this might be understood to be a mainly middle class preoccupation, because of its intellectual capital and access to resources such as the media. Groups such as the Soweto Electricity Crisis Committee, whose demands include water rights, have proved that working class groups can also assert their right to reliable water supply, albeit from an angle different from that of the middle classes (Wafer 2008).

Failure to meet the need for reliability of supply may lead to public disapproval of city administrations. This suggests that cities should have in place risk management systems. Howe and Smith (1993) refer to this system as 'hydrolic risks'.

From the above it is critical that one of the risks that need to be mediated is the reliability of supply. This must be for both short and long-term supply.

Howe and Smith conclude from a survey of residents in the three United States towns of Boulder, Aurora and Longmot that '... levels of reliability are pretty much in keeping with explicit calculations of system costs and customer preferences, even over the wide range of reliabilities represented by the three sample towns' (1993: 61).

Reliability of supply is intricately linked with the cost that consumers pay for water resources. In certain instances, as in the case of South Africa, especially within working class communities, the supply is linked largely to viewing and treating water as a right more than a privilege – a common good.

Irrespective of which class of consumer, demands are made to bear on water resources; it is imperative that risk management is incorporated as a component of the overall management of water resources.

While authorities must guarantee security of supply, consumers must, on the other hand, be willing to pay. This brings up a tension between water as a common good on the one hand, and water as a commodity that must be paid for on the other.

To address the above tension a distinction is drawn between *valuing* and *charging* for water. This distinction is captured as follows:

The value of water in alternative uses is important for the rational allocation of water as a scarce resource (using the 'opportunity cost' concept), whether by regulating or economic means. Charging for water is applying an economic instrument to affect behaviour towards conservation (Agarwal et al 2000).

As stated earlier, integration of water sources is important in order to mediate and mitigate the security of supply. This requires the introduction of conjunctive management of water resources.

In a study of Arizona, California, and Colorado in the United States Blomquist, Heikkila and Schalager (2001) postulate that the purposes of conjunctive management systems are to coordinate water resources in such a way that it reduces exposure to drought, to maximise water availability, to protect quality, and to sustain ecological needs and recreational values (Blomquist *et al* 2001).

Accordingly conjunctive management has the potential benefit of improving security of water supplies, reducing reliance on costly and environmentally disruptive water impoundment and distribution systems, and also enhancing protection of aquatic life and habitat (Blomquist *et al* 2001).

There are three major factors that make conjunctive management attractive. The first is the population growth that, as pointed out earlier, puts a stress on water resources. The second is the uncertainty of security of supply during certain periods of the year when rainfall is low. This is relevant for South Africa in general, and the City of Tshwane in particular, with its low rainfall patterns. The third are changes in

the tools and technology for diverting, storing and managing water supplies, and the rising costs when compared to strained budget allocations.

The latter point relates directly to fiscal austerity in the face of challenges that need to be addressed. In an attempt to address these challenges some proffer strategies on how to ensure supply.

The first strategy is pricing, meaning higher prices will discourage over-consumption. Postel (1992) argues that increasing user fees will decrease overuse of the resources. This view is supported by Brooks (2002) who argues that subsidising water resources encourages over-use and rewards waste. He goes further than Postel by arguing that, '...far from aiding the poor or politically weak, subsidies often and infamously favour the well-off and well connected' (Brooks 2002: 39).

What both Postel (1992) and Brookes (2002) fail to clarify and which is important is the fact that their proposal is based on the cost recovery model that is often criticised. This approach is seen by some as constituting part of the IMF and World Bank's measures that encourage austerity on the side of the state by promoting cost recovery (McDonald and Pape 2002).

The argument advanced in the above collection (McDonald and Pape 2002) is that cost recovery measures have often led to poor service delivery for the working class in South Africa. The major practical problem with cost recovery approaches, which, as we have argued above are part of the austerity measures, is that they are in direct conflict with two important imperatives of transformation in South Africa.

The first transformation imperative is the overall economic difficulties faced by both lower middle and working class households as a result of the economic recession, and therefore the need to ameliorate these difficulties. The second problem is that the policies of the post-apartheid government have been aimed, at least on paper, at ensuring that there are increases in access to basic services by the majority of the people. Of course there are contradictions and tensions between policy

pronouncements and implementation; what Bond (2004) terms the 'talk left, walk right' approach of the post-apartheid government.

The above suggests that there must be willingness to pay on the side of the consumers, which will in turn, as demonstrated earlier, lead to entitlement to security of supply. The second method is the non-price control such as regulating use by rationing consumption. This method is used for pensioners in the City of Tshwane, who are provided with water at a rebated amount but also receive lower volumes of supply.

2.8 Forging a political will to act on resource management challenges

The above challenges point to the need for political and administrative leadership to address them. Such leadership will be demonstrated at two levels. The first level is the policy environment and intent levels, where relevant policies should be put in place to guide resource management.

The second level should be the actual implementation and the attendant political and economic dynamics that affect the stated policy intentions. The policy environment is examined in some detail in the next chapter. What we examine in this section are broad theoretical arguments postulated by some authors.

For Brooks (2002) the importance of good management, and therefore the political will to act on resource management challenges, is seen as a compliment to two essential efforts.

The first element is the national and international programmes of resource management. The second level is the application of scientific findings and advises to develop and diffuse ways to increase efficiencies with which water is treated and used.

Sound management would have a system to raise early warnings of either shortage or contamination '...with recommended options for corrective action' (Brooks 2002:

41). As we demonstrate in Chapter 5 this point –early warning systems – is relevant in the case of Centurion Lake and raises the question as to whether there was any form of early warning system that could have allowed or alerted the authorities to the deterioration of the facility?

If such a system existed the next logical question should be to ask why there was no adequate and timely response to the warnings?

The final point regarding political will is that of allocation of resources. As demonstrated in Chapter 4, the municipality seems to not allocate adequate financial resources for the management of water resources. The decision on how funds are allocated rests with the Council of the municipality. This body is made up of elected public representatives – politicians – and is therefore a barometer of how water resource manage issues are viewed by the municiplaity.

2.9 Conclusion

In this chapter, the literature on fiscal austerity was examined. It is established that fiscal austerity measures are adopted and implemented by countries largely as a component part of structural adjustment programmes that are either imposed on countries – especially developing countries – or self-imposed by countries ,for various reasons.

It is also established that the structural adjustment programmes are part of the broader neoliberal macro-economic policies which are dominant in the 21st century and are a manifestation of modern capitalism.

The chapter argued that water resources management in the 21st century is influenced by the fiscal austerity approaches that lead to states either privatising or corporatizing water resources.

The next chapter examines where South Africa in general and the City of Tshwane in particular, are placed in terms of the above literature review findings. The water

management policy terrain of post-apartheid South Africa is examined within the context of fiscal austerity.



CHAPTER 3: CONTESTED POLICY TERMS: WATER MANAGEMENT IN THE ERA OF FISCAL AUSTERITY

3.1 What is policy?

It is important when analysing water policy in South Africa - its evolution and intention – that we start by outlining what policy is, and how we intend using that definition in this study.

In a 2004 study aimed at assessing the processes embarked upon to develop the South African water policy between 1994 and 2003 Christo de Coning and Tamsyn Sherwill define policy as ‘... a statement of intent’ (De Coning and Sherwill 2004: 8). They argue further that, ‘Policy articulates basic principles to be pursued to attain specific goals and actions’. As such, policy interprets the values of society and is usually followed by pertinent project and programme management actions related to implementation’ (Ibid).

In a paper simply titled, *What is Policy?* Sherri Torjman (2005) points out that there are different kinds of policies. The first is the substantive policy, which concerns itself with the legislation, programs and practices that govern and guide substantive aspects of a given issue that must be addressed by the particular policy. For the purposes of this study the policy must provide guidance on how water resources should be governed in the republic.

The second aspect of policy is the focus on administrative procedures that would, for the purposes of this study, outline what steps must be taken to ensure the governance of water resources.

There is then the horizontal and integrated policy-making, which may be developed or carried out by two or more organisations, or different parts of the same organisation. This is particularly important for this study. As already pointed out in Chapter 1, the governance of water resources is shared amongst the three spheres of the government in South Africa – the national, provincial and local levels.

Given the above the following observations by Torjman (2005) is applicable in the South African case and for this study in particular: ‘

Governments increasingly are focusing their efforts upon horizontal policy-making in recognition of the fact that many of the objectives they seek to achieve are complex and relate to the mandates of two or more departments, jurisdictions or non-governmental organizations.

Collaborative arrangements are being driven partly by the pressure to enhance performance and achieve measurable improvements in service delivery (2005: 6).

Lastly, Torjman (2005) argues that there are reactive policies and proactive policies. Reactive policies seek to address challenges brought up by some crisis or another, whereas proactive policies seek to address those challenges that are not yet manifest but are anticipated to arise in the future.

The fact that South Africa is one of the driest countries in the world can be said to be a crisis that water policies for the country must address reactively. On the other hand, the need to avert future challenges, such as anticipating the effects of climate change on the future availability of water resources, can be said to lead the government to develop the kind of policies that must take the future of these resources into account.

Overall water policies must, for them to satisfy the strictures of policy as articulated by De Coning and Sherwill (2004) and Sherwill (2005), have the following features: they must have a clear intent; they must articulate substantive and administrative aspects; they must be both horizontal and integrate efforts at national, provincial and local levels; and lastly, they must be both reactive and proactive in character and content.

In practice, policy takes different forms. In the South African context in general, and the City of Tshwane in particular, policy would take the form of Green or White Papers, which outline the broader political intentions of the government of the day, influenced as it were by history, socio-economic factors, international conditions and any other relevant factors; legislation in the form of national acts of parliament or provincial ordinances; regulations that can be issued by the executive arm of government – that is, different ministers; and by-laws, Integrated Development Plans and business plans that are passed and adopted by municipalities.

3.2 Locating water management within the broader policy and legislative framework

The Constitution of the Republic of South Africa, Act 108 of 1996, makes provision for the coexistence of three spheres of government. Section 40(1) of the constitution states that ‘... government is constituted as national, provincial and local spheres of government which are distinctive, interdependent and interrelated’.

As a local sphere of government the City of Tshwane must, in terms of Section 152(1b) of the constitution ‘...ensure the provision of services to communities in a sustainable manner’.

The municipality is – in terms of the Local Government Transition Act, Act 209 of 1993, read with the Water Services Act, Act 108 of 1997 – a water services authority. This means that the municipality has the responsibility to ensure access to water resources within the area of its jurisdiction.

In terms of the law the national and local spheres of government are responsible for the governance and provision of water resources respectively. The national government acts as a trustee on the ownership of water resources, which are, in terms of the White Paper and the Water Services Act, a common good (Department of Water Affairs and Forestry 2000 [first edition]).

Water resources cannot be owned by any entity other than the government, in most cases the national and local spheres of government - on behalf of the people of the

republic. Instead, the right to ownership is substituted with *user rights*, that is, the right to use water resources under conditions stipulated in the National Water Act, Act 36 of 1998. This arrangement is examined here within the interplay of international, national and local policies.

In terms of the National Water Act, users who do not receive their water supply from the local authority – meaning a municipality that has the capacity to supply water resources to residents and businesses; the different water boards; irrigation board; government water schemes; or other sources, must apply for a water use license.

3.3 International Water Policy Environment

On October the 1st 2010 the United Nations Human Rights Council declared that the right to water and sanitation is contained in human rights treaties and is therefore legally binding. This means that states have the primary responsibility to ensure the full realisation of this and other basic human rights (United Nations 2010).

By adopting this position the United Nations was therefore framing an international policy that must influence and guide national policies on water resources, and how they must be understood and treated in relation to humanity.

According to the United Nations (2010), ‘almost 900 million people worldwide do not have access to clean water and more than 2.6 billion people do not have access to basic sanitation’. This shows the extents to which water resources are either scarce or how large sections of the world population are denied access to clean water.

Global water policies are coordinated through the United Nations Water (UN-Water), a network within the United Nations framework that coordinates other organs of the world body to provide guidance on water resources management. While not an implementing agency but a network, UN-Water works closely with and seeks to influence other implementing agencies of the UN fraternity, such as the World Health

Organisation, the Food and Agriculture Organisation, the UN Development Agency, and the UN Educational, Scientific and Cultural Organisation.⁹

Four key principles must be considered for the sustainable employment of water resources as central features of human existence. These are: water should be seen and treated as an essential factor in the production of any good; that consumption and production patterns have considerable impacts on overall water resources availability, quality and use; that global trends point to increasing consumption due to population growth and changes in consumption patterns, in particular related to food and energy; and, that water recycles through the hydraulic cycle, but that there is a finite amount of good quality water available for use (UN-Water 2010).

At a policy level UN-Water advocates the Integrated Water Resources Management (IWRM) programme as the ideal approach and method to managing water resources.

3.4 Towards an understanding of IWRM as international water policy

Apart from the UN Water network, and in fact within it, the World Bank also has an influence on water policies. Other multi-lateral organisations that have a direct or occasional interest in water management include multi-stakeholder organisations such as the World Water Council and the Global Water Partnership, which also influence water policies.

What is known about these organisations is their reflection of and commitment to an ideologically slanted world-view which is largely influenced by the post-1989 free market triumphalism.

⁹ Unlike other UN bodies such as the UNDP, FAO and others, UN Water is largely a network whose main thrust is carried out by other organisations such as the World Bank, Global Water Partnership, philanthropic organisations and national governments. Reference to UN Water in this thesis should therefore be understood within this context. Nonetheless, some of the texts produced by the network are valuable and hence it (the network) is referenced, despite the fact that the prominence of this network has declined, apart from the production of reports

Almost all documents prepared for policy makers by UN-Water advance the IWRM as the undisputed and '...empirical concept that was built up from the on-the-ground experience of practitioners' (Hassing *et al* 2010).

Integrated Water Resource Management (IWRM) is proffered as one of the ways in which water resources can be used and managed for both consumptive and non-consumptive uses of water resources.

The dominant influence of the IWRM approach is reflected in a number of jurisdictions, including the South African policy and legislative framework, and therefore influences the practice of water resources management in the country.

The key principles of the IWRM, also known as the Dublin Principles, following the International Conference on Water and the Environment in Dublin, Ireland, January 1992, are as follows:

- Freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment;
- Water development and management should be based on a participatory approach involving users, planners and policy makers at all levels;
- Women play a central part in the provision, management and safeguarding of water; and
- Water has an economic value in all its competing uses and should be recognised as an economic good (Hassing *et al* 2010).

The dominant influence of this approach is reflected in the South African policy and legislative framework, and therefore shapes the practice of water resource management in the country. The objectives of this approach are that: water should be managed in an integrated way; water should be managed at the lowest appropriate level, in this case at municipal level; water allocation should take account of the interests of all who are affected; and that water should be recognised as an economic good (Calder 2005: 268).

Whereas the concept of IWRM is subject to varied interpretations, the description that seems to capture the essence of this approach best and which also seems most relevant for the study is one proffered by Ken Conca (2006). He posits that:

As a conceptual approach to water problems, planning and practice, IWRM typically stresses three interrelated themes: recognition of the full range of social, economic, and ecological uses of water; “cross-sectoral” water management, in the sense of integrated planning and practices related to agricultural, industrial, municipal, and ecosystem or in-stream demands for water; and water management at multiple scales and levels, in the sense of coordinating local, regional, national, and transnational practices and institutions (Conca 2006: 124).

Conca (2006) further notes that IWRM evolved from being an expression of frustration by water planners and managers into the dominant language in which the challenge of water governance is framed. To this end IWRM has emerged as a political force, defining as it were, the global water management policy landscape.

3.5 Locating international water management policy advise within the macro-economic policy – a critique

Like all theories the IWRM is not without its criticisms. Some view this approach as being underpinned by neo-liberal principles (Mollinga *et al* 2006: 2). In addition, the approach is seen as being pro-privatisation of water resources, and also neglecting key environmental and ecological issues (ibid).

The criticisms that have been levelled against the IWRM framework thrust into the fore socio-economic and political questions that the study seeks to address. First, the integrated approach in water use is fundamental to the study. For instance, in the case of Rietvlei Dam the water is used by the municipality for both consumption purposes, that is, industrial and domestic use, and for non-consumptive use, that is, for biodiversity purposes as part of the Rietvlei Nature Reserve.

On the other hand the water at Centurion Lake is used exclusively for non-consumptive purposes, that is, for recreational use as part of a ‘broad aesthetic

enhancement of the area', around which there are shopping complexes and hotels. There are some who would want to argue that Centurion Lake also serves the purposes of regulating a wetland (See Chapter 5 for this argument).

In a collection of essays/journal articles writers Easter and Renwick (2004) note two fundamental pressures on water resources. The first is that population growth increases demand for water. This demand renders water to become a finite resource that can become scarce if not properly managed. In the context of South Africa, which as we have already demonstrated in Chapter 1 is a dry country, the increased demands on water resources cause an extra strain to the resource source.

The second observation made in the above publication is that there is considerable deterioration of water quality as a result of the urban, industrial and agricultural population which reduces usable water supplies (Easter and Renwick 2004).

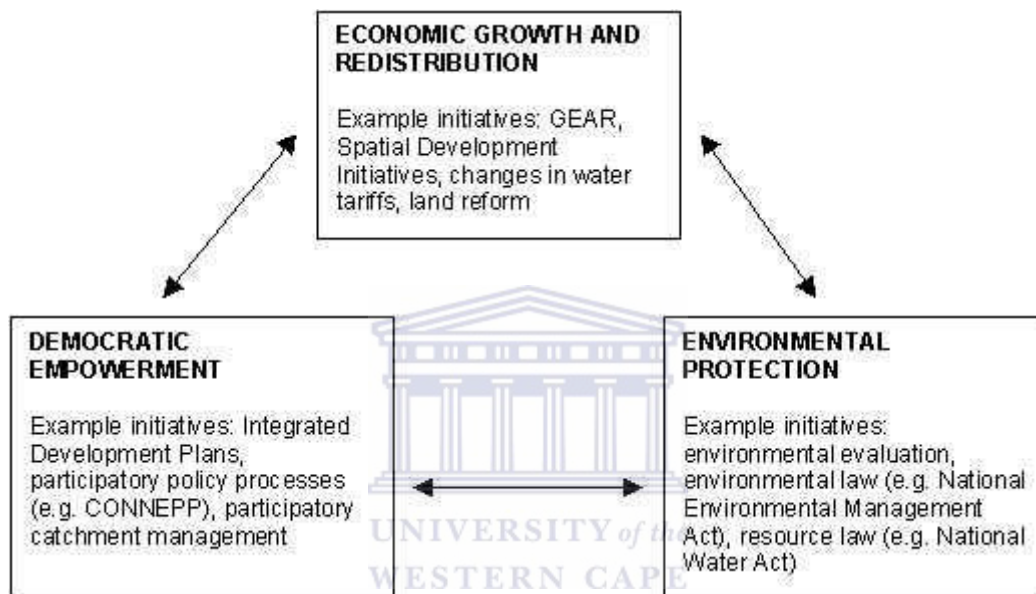
The deterioration of water quality is critical for the case studies of Rietvlei Dam and Centurion Lake. In the case of Rietvlei Dam the water quality is a fundamental criterion that is legislated in terms of the National Water Act, which stipulates that the quality of water should be of an acceptable level of scientifically tested standards, especially for human consumption.

For the Centurion Lake the water quality should meet mainly the aesthetic needs for the environment. As shall be demonstrated in the next chapter the quality of the water in Centurion Lake has, correctly so, attracted considerable attention and criticism, especially in the media. This has placed immense pressure on the municipality to address the problem as it presents itself. As shall be demonstrated, addressing the problem requires increased budgetary allocations, something that the municipality is finding difficult to address given the many competing priorities that have to be addressed.

The fundamental question that the IWRM has to answer is to what extent these pressures are made to bear without a resort to privatisation as an option. As in other cases, especially the provision of basic services, the policies relating to access to water would be affected and influenced by the prevailing macro-economic policy. The latter policy is a confluence of, and an attempt to, reconcile reconstruction and

development imperatives on the one hand, and the need to grow the economy within the contracting national and international fiscal environment, represented by the GEAR policy.

Ralph Hamann and Tim O’Riordan (undated) postulate what they term a triple helix of South Africa’s sustainability initiatives that show the link between macro-economic policy, efforts to protect the environment, and the democratic empowerment processes. The figure below illustrates the formulation.



Source: Ralph Hamann and Tim O’Riordan (undated)

3.6 South African water management policy terrain

The dominance of the IWRM as a conceptual framework is reflected in the South African water policy and legislative sphere. Both Conca (2006) and Wouters (2007) note the heavy influence of the IWRM framework on the post-1994 policy landscape in South Africa, starting with the 1997 White Paper on National Water Policy, through to the National Water Act 36 of 1998 and the Water Services Act 108 of 1997.

Central to the water policy in South Africa are three fundamental objectives on the management of water resources in the country. These are grounded in the Bill of Rights of the Constitution of the Republic, Act 108 of 1996.

The first objective is the achievement of equitable access to water, and the need for these resources to benefit as many people as possible. Second, water resources must be used in a sustainable manner. This means that there needs to be a balance between water availability on the one hand and legitimate water requirements on the other. Third, there must be efficiencies and effective ways of managing the water resources in order to optimise social and economic benefits (Department of Water Affairs and Forestry 2004).

3.6.1 *The White Paper on Water Resources*

Inherent contradictions emerge when considering the contents of post-apartheid water policies. Whereas there is general consensus that the post-apartheid water policies have allowed the country to move considerably towards increased access and better management there is reason to put under scrutiny some of the implications contained in the policies.

The 1997 White Paper on a National Policy for South Africa outlined the guidelines on which water resources would be governed (SA Government 1997). The White Paper sets out a number of principles, in the form of proposals that inform the South African government's policy approach. This thesis will not consider all of them. See Addendum 1 for all the principles.

Taken collectively the following can be summarised from the principles as the overall approach with regards to water resources management in South Africa. First, the principles emphasise the sole ownership of water resources by the state, on behalf of all the people of the republic. This means that, on the face of it, there can be no private ownership of water. However, as we illustrate below, there is, beneath the veneer of public ownership aspects of corporatisation and commercialisation.

For McDonald and Ruiters (2005) traditional notions of privatisation are sometimes hidden when considering recent methods to include the private sector in the ownership or management of water resources. Whereas the traditional understanding of privatisation is that of the state divesting its interest from the

ownership of resources, by selling them, new emergent methods involve other approaches that are slightly different from the traditional modes (McDonald and Ruiters 2005: 11-14).

What has instead emerged is the move towards corporatisation, commercialisation or marketisation. These interventions are driven mainly by arguments that the state faces a fiscal crisis and therefore needs to recover costs by selling water (ibid).

According to McDonald and Ruiters (ibid), the perceived crisis of the state gives rise to the adoption of marketisation policies.

The central argument here is that water marketisation is both widespread and influential and is being driven primarily by the structural demands of local and international capital and the continuing fiscal crisis of the state (2005: 11).

In the case of the City of Tshwane the manifest expression of the above policy choices were the corporatisation of some of the water resources in the form of contracting a state-owned corporation, Magalies Water, to manage some of the resources in the north-eastern parts of the city, namely the Hammanskraal and Temba areas, and the retention of the municipal entity, Zandspruit Water, to provide water in the north-western parts of the city, namely the Mabopane, Ga-Rankuwa and Winterveldt areas (McInnes: 2005).

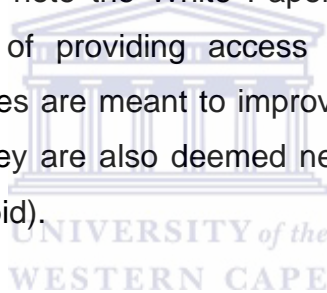
The Rietvlei Water Treatment Plant is wholly owned and managed by the City of Tshwane. It is therefore not corporatised. However, it can be argued that the water resources produced for both domestic and industrial consumption and coming out of the plant are, in many ways, marketised.

The same can be said about the use of water resources in the case of Centurion Lake, which, while used for aesthetic purposes and should therefore be understood to be for residents' free recreational benefits, is instead linked to a commercial enterprise, a shopping mall – the Centurion Lake Mall – and adjacent hotels.

Marketisation is used in this study to mean ‘...policies and practices that present municipal services as economic goods or commodities, not as entitlements’ (Kelly and Ntlabati 2007: 1). The latter authors argue further that, ‘Marketisation does not exclude life-line water supply. What it means is that any amount of water used over this minimum “life-line” amount are charged at market-related rates, i.e. on a cost recovery basis’ (ibid).

The marketisation of water from the Rietvlei Water Treatment Plant, as a contribution to the overall city water supply, is in the form of the rates that residents have to pay. These are increased on a yearly basis and are formulated in such a way that the city would generate revenue out of selling water to residents and businesses.

The above is enabled by the principle built into the water policies. As Ralph Hamann and Tim O’Riordan (undated) note the White Paper indicates that users must be charged the financial costs of providing access to water. Hamman and Tim O’Riordan add that the ‘charges are meant to improve the financial sustainability of water supply services, and they are also deemed necessary to encourage prudent exploitation of the resource’ (ibid).



It can be argued that it is this provision which – in the era of fiscal austerity where the state needs to recover costs – that allows for municipalities to sell water on a cost recovery and revenue generation basis.

The second principle is that user rights will be within the broad parameters of water remaining a common good. This principle is clearly in contradiction with the practice as illustrated above.

For Peter McInnes (2005) the City of Tshwane embarked on a move to corporatise water services. This was in the form of the outsourcing of services to Magalies Water and Zandspruit Water respectively, as indicated earlier.

McInness (ibid) argument must however be treated with a qualification. First, whereas it remains largely true on the whole, that is, overall water management by

the municipality, the reality is slightly different for the Rietvlei Water Treatment Plant, which, as we have pointed out already, is wholly owned and managed by municipal officials. Secondly, the municipality was, at the time of concluding this study (November 2011), reconsidering the relationship with Magalies Water. In fact, the municipality's Mayoral Committee – the equivalent of a cabinet – took a decision to terminate the contract with Magalies Water, due largely to dissatisfaction with the services rendered by the company.¹⁰

The third principle established by the White Paper is the acknowledgement that water is a finite resource and therefore measures must be taken to conserve it. There is very little, if any, contention with this observation. It is however safe to say that for others the fact that water is a finite resource is not supported by two contrary actions. First, the actions of the elites who treat water as a commodity to satisfy their aesthetic tastes – as in the case of the Centurion Lake – even though this may lead to actual waste of municipal resources. Secondly, the fact that – as observed in a number of articles in McDonald and Ruiters (2005) – there are increasing inequalities brought about by the commodification of water resources.

The fourth principle established by the White Paper is that there must be a balance between water resources for human consumption and non-human consumption. Again this principle is not in dispute. However, as shall be demonstrated in Chapter 5, in practice there is a tension between the need to manage water resources for basic needs on the one hand – as in the case of Rietvlei – and the desire to employ water resources for elite aesthetic wants.

The fifth principle established by the White Paper is that the government should, as the custodian of water resources, maintain, develop and protect the resources, and ensure that both the quantity and quality of the resource are safeguarded. This is

¹⁰ Mayoral Committee meeting held on 3 August 2011 in Bronkhorstspuit. The committee took a decision after a presentation titled *Extension of service delivery agreements with Magalies Water*, presented by the Water and Sanitation division. The presentation offered as one of the options the termination of the Magalies Water contract and the complete takeover of the Temba Water Treatment Plant by the Water and Sanitation division. The author of this study attended the meeting in his capacity as an Executive Director within the municipality. The process was still underway at the time of concluding this study (November 2011).

done against the backdrop brought to bear by the contradictions of a market economy in the era of fiscal austerity.

3.6.2 City of Tshwane Water Policy

For its part the City of Tshwane seems to concern itself with practical implementation of policy. This brings the assumption that this component of the local government sphere is content with policies that have been developed by the national government.

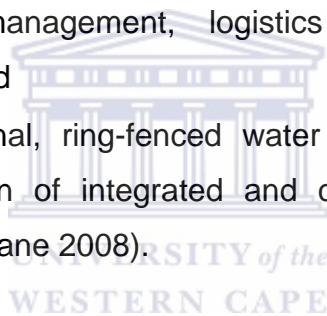
For the purposes of this study we will focus on the 2008/09 Water and Sanitation Business Plan of the City of Tshwane, as an illustration of policy and its implementation at local level. The purpose of this plan reads in part, as being to:

...document a cohesive frame of reference for strategic, tactical and operational management ... *(of water services in response to and within the context of)* a very complex domain of management because of the increasing demands of government at national, provincial and local levels for the redress of inequalities in service delivery to the previously disadvantaged communities in municipal areas (City of Tshwane 2008 [*emphasis in parenthesis added*]).

This business plan outlines what must be done in order that the municipality may achieve the goals set out in the national policy. The plan sets out the following strategic objectives, against which the water management capacity of the municipality must be measured:

- To provide an adequate supply of bulk water on a continuous basis in an economic, effective and efficient manner, and at an acceptable quality and price to satisfy the needs of our clients;
- To distribute potable water in a sustainable, effective and efficient manner to the satisfaction of our clients, stakeholders and communities in accordance with their expressed needs;

- To improve access to water and sanitation facilities for the satisfaction of essential needs of water consumers in Tshwane through effective and efficient planning and implementation of new water and sanitation infrastructure;
- To recover and treat waste water in an effective and efficient way, and to dispose of all by-products from treatment processes in accordance with legally prescribed standards to prevent pollution of the environment;
- To have satisfied customers that prosper in a sustained, safe and healthy environment through professional education, development, promotion and communication about the provision of water and sanitation services and effective utilisation of water services;
- To maintain high standards of governance, management and administration in the divisional organisation through compliance with all appropriate statutory requirements and "best practice" operations management, human resource management, finance management, logistics management and general administration services; and
- To establish an operational, ring-fenced water and sanitation business unit internally for the provision of integrated and coherent service delivery and management (City of Tshwane 2008).



As stated in the previous and forthcoming chapters, water management in the municipality is influenced by factors other than simply water science factors of quality, or lack thereof. Relevant to this study is the fact that the management of water as a natural resource is subject to fiscal management factors. These factors are again reflected on in the business plan itself, thus demonstrating that the municipality is honest about the challenges that faces it.

The business plan notes the following challenges, out of which can be extrapolated fiscal austerity measures that affect water management:

- The CoT is subject to major growth and development, at a rapid pace, which broadens the tax base of the city. This growth and development has a major impact in terms of required operation and maintenance responsibilities and capabilities of water and sanitation infrastructure.

- The tempo of development is constantly resulting in new and additional infrastructure being taken over as municipal infrastructure, which naturally results in a constant increase in workload since this infrastructure also needs to be operated and maintained on a sustainable basis. However, no provision is made for additional personnel to enable the Water and Sanitation Division to address the ever increasing workload.
- The average age of the workforce – ‘physical labour’ related – is another point of concern. It needs to be emphasised that an aging workforce will, obviously, not be able to maintain the same outputs and performance levels as that of a younger workforce.
- Reactive crisis management is increasingly becoming the ‘standard’ modus operandi. This is a major concern, especially since available managerial and supervisory staff are ‘forced’ to be much more involved with operational issues and duties rather than focusing on what they are in actual fact appointed for, and expected to do (City of Tshwane 2008).

The net effect of these factors on the provision of an efficient water management regime is captured in the business plan as follows:

A negative result of this is that preventative maintenance is being neglected or not being attended to at, service delivery and quality of service are impacted upon, mistakes are being made, effective communication is deteriorating, supervisory and other important tasks are not attended to adequately, negativity, “burn-out” and de-motivation of staff are setting in (Ibid).

The above provides evidence that water management in the era of fiscal austerity is faced with major challenges. The following are the possible reasons why. Firstly, the growth and development experienced by the municipality, and the demands on the infrastructure, as pointed out in the above challenges; mean that there needs to be increased financial allocations in order to cope with the demand. The second reason is the fact that the ‘ageing’ and retiring staff is not adequately replaced with new and young staff members who would be better qualified given modern scientific

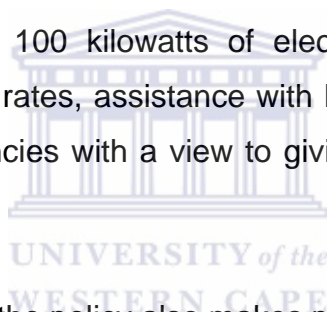
knowledge that they would have acquired in tertiary institutions. The challenge or failure to recruit more staff members – scientists – is elaborated in Chapter 5.

3.7 City of Tshwane indigent policy

In an attempt to fulfil its constitutional obligations of providing services to residents, and addressing the huge levels of poverty as shown in Addendum 2, the municipality developed an Indigent Policy. The policy was adopted by council in May 2009 (City of Tshwane 2010).

The policy aims at assisting poor families that are not able to fully provide for themselves. The threshold to qualify for the services is that a family should not be receiving a joint income of R1700 per month.

The services offered include 100 kilowatts of electricity per month, free refuse removal, zero tax on property rates, assistance with burial or cremation, and linking with state social security agencies with a view to giving destitute families access to social grants.



For the purposes of this study the policy also makes provision for water resources for indigent households. Indigent households must receive up to 12 kilolitres of water per month; the family must then pay for services once this threshold has been exceeded.

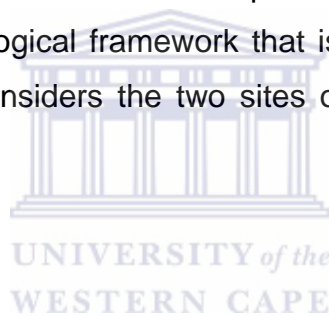
The policy on water provision has received a considerable amount of attention from social activists and radical academics. The argument by some is that the provision of free basic services has failed to take into account the actual needs of communities. Instead, the cost recovery model has been privileged over providing services to the poor. The argument has been that 12 kilolitres of water per household is not enough (McDonald and Pape 2002). Others have argued that water security has not been achieved in South Africa (Reddy 2002).

The municipality's attempt to offer free basic services is further considered in Chapter 5, where it is observed that there has been a disconnect between policy on the one hand, and practice on the other.

3.8 Conclusion

The arguments presented in this chapter demonstrate the contested and complex nature of the water resources policy landscape. Policy is not only influenced by the need to maintain high scientific standards of water quality. Neither is water resource management policy only influenced by the need to preserve water as a common good.

What has emerged is that water resource management policy is influenced also by the national and international macro-economic policies of the time, which is itself a reflection of a dominant ideological framework that is characterised by free market thinking. The next chapter considers the two sites of the study and how they are affected by these policies.



CHAPTER 4: DESCRIPTION OF SITES OF STUDY: RIETVLEI DAM AND CENTURION LAKE

4.1 The Rietvlei Nature Reserve¹¹

The Rietvlei Dam is situated inside the Rietvlei Nature Reserve, south-east of the Central Business District (CBD) of the City of Tshwane. The reserve itself developed out of the Rietvlei Water Scheme. There was therefore an organic growth between the two. The Reserve is said to be one of the world's largest urban nature reserves and occupies 3 800 hectares of land south of the central business district of the City of Tshwane. It lies 1700 metres above sea level.

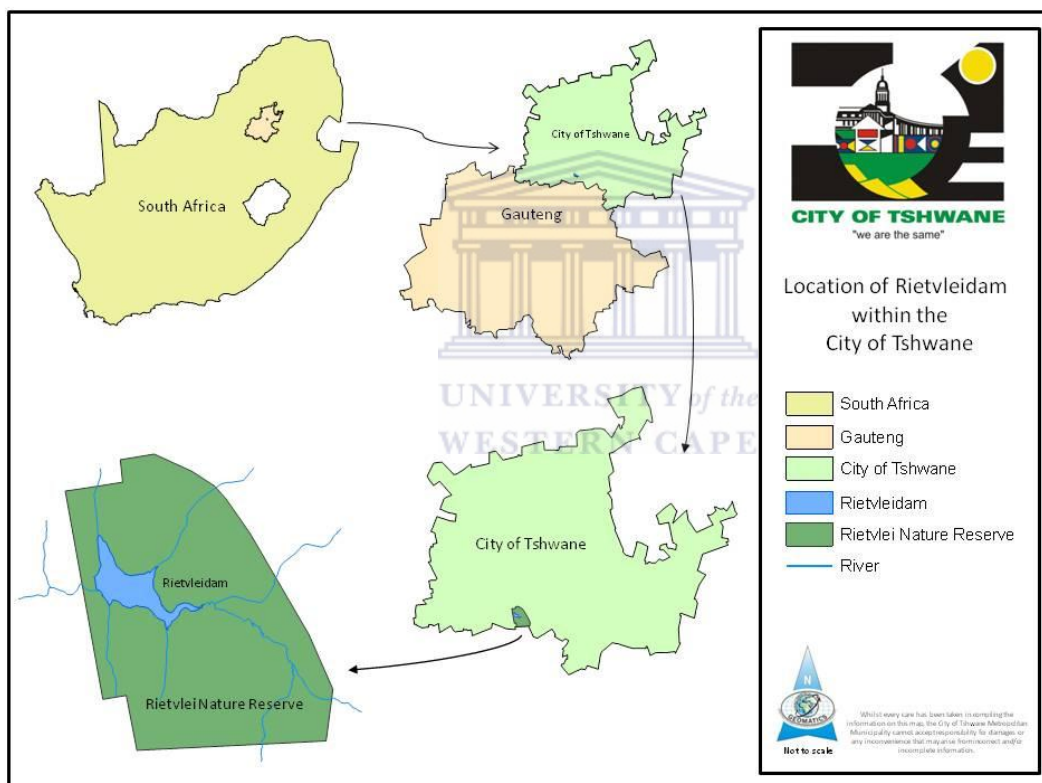


Figure 3: Location of the Rietvlei Dam

Source: Source: City of Tshwane City Planning Department (2011)

¹¹ Unless indicated otherwise historical and general Information on the Rietvlei Nature Reserve and Rietvlei Dam in this chapter is aggregated from the following website addresses: <http://www.rietvlei-reserve.co.za/>; http://www.tshwane.gov.za/rietvlei_history.cfm; http://www.rietvlei-reserve.co.za/index.php?loc=rietvlei_fishing; http://www.sa-venues.com/game-reserves/ga_rietvlei.htm (All accessed on 27 October 2010).

The reserve has a highveld climate which is dry and has frosty winters, and an average rainfall of 724 millimetres during the summer rain season. The temperatures in the area can reach a high of 34 degrees Celsius during summer and a low of -2 degrees Celsius during winter.

In terms of vegetation the reserve is made up of open grassland with hills that have indigenous trees clustered in small groups. A number of exotic trees and shrubs still grow in the reserve due largely to previous farming activities that used to take place before its creation and later proclamation in 1948. The original plan by the then City Council of Pretoria was not to open the dam to the public, until an ecological plan was developed and a number of game species was introduced to the reserve.



The dam showing some of the resident boats. Source: Author (2011)

The reserve is rich in terms of the fauna and flora, and has varied species of birds. There are some 272 species of birds and 530 species of plants. In terms of the fauna

it is estimated that the reserve has some 2010 head of game. The table below indicates the numbers:

Table 1: Game numbers as on 2 August 2011

Blesbok	1076	Red hartebeest	90	Buffalo	40
Eland	137	Springbok	159	Reedbuck	22
Black Wildebeest	210	Ostrich	50	Waterbuck	64
Zebra	138	Rhinoceros	8	Mountain Reedbuck	2
Hippopotamus	6	Cheetah	2	Lion	6

Source: City of Tshwane Department of Agriculture and Management (2011, email correspondence dated 28 November 2011)

4.1.1 The Rietvlei Dam

The Rietvlei Dam was acquired by the then City Council of Pretoria in 1929 along the Hennops River, and was built during the great depression. It was completed in 1934.

The main aim of building the dam was to supply the city with clean drinking water. Thus, the Rietvlei Water Treatment Works was also founded in the same year - 1934 (Clements and Haarhoff 2004). The other aims, which were developed later, were related to the conservation and tourism goals of the city.



Aerial photo of the Rietvlei Dam. The treatment works can be seen in front of the bushes. It receives water from the dam via a short underground pipe. Source: Author (2001). Photo adapted from an old photo owned by the City of Tshwane.

Rietvlei Dam is one of the three major dams within the city of Tshwane's boundaries. The others are Roodeplaat and Leeuwkraal. As indicated in Chapter 1, of the three Rietvlei is the only one owned by the municipality, even though the water from Leeuwkraal is acquired by the municipality through the Temba Treatment Works which, as indicated in Chapter 5, would be taken over by the municipality, from Magalies Water.



The Rietvlei Water Treatment Works buildings. The dam is on the left of this picture. Source: Author (2011)

The biggest dam within the boundaries of Tshwane is the Roodeplaat dam, followed by Rietvlei, Bon Accord, Nooitgedacht and Leeuwkraal. Bon Accord and Nooitgedacht are not used for water supply. It is for this reason, again as elaborated in Chapter 1 that Rietvlei was chosen as a case study.

The City of Tshwane's own water purification plants draw raw water from dams in tributaries of the Crocodile (West) River system.

Table 2: Water purification plants, dams and their capacity and supplying rivers

Water Purification Works	Current capacity (Ml/day)	Dam	River
Rietvlei	40	Rietvlei	Hennops
Roodeplaat	60	Roodeplaat	Pienaars
Temba	60	Leeuwkraal	Apies

Source: City of Tshwane Water and Sanitation division (2011)

The city's water supply is mainly from Rand Water (76%), while a significant portion (24%) comes from the municipality's own sources being boreholes, fountains and the three water treatment works.

The water produced at Rietvlei and emanating from the boreholes is conveyed to the Garstfontein reservoir, which is the main receiving reservoir of the Rand Water supply. Rietvlei water is therefore mixed with the Rand Water supply and a small volume is present in most suburbs of the municipality's Regions 4 – Centurion and surrounding areas – and 6 – Mamelodi and surrounding areas...

The various components of the water supply as at end of April 2011 are presented in the table below:

Table 3: Annual Average Bulk Water Supply

Bulk Water Source	Gross Supply (MI/day)	Export to	(MI/day)	Net Supply (MI/day)	% of total supply
Rand Water	517	Johannesburg	16	501	69
Rand Water (SWA)	64	Madibeng	16	48	7
Magalies Water (Klipdrift WTP)	9	Nokeng	1	8	1
Temba WTP (Leeuwkraal Dam)	48	Moretele	21	27	4
Rietvlei WTP	38			38	5
Roodeplaat WTP	46			46	6
Springs and Boreholes	57			57	8
Total	779		54	725	100

Source: City of Tshwane Water and Sanitation division (2011)

Through the dynamic of development and as a result of the population growth along the Hennops River the quality of water began to deteriorate with time. For that reason the municipality instituted major upgrades in 1988, which improved the performance of the plant for a number of years that followed (ibid). However, another dynamic of development affected the water quality that supplied the plant. Extensive agricultural activities in the catchment area led to increased concentrations of nitrogen and phosphorus that flowed into the dam, leading to an increase in the growth of algae.

Yet another dynamic of development and population growth is that the dam also has the challenge of receiving effluent from a number of industries and wastewater treatment plants (Barson and Avenant-Oldenwage, 2006).

In a study undertaken in 2006 the above authors found concerning levels of nematode parasites (roundworms). The study did, however, find that the levels of existence of these parasites had decreased when compared to previous levels tested.

The water in the dam is drawn from the Sesmyspruit, five fountains – one located on an adjacent property – and five boreholes. The Marais dam is situated up-stream from the Rietvlei Dam and serves as a sludge dam for the Rietvlei Dam. The Sesmyspruit joins the Grootvleispruit which then flows through the reserve and forms an 8 kilometre 'vlei' or wetland.

As indicated above the primary function of the dam is the supply of water to the City of Tshwane. It supplies 15% of the water needs for the City, which amounts to 20 million litres of water per day. The dam's storage capacity is 12 024 million cubic metres (m³) of water. And has a surface area of 204, 13 hectors when full.

The dam wall is 32 metres high and 350 metres long. Its overflow is 191 metres long and 101 metres wide. The catchment area for the dam covers 479 square kilometres, while the Rietvlei Nature Reserve covers only 38, 70 square kilometres, which translates into 3 870 hectors.

During the winter period, more than 20 million litres of water flow into the dam per day. It is said that as the dam area is a wetland it therefore serves as a good natural filter and sponge.

The water from the dam is treated at the dam itself. This means that in terms of management two city departments share in the management of the facility. The municipality's Agriculture and Environment Department manages the reserve as a whole and the dam itself. Water is drawn from the dam into the treatment plant, which is managed by the Public Works and Infrastructure Development department, through the Water and Sanitation division.¹²

The treatment plant operates on a twenty-four hour basis. The Water Treatment Works at the dam, which is the specific section that we focus on for the study, employs thirty six (36) people. However, in terms of the official structure of the municipality the Treatment Works is supposed to have fifty-two (52) staff members (interviews with Scientist 3 2010 and Scientist 1 2011). This means that the staff complement is only 75% filled.

The Water Treatment works is located within the Water and Sanitation division of the Public Works and Infrastructure department, specifically within the Bulk Water directorate. In terms of the workflow the process looks as follows:

¹² Interview with Mr Carel Taljaard from the Water and Sanitation division, City of Tshwane, on 25 March 2010.

Bulk water infrastructure management

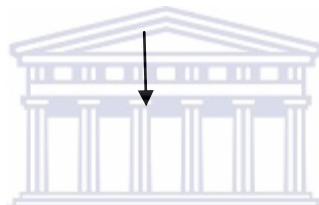
Incorporating the management of the water while it is still in the dam



Bulk water purification processes



Pre-distribution scientific testing



Distribution into the reservoirs system

4.1.2 Other activities at Rietvlei Nature Reserve

Apart from conservation activities and the treatment plant at the dam there are other related activities that take place. The reserve is open to the public and has a set of tariffs for visitors. Provision is made for individuals, families and groups to visit the reserve during the day. There are also overnight facilities in the form of chalets for visitors.

In addition to day and overnight visits there is a yacht club that operates at the dam. Angling is also allowed. Hiking, game drives, horse rides and night drives complete the offerings at the reserve. Educational programmes are also offered to school children and interests groups.

It can be deduced from the above that, while the primary aim for the dam is to provide water to the City of Tshwane, the reserve as a whole, including the dam, is

being used not only for the water needs but for conservation and revenue generation purposes also.

4.2 The Centurion Lake¹³

The Centurion Lake is situated in the suburb of Centurion, south of the CBD of the City of Tshwane. Whereas the Rietvlei Dam as a water resource point was developed for the primary purpose of providing clean water to the city, the Centurion Lake was developed for a totally different set of reasons. There is however no agreement within municipal officials on the real reasons why the lake was built.

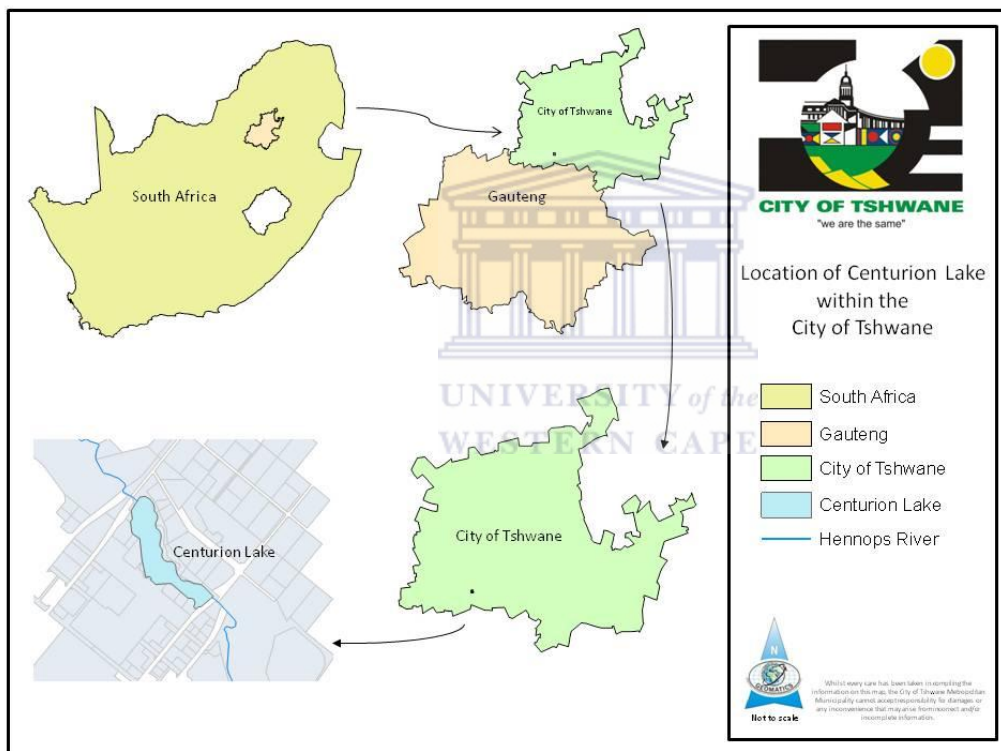


Figure 4: Location of the Centurion Lake within the City of Tshwane
Source: Source: City of Tshwane City Planning Department (2011)

As will be clear in this chapter and the next one, there are contradictory views on the need for the lake, and whether the municipality should have prevented its deterioration. These views are presented in this thesis to illustrate the contested

¹³ Unreferenced information on the lake is from officials within both the municipality's Water and Sanitation division, and the Roads and Storm Water department. The information was gathered through interviews. The names of the officials are indicated in Addendum 3.

nature of both the history and future of the lake. On the one hand there are those who argue that the lake was created purely for recreational purposes, to cater for the needs of an emerging residential area, and the prospects for a shopping complex and a range of hotels.

In terms of the above view the lake, which is human-made, was constructed during the early 1980's as a focus point for a new commercial area that was to be developed. Thus, from the onset aesthetic reasons were at the centre of the development of the lake.

The initiative was deemed a success and as a result a regional shopping centre, the Centurion Lake Mall, a hotel and a number of office blocks and other commercial buildings developed around the lake.

On the other hand there are others who argue that the creation of the lake was a dictate of natural phenomenon. The argument here is that the area where the lake is situated is a wetland, resulting from the convergence of rainwater from the catchment area which also has the Hennops River as patch of the habitat. Therefore, a lake had to be built to ensure that the wetland is better managed. Another factor that was taken into account is that the area is not only a wetland; it is also situated on a low-lying area.

One of the problems faced by the municipality is that documents about the lake, which would contain its historical facts, including the real reasons for its creation, and agreements with other parties on its use, cannot be traced. These agreements are said to have been signed during the 1980s by the former Centurion Town Council which amalgamated into the City of Tshwane in 2000.

The lake also plays a role in addressing the recreational needs of the community. Over the years some forms of water sports, such as canoeing, were held at the lake. However, because of the pollution as a result of siltation the lake's water quality has deteriorated to levels where sporting activities can no longer be held there.

The lake is the centre-piece of the shopping complex that is built around it. The businesses that surround it continue to advertise themselves by anchoring their services on the beauty and serenity provided by the lake.

The overall area of the lake is 238 235 square metres. It contains 238 million litres of water. The lake gets water from the Hennops River, which flows from the adjacent Ekurhuleni Metropolitan Municipality. The water is in turn transferred to the Hartebeespoort Dam which is situated at the adjacent Madibeng Local Municipality, via the Crocodile River.

With regards to the technical maintenance of the lake this is done through dredging, which means the excavation of underwater sediment and the disposal thereof in a dedicated waste area. The dredged sediments are disposed into a silt dam located in the Highveld Techno Park.

In terms of the human component of the lake there is no manager dedicated to the site. The site is managed by the managers responsible for the Roads and Stormwater division within the city's Roads and Transport department. There are however only six (6) full-time workers who have been dedicated to clean the lake. This suggests, as it is demonstrated in Chapter 5 and further argued in Chapter 6, that the lake does not receive adequate attention from the municipality's leadership.

4.2.1 The deterioration of Centurion Lake

One commonly known fact is that the lake is badly polluted. The regional commercial newspapers, especially the *Pretoria News* and to some extent the Afrikaans-medium *Beeld*, have reported this fact extensively since 2006 (du Plooy 2006).

At the time of the above reports the municipality claimed that efforts were underway to rehabilitate the lake, which, again according to newspaper reports of that period, was caused by the silting of the lake which led to the deterioration of the water quality.



Debris in an area that is supposed to be clean and providing resting areas on the Centurion Lake. In the background is one of the office blocks. Source: Pretoria News

A monitoring committee comprising of representatives from the municipality; members of the local business community and the Centurion Shopping Mall; and other affected parties was formed in 2006 to address the problem.

A regional task team was also formed comprising of the representatives of the municipality, the Gauteng Provincial Department of Agriculture, Conservation and Environment, and the national Department of Water Affairs was also formed to rehabilitate the lake and the surrounding wetlands (du Plooy 2006). Assessed in the next chapters is whether these efforts were successful, or if they did not yield any fruits.

Attempts to rehabilitate the lake were taken up again in 2008 when the municipality announced that the facility would be dredged during November of the same year. At the same time the municipality installed a Periphery Odour Neutralising System (PONS), a device similar to the water sprayers often seen at restaurants, at a cost

(then) of R180 000.00. The device was aimed at reducing the odour that came out of the lake. The shopping mall management also claimed that it used R48 000.00 at the time to clean up the litter in the lake (Bateman 2008b).

The municipality also promised that it would release water from another site of this current study, the Rietvlei Dam, to 'flush' the lake. The municipality's fire brigade services were also to be requested to 'flush away' the stagnant water that was trapped behind a sandbank near the lake. Thereafter the dredging would follow (Bateman 2008a).

After making promises to dredge the lake the municipality appears to have revised its plans. Instead, and as is elaborated in the next two chapters, other considerations seem to have led to the indefinite postponement of the dredging. The municipality announced a postponement of the dredging in November 2008 – the month when it was supposed to have been dredged (Magome 2008a; Magome 2008b; Magome 2008).

The problem of silt and the associated bad odour coming out of the lake persisted till 2010. There was some confusion as the municipality and the Gauteng Department of Agriculture and Rural Development (GDARD) blamed each other in public for the delays in the dredging of the lake.



Shallow water can no longer flow smoothly because of the silt. This causes debris to build up and cause an unbreable stentch. Source: Pretoria News

The municipality claimed at the time that the dredging was delayed in part by lack of a decision from the GDARD to approve an environmental impact assessment report on whether the dredging should continue. The GDARD on the other hand claimed that it was waiting for the municipality to provide the assessment report (Bateman 2010).

An attempt was made in May 2010 to clean the Hennops River, which, as we elaborate further in the next two chapters, is the major cause of pollution at the lake (Seanego 2010).

One of the reasons advanced, at least in the newspapers, was that the dredging would be expensive. The municipality's political leadership was quoted as saying the project would cost millions, and that it was unsustainable. After many months of considerations it seems the municipality arrived at some form of a cross-roads, not just about how to dredge the lake, but about the future of the lake itself.

Part of the problem as identified by the city officials is that the existing silt dam is nearing its capacity. Silt refers to a form of sand-like sediment that builds up at the bottom of a water area, especially 'stationary water', having resulted from erosion that may have occurred on the river banks of the supplying river. In order to reduce the increasing levels of these sediments a silt dam, that is, a repository for the silt that is extracted from the lake, was constructed so that the levels within the lake could be controlled.



Silt filling up the lake area. Source: Pretoria News

Failure to follow the above procedure, and the silt dam filling up, resulted in the problems of silt levels within the lake rising as a result of inadequate dredging. The silt dam operates under the required legal standards as provided for in the national Department of Water Affairs documents titled *Minimum Requirement for Handling, Classification and Disposal of Hazardous Waste*, published in 1998. It is therefore

imperative that, in trying to address the problem, the municipality must also address the problem of the silt dam. This in itself might prove to be expensive.

The fact that the lake is badly polluted even though there are dedicated personnel who must clean it suggests that there are other problems that have led to the pollution, in addition to the challenge of the filling up of the silt dam. These possible reasons are examined in the next chapter on research findings.

4.3 Conclusion

The two sites of our study depict different trajectories in terms of their development. On the one hand the Rietvlei Dam developed out of a need to have a water resource for the city's growth. On the other hand, the evolution of the Centurion Lake seems to have been a dictate of two interests. The lake seems to have been developed in hopes of addressing the problems of an unattended wetland.

The second interest that led to the construction of the lake seems to have been an elite interest of satisfying the needs of the growing middle to upper class settlement of Centurion at the time of the lake's construction, which is estimated to have been around the 1980s.

As it has been shown, others hold the view that the lake has an aesthetic value that might not serve the broader interests of society. These views are explored further in the next chapter.

CHAPTER 5: WATER MANAGEMENT IN THE CITY OF TSHWANE: RESEARCH FINDINGS

The four previous chapters were focused on weaving the interface between historical developments, theoretical assumptions, and policy implications; all these considered with a given political and economic juncture. Demonstrably, theories of natural resource management, in this case water management, are influenced and shaped by global and local policy choices that are in turn shaped by political and economic factors.

This chapter outlines the findings of the field study, wherein role-players in water management within the City of Tshwane and those from outside express their views on the influences of fiscal conditions faced by the municipality. I also consider the question of whether IWRM is being applied in the City of Tshwane. However, before examining the fiscal issues relating to the management of water resources let us first, in brief, examine below some of the natural science findings about both sites.

5.1 Some natural features about the condition of the Rietvlei Dam and Centurion Lake

From a natural science perspective the two sites, as would be expected in any case in the era of population growth and rapid industrialisation, have had challenges of pollution. First, and as indicated in the previous chapter, there is the challenge of the dam having to receive effluent and waste water residues after treatment (Barson and Avenant-Oldenwage 2006).

The above authors found nematode parasites (roundworms) in the dam. These of course can be treated, but would pose some dangers if not. The second problem was that of fish that would be found dead due to the pollution in the dam, caused by upstream tributaries that deposit water into it (Van Eeden 2004).

The above were acknowledged by the scientists responsible for the dam. The problem is caused by upstream pollution resulting from the Ekurhuleni areas of Tembisa and Kempton Park. For the purposes of this thesis I name the scientists in

numerical numbers. The reason is that in certain instances the scientists contradict each other, but more so in some instances the juniors contradict their superiors. The relative harmony between the scientists is therefore preserved by not naming them directly in the body of this thesis.

One of the municipality's scientists had this to say about the origin and nature of the pollution:

Tests that have been conducted indicate that there is a problem of contamination with water from the Kaalspruit. This is due to the conditions in Tembisa, in Ekurhuleni; the major problem is sewerage spillage into the Kaalspruit (Scientist 1 interview with the author 2011).

Another scientist argued that the two major reasons why the water would be polluted is the sewerage spillage that results from Ekurhuleni, and the natural process of lack of oxygen and sunlight in and for the water. He also attributes some of the pollution to the catchment area of the tributaries, which is Ekurhuleni:

Going back to what leads to the fish dying the cause might be the sewerage spillage that might be caused at the source, at the catchment area. The latter is an area where the collection of rain water happens and gets into the upstream river. The catchment of the Rietvlei Dam stretches up to Alexander in Johannesburg, and includes the areas around Tembisa in Ekurhuleni. The dam receives water from the Sesmylsprit River (Scientist 2 interview with the author 2011).

Despite the above problems of pollution, the treatment works is able to apply modern methods to improve the quality of water and purify it. As yet another scientist pointed out emphatically:

We were the first to use dissolved filtration; the first to use granular activated carbon; and the first to use solar beams for water treatment. We are currently

busy with the construction of the ozone plant (Scientist 3 interview with the author 2010).

The ability to employ modern technology is attributed by Scientist 3 to be the treatment works' proximity to several institutions of higher learning and scientific foundations. Indeed the city hosts several institutions that collaborate with the municipality to improve water technology – the University of Pretoria, Tshwane University of Technology, the Agricultural Research Council, the Water Research Commission, and the Council for Scientific and Industrial Research.

Overall, there is general consensus that the water quality at Rietvlei Dam is of acceptable and prescribed national quality, adhering to the highest standards. As Scientist 1 emphasises:

We also have the best equipment. We obviously need more. The laboratory is accredited by the South African Bureau of Standards. In terms of accreditation we conduct quality analysis of water on a monthly basis (2011).

With regards to the Centurion Lake the issue of the source of the pollution is almost the same – the source being areas in Ekurhuleni. The major problem with regards to the pollution, apart from the contamination which is the same as with Rietvlei Dam and is therefore not repeated here, is that of siltation.

There seems to be no consensus about the actual reason why the lake was constructed. On the one hand there are those who argue that the lake was constructed purely for aesthetic reasons, with no compelling scientific reason behind the decision (Scientist 4 interview with the author 2011). Others, however, argue that the lake was built in order that it could serve as a way to regulate the water that would in any case form into a wetland, given the fact that the area where it is situated is on a low-lying area that is the natural path of a stream (Scientist 2 2011; Scientist 5 2011).

As Scientist 2 explains, the creation of the lake was a natural progression:

... the Centurion Lake was constructed out of a natural progression from the fact that the area where the lake stands is itself a wetland. So, even if the lake was not constructed the area would still need maintenance, not unless there were no residential or commercial areas, or at least plans to construct some at the time of the creation of the lake (2011).

Unfortunately, as argued by Scientist 5, the lake would be left to deteriorate without any attention given to its environmental and tourism potential (2011). We consider this point later.

The observation by Scientist 4 from the Roads and Stormwater division of the municipality sums up the problems with Centurion Lake. He had to this say about what has caused the deterioration:

The main problem with Centurion Lake is the soil. We are basically fighting against the processes of nature, soil erosion. The problem starts at Bruma Lake in Johannesburg. From there it moves to Ekurhuleni, where the river is split. One side moves to Randburg, while the other goes through Ekurhuleni, then through (the erstwhile) Kungwini area.

The problem at source is caused largely by the urban sprawl, especially in the areas of Doornfontein. There is therefore soil erosion that is caused there. The river embankments are eroded. In the process silt develops and gets carried through into the supply.

The second problem is the failure to manage sewerage spillage into the river. This starts in Tembisa, Ekurhuleni; Ivory Park in Johannesburg, and (the erstwhile) Kungwini. Johannesburg has been able to solve the problem, while Ekurhuleni has not been able to solve this problem. (The erstwhile) Kungwini Municipality even received a directive from the national Department of Water Affairs and Forestry to address the problem.

The silt and sewerage from the source settle when they get into the Centurion Lake. The reason why these happen and there is little silt that passes through the lake is that it is based on a lower plane. Therefore these deposits do not get into the Hennops River again to get through to the Hartebeespoort Dam in Madibeng. They cause the bad odour that has come to characterise the area. The only time that there is transfer of silt to the Hartebeespoort Dam is when there are heavy rains and therefore flooding.

Another problem that exacerbates the issue is that the buildings adjacent to the lake are situated on a flood line. Whereas this was not the case in the past years there has been a noticeable shift over the years. This shift is attributed to the changing environmental conditions and changing weather patterns. The flood line was 1: 50 years, meaning a shift of 1 metre in 50 years. There has been a dramatic shift of 100 metres, meaning that the flood line is now on the building lines (2011).

From a natural science perspective, the two sites present two narratives. On the one hand the Rietvlei Dam is a manageable site that assists the municipality with its water resources. The Centurion Lake on the other hand seems to have deteriorated to a point where the municipality is no longer able to manage it. We consider the interplay of this and the impact of fiscal challenges below.

5.2 Challenges in managing the Rietvlei Dam and Centurion Lake

The above natural science perspective on the problems faced by the municipality in managing the two sites manifest themselves in the form of the challenges that must be navigated by the municipality's scientists and managers.

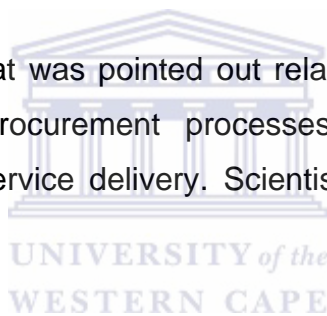
There seems to be a disconnect between what is found in some of the documents, such as the 2008/09 Water and Sanitation Business Plan of the City of Tshwane, referred to in Chapter 3, in which an inability in managing water resources due to

lack of adequate funding is articulated, which is opposed to the views of those who work on the bulk water system, at Rietvlei Dam in particular.

All three of the respondents who work at, or are responsible for, the treatment works at Rietvlei Dam – Scientists 1, 2 and 3 – are of the view that capital expenditure funding for the dam is not the main problem.

There is also an indication that the municipality, or the Water and Sanitation division to be more specific, has adapted to challenges that would, ordinarily, lead to inefficiencies. In 2011 the dam had thirty six (36) scientists and ordinary workers. The full complement of staff is supposed to be fifty two (52). Yet, despite these staff complement deficiencies, the management of the treatment works seems to be managing with the staff numbers that they have.

The other major challenge that was pointed out relates to procurement processes. There is consensus that procurement processes can at times delay major developments. This affects service delivery. Scientist 3 had this to say about the issue:



The system of procurement in the City is also a problem. The turnaround to procure goods and services can be very long. In the meantime you find that the instruments can deteriorate as a result of the long waiting periods that we are subjected to. Overregulation so procurement is standing in the way of service delivery (2010).

For the Centurion Lake the major problem has been to rehabilitate it. As outlined in Chapter 4, the lake started to deteriorate over a period of time. The deterioration took the form of increased siltation as a result of lack of adequate dredging and de-sludging.

The first point seems to be that the lake was not designed to handle high volumes of water, and to cope with the increased levels of silt that would emanate from outside the borders of Tshwane (Scientist 2 2011). As a result, and because there seemed

to be no effort on the side of the neighbouring municipalities to address their pollution problems, the City of Tshwane has had to deal with the problem alone. Yet, some feel that even if that was the case what compounded the problem is that there was no will on the side of the municipality to arrest the problem before it became a crisis.

Scientist 5 is of the firm view that the municipality failed to address the problem from the onset. He traces the problems faced by the municipality with regards to failure to manage the lake properly to two factors, one being a historical mistake by placing the lake under a 'wrong department', the second being lack of imagination and vision. He had this to say, and is quoted extensively below due to the incisive nature of this assertion:

The problem can be traced to the historical misplacement of the Lake under the Roads and Stormwater division. This never made any sense to me. The lake has nothing to do with roads and storm water; it is an environmental matter. It should have therefore been placed under the Agriculture and Environment department. But I am told that both the political and administrative leadership of that department have had nothing to do with the lake. What I am not sure of is whether they developed this attitude a long time ago, or whether they developed this attitude after the lake started deteriorating.

We went wrong when we placed the lake under a wrong department. Therefore the lake did not receive adequate resources. We did not treat it like an asset. As you know, if you do not treat something as an asset you do not invest into it, it then loses value. Now, trying to reverse that and treating it like an asset is proving to be an expensive exercise.

The lake could have been good for some water sports. (But) it is not too deep and therefore would not have been able to accommodate big boats; but you could have other forms of water sport, for instance rowing (2011).

The point made by Scientist 5 on the lack of clarity about when the problems of the lake's deterioration first arose, and the fact that no one seems to be able to accept responsibility for the deterioration, can be linked to another fact, which is that there is no record of the actual evolution of the lake. This poses a challenge in that it is difficult to point out exactly where and when the actual problem started; what happened and what could have been done at that time.

In addition, Scientist 5 blames lack of imagination to address the problems posed by managing the site. He argues as follows:

We have also failed to be imaginative. For instance, we could have developed partnerships with the private sector, wherein they would invest in the maintenance and development of the lake then perhaps manage it on our behalf in exchange of them charging user fees for say watersport (2011).

The above assertions bring to the fore two fundamental questions. Could it be that it is easy for some to blame others for a problem that they should be addressing? Could it be that the municipality as an organisation has failed to deal with the challenges posed by the management of a site that has deteriorated, irrespective of who should have taken responsibility for the emerging problem in the first place?

It does seem that the municipality arrived at the conclusion – as pointed out earlier in Chapter 3 where reference is made to a report that was considered by the council – of recommending the lake's closure and that the problem has reached a point where the lake can no longer be saved.

The other question, raised as one of the major research questions for this study, is whether the municipality has had to strike and maintain a balance between competing interests. In this case we need to ask whether the lack of adequate maintenance for Centurion Lake was as a result of the lake being viewed as not in need of adequate funding. This brings us to the core of the study, which is the effect of fiscal austerity on water resource management.

5.3 Fiscal austerity and water resource management

In simple terms fiscal austerity for water management would mean that the municipality has to cut on financial allocations for the water management. From the interviews conducted it emerged that the view on what would constitute fiscal austerity is subjective. To this end it is not possible to arrive at an objective view of what would constitute austerity, and would be the impact on water resource management.

To address the question we start first by briefly examining the context within which the findings in this chapter are presented. A report on the 2011/12 municipal budget – which was presented as part of the 2011/12, 2012/13, and 2013/14 Medium Term Revenue and Expenditure Framework, or simply a three year budget, and which was considered by council in May 2011 – outlined two factors that would affect the budget.

The first was the incorporation of the Nokeng tsa Taemane Local Municipality and the Kungwini Local Municipality. On the issue of the incorporation of the two municipalities the report noted that ‘... although (both) national and provincial government(s) were engaged in various submissions for financial assistance with regards to the incorporation, no funding was allocated to the CoT (City of Tshwane) for the 2011/12 financial year’ (2011).

The deduction that can be made from the above assertions is that the two municipalities brought more liabilities as there would be minimal revenue streams realised from their incorporation. The second deduction that can be made from the report is that the incorporation would, in real terms, lead to austerity as demand would far exceed the revenue that the municipality is able to collect.

The second point made in the report, which was more direct and is of relevance to this study, is that the municipality would have to exercise fiscal austerity in its budget allocation. The report stated the following:

To align with the theme of ‘consolidating service delivery, accelerating job creation and strengthening foundation for a greater Tshwane, a city of excellence’, fiscal austerity measures such as cash-flow management intervention initiative and strategy, long-term financial model, the budget policy, revenue enhancement strategies, budget principles, cash back reserves, and applying the funds management tool must remain in place (ibid).

The report further alluded to the need to make tough decisions in spending funds, meaning that there would be some budget cuts. Yet, in the same document, and perhaps as a demonstration that budget allocation processes and the implications that they bring out should not be approached and understood in simplistic terms, there is emphasis on ensuring that service delivery remains a priority.

The following is quite illustrative on how the municipality attempts to strike and maintain a balance in the era of fiscal austerity:

With the on-going revenue constraints, tough decisions on expenditure had to be made in order to give priority to:

- Ensuring that drinking water meets the required standards at all times;
- Protecting the poor from the worst impacts of the slow recovery in the labour market;
- Supporting meaningful local economic development (LED) initiatives that foster micro and small business opportunities and job creation;
- Securing the health of their asset base – especially the municipality’s revenue generating assets – by increasing spending on repairs and maintenance; and
- Expenditure on capital projects that are funded on conditional grants (2011).

The assertions in the report seem to contain some of the answers to the research questions posed in Chapter 1, and varied observations made in Chapters 2 (literature review), 3 (policy analysis) and 4 (the state of the two sites).

While making different points of emphasis the scientists responsible for Rietvlei Dam do agree that the municipality does allocate sufficient funds for capital projects and maintenance. Scientist 3 was critical of the fact that there seems to be more emphasis on capital projects than on operational projects. He does state the fact that the plant needs more funding, especially for personnel remuneration. He argues as follows:

What we do need is more money to ensure that we keep the standards of water quality. More money is needed for water treatment. Yes, we do receive substantial allocations from the council. But, while these funds keep us afloat I feel that we can do with more.

We need the money for more personnel. We also need it in order that we can procure more equipment. The equipment in our field keeps on changing and we need funding for this, in order that we can keep the standards (2011).

For her part Scientist 1 (2011) is of the view that the plant does receive adequate funding. She states as follows:

We do have adequate funding for the plant. The plant receives R17 to 21 million per year for both capital and operating expenses. The municipality has taken the view that we are not going to take away anything from drinking water.

We also have the best equipment. We obviously need more. The laboratory is accredited by the South African Bureau of Standards. Our accreditation level requires that analysis must be done once per month (ibid).

This observation, which would have influence given that it would have participated in the motivation for funding, echoes the sentiments contained in the above council report. As illustrated, the report made the point that the municipality should, even in the era of fiscal austerity, ensure that it does not sacrifice the quality of drinking water for residents.

While the above assertions would, on the face of it, demonstrate the municipality's commitment to quality service delivery, an observation can be made that there is also a resolve to make sure that there is a need to secure those services that assist the municipality to generate revenue. This would be done by securing revenue generating assets. See above quotation from the council report.

Water is one of the commodities that the municipality 'sells' to consumers to generate income. The resolve to maintain the high standards of water services can therefore be seen as not only a commitment to service delivery, but also as an adherence to the underlying IWRM principles of treating water as a commodity, as observed by critical scholars, even though the trajectory of water commodification has not taken the full privatisation route as observed in some of these studies (Francis 2005; Bakker 2007; Ruiters 2007). Thus, the commodification and marketisation of water resources is masked by the rhetoric of quality service delivery.

The lack of maintenance at Centurion Lake and the subsequent deterioration can be viewed from two competing perspectives, which may cross lines when put under scrutiny. The first is held by Scientist 4 (2011), who believes that attempts to maintain the lake would be a waste of funds. He argues as follows:

The maintenance of the lake is seen as a waste of money because the resources could be used elsewhere. On the other hand the tenants are complaining because they are the ones that pay taxes and therefore deserve to have the municipality servicing them.

The lake was built to serve the commercial needs of the business community at the time. It is estimated that it was built at the same time as the mall around it.

There is a view that dredging will solve the problem. While sounding noble at face value the push for dredging seems clouded by hidden interests of service providers who were apparently disappointed when the tender for dredging

was shelved in 2007. The reason for the shelving of the project was that the service provider apparently changed the methodology. As such, the company could not be appointed because that would have been technically and legally wrong (ibid).

The above views seem to mirror those of the council report referred to above, even though the latter might have made his views from a different motivation as those of the former.

The council report – referred to here – reflects a dominant view from within the municipality's treasury division, whose preoccupation it is to expend the funds as prudently as possible, implementing austerity measures that are seen as necessary to ensure the basic services are maintained. From that perspective, the maintenance of resources which do not generate revenue may not be financially prudent. Nonetheless, the two views merge in that they might, be a waste of funds; even though for the treasury the deterioration might be an unintended consequence, while for Scientist 4 it might be an informed view.

The second view about what might be done with the lake comes from Scientist 5, who argues that the allocation of funding resources, or lack thereof, was not, in and of itself, the cause and therefore the focal point of the deterioration. He explains his views as follows:

On your question whether the deterioration was caused by lack of funding allocation I would answer you in another way. In my view, the problem was not caused by lack of funding per se, or inadequate funding. The problem was that the placing of the lake under a wrong department led to it not being treated like an asset and therefore neglected. Like a vehicle which you would, as the owner, neglect and not take to the usual service it will deteriorate. Then, it will become expensive to try and fix it or take it for major maintenance at a later stage, after neglecting it. That is exactly what is happening with Centurion Lake. We neglected it for so long that it is now more expensive to

try and rehabilitate it. There are simply not enough funds to rehabilitate it (Scientist 5 2011).

Followed to its logical conclusion the above views suggest that fiscal austerity can be a consequence of other policy and practice choices and not itself a cause of problems. These views support the logic that economic policy might be a consequence of political and administrative choice. Accordingly, if there was a positive political choice to embrace environmentally friendly policies in the first place the consequent fiscal restraint with regards to the allocation of funds to the lake might not have come up.

5.4 Failure to implement IWRM

In a chapter titled *Managing the Zambezi: The need to build water institutions* Swain and Stalgren (2000) argue that water resources stand on the three pillars of the IWRM approach. These are the political, technical and institutional cooperation pillars.

The political pillar comprises of an enabling environment for sectoral integration, cross-border integration and other forms of collaboration. In the case of this study such a pillar would be the collaboration between the national, provincial and local spheres of government, including cross-border collaboration between different municipalities, in this case Ekurhuleni and Johannesburg.

Technical collaboration would include information exchange, standards crisis procedures, human resource development, joint research and joint ventures. Lastly, regarding institutional matters, there must be proper and legal institutional structures upon which collaboration is based.

From the fieldwork it is apparent that the principles of the IWRM are only implemented minimally. with regards to political collaboration it was mentioned during one of the interviews with the officials from both the Water and Sanitation division and the Roads and Transport department that a monitoring committee was

formed in 2006 comprising of the representatives from the municipality, members of the local business community, the Centurion Shopping Mall and other affected parties to address the problem of deterioration of the lake.

The above committee did not last and therefore collapsed. This was partly, at least according to municipal officials, due to one-sided interests by the business people around the lake. Their singular interest is for the municipality to rehabilitate the lake, without them – the businesses – having to incur any costs.

This seemingly one sided approach by the business community was evident when the Author tried to organise interviews for this study. The response from them was simply that they would not want to participate in any study, because the problem was not theirs but the municipality's to resolve.

On the other hand a regional task team was also formed comprising of the representatives of the municipality; the Gauteng Provincial Department of Agriculture Conservation and Environment; and the national Department of Water Affairs. The team was supposed to address the problems especially of the contamination at source, meaning as they emanate mainly from Ekurhuleni, as demonstrated in Chapter 3.

The above team was also not successful. It collapsed due largely to there being little interest shown by the other supposed partners. The municipality ended up left alone to address the problem of the lake.

The municipality itself has failed to implement the IWRM principles. This is shown in its failure to involve the community, especially those who really need the basic services – the poorest section of the city.

An argument in defence advanced by local councillors is that the community is involved 'extensively' through the Independent Development Programme (IDP) consultations to determine the needs of the community, which include water. It is indeed true that the municipality does host extensive consultations for the IDP, which

is the yearly plan for the delivery of service and contains the prioritisation of such services. The process is legislated through the Municipal Systems Act.

One councillor had this to say:

We involve the community in everything that we do. Extensive consultations are held for the IDP. There is no resident who can claim that they do not know about this process because we advertise it aggressively. They attend and express their views, including about how water resources should be managed (Councillor 1).

Another councillor emphasised the importance of the Ward Committee, and how it serves as a platform for community representatives to advance the views and aspirations of the residents:

As ward councillors it is our responsibility to ensure that we have well-functioning ward committees. These committees are critical in that they assist us to be in touch with the needs of the community and therefore be able to convey these needs to the council and the officials. Issues of water provision are discussed extensively at the meetings of the ward committee (Councillor 2).

As in the case of the IDP processes it is true that there are well-functioning ward committees. Again as in the case of the IDP process it could be that the ward committee system is legislated by the Municipal Structures Act¹⁴ and therefore the municipality and councillors would have no choice but to ensure that these committees are elected, well-constituted and function effectively. What does not come out clearly is whether these committees address issues of water provision, especially to the poor, in the spirit of the IWRM, which is meant to 'co-manage' and

¹⁴ Note that the Municipal Systems Act, Act 117 of 1998 and the Municipal Systems Act, Act 32 of 2000 should not be confused. The latter concentrates on how a municipality should function in terms of systems, including the handling of the IDP processes. The Structures Act on the other hand concentrates on the structures of the municipalities, from council down to different committees, including the ward committees.

not simply provide feedback. It does seem that when issues of water are raised it is a matter simply of feedback and relaying the concerns to the bureaucrats.

It could be that in both instances of the attributing of consultation to the IDP and ward committee the municipality has no choice but to adhere to legislative prescripts in order to comply with these pieces of legislation; therefore not having to receive qualified audit reports from the Auditor General, and being found non-compliant by both national and provincial departments responsible for local government.

The above assertion is supported somewhat by the views expressed by the community leader, the leader of the South African National Civic Association (SANCO). According to him the municipality has failed to implement an integrated water resource management approach. He outlined this view by tracing the history of this failure in historical terms, which becomes important for this study, especially as it highlights the continuities and discontinuities in the implementation of policy. I quote him extensively to illustrate this point:

SANCO was involved in debating most of the pieces of legislation. So, there was involvement of communities through our structures during the 1994 to 1996 era. We then even seconded one of our comrades, the recently deceased Nontsikelelo Magazi,¹⁵ to the Department of Water Affairs. Her role within the department was to maintain strong links with community structures, and ensure community participation.

Unfortunately we started to lose the link when Magazi was deployed to parliament. Since then her position was not refilled.

The municipality is also blamed for failing to involve communities in the management of water resources as the SANCO representative continued to elaborate:

¹⁵ Magazi passed away on November 11 2011. She was a former SANCO leader. She became a member of parliament in 1999. She remained a member of parliament till her passing away.

The other main challenge that we have is that we are not involved in municipalities, speaking here about the City of Tshwane. There is no Water Resources Forum in Tshwane, as is supposed to be the case. There is therefore no interaction with the municipality when it comes to water resource management, except when we are at odds with each other.

There was an attempt by Rand Water around 1995 to involve the community. That was during the time of the GPMC.¹⁶ That attempt collapsed. We have since then never received any invitation, nor has anything been done since.

The only interaction that we have with the municipality is when there is a shortage of water and we have to fight.

It does seem from the above that there has not been any successful implementation of IWRM; there has not been a dedicated focus on water resources as an area that needs attention, in and of itself. The understanding by the municipality seems to be that the obligation is to provide clean quality water – a narrow natural science approach – and to consult the community about their needs – a narrow bureaucratic approach.

The essence of the IWRM, which is, amongst others, devolving of water management to the lowest level, meaning the level of the community, is clearly missing.

Apart from failure to implement the consultation aspects of the IWRM there seems to be failure by the municipality to provide access to the poorest sections of the community.

¹⁶ The GPMC stands for the Greater Pretoria Municipal Council. An amalgamation of previously separate municipalities which occurred around the years 1995 and 1996 when municipal boundaries were being reconsidered in order that they could be relevant to the post-apartheid (post-1994) political dispensation. It comprised mainly of the areas of the former Pretoria, Mamelodi and Atteridgeville. This was before the formation of the City of Tshwane in 2000 through the amalgamation of fourteen erstwhile municipalities as outlined in Chapter 1.

5.5 Failure to provide to the poor

One of the central aims of the policy relating to water – from the United Nations Water policies through to the national policies, starting with the national constitution; the White Paper; the Water Services Act; and the municipality's own policies – is to provide systems for the provision of water resources to the poorest section of the community.

From the fieldwork it became apparent that the Water and Sanitation division personnel were largely concerned with water quality. An explanation to this seemingly narrow approach may be that almost everyone in the division are natural scientists or technicians; the professional disposition of natural scientists is that they are mainly concerned about natural science and technical issues and approaches – not the social dimensions of water.

The above observation was proved by the articulations from the councillors on the one hand, and the SANCO representative on the other. The views of the scientists will not be highlighted here as they are already clearly articulated in this chapter, but it should be noted that their concern is mainly about water quality.

For the local councillors the municipality is succeeding to provide the national requirement of free 12 kilolitres of water for poor households. One councillor said:

We have the indigent policy. It is through this policy that we provide poor households with free basic water up to 12 kilolitres a month. The people really appreciate that and it alleviates stress for our people (Councillor 1).

An indigent policy is a framework that the municipality has adopted in order that poor households can be subsidised to receive certain amounts of free basic services. These include 12 kilolitres of free water per month, 100 kilowatts of free electricity, and free waste removal. Households only start paying once they have exceeded the above rations.

SANCO contests the claim by the municipality to be providing free basic services to the poor, in an adequate manner. The representative from SANCO had this to say about the management of the indigent policy as it regards water resources, again tracing the history of the policy and in the process highlighting continuities and discontinuities of policy implementation:

We did participate during the Credit Summit¹⁷ and managed to push certain arguments, like the provision of free basic services. Remember that previously there was the issue of paying only a R50 flat rate that was part of the liberation struggle to bring down the previous government. We had to abandon that approach in 1995/6 when we were preparing ourselves to contest local government elections (in 1996).

We introduced the debate around the notion of the assisting the Poorest of the Poor (POP) to have access to free water services. This was across the board, including even for poor whites.

There was a task team that determined that if people exceeded their allocation that the municipality would commence with restrictions. We have been very clear from the onset though that restrictions would not mean cut-offs. The understanding has always been that water is life. It is a right and not a privilege. It was therefore agreed at the time that there would not be cut-offs.

¹⁷ The summit was held in 1995 to consider what the on-coming local sphere of government would do to improve service delivery to the poor.

As it would happen with other policies, the approach to meet with obstacles collapsed. Again the SANCO representative elaborates:

What was also supposed to have happened was the formation of street committees. We know that there are people who have tenants in their yards. So, if you cut uniformly you can punish those people. The street committee would have advised us on what is happening in every yard, and assist to expose and name and shame those who abused the system. We would also expose car washers who abuse the system by using hoses instead of buckets.

Another role that we drafted for the street committees would have been to embark on education campaigns.

All these plans did not materialise. There was no political will from those who assumed office in 1996. And that has been the problem ever since. Instead, they concentrated on the commercial motive; collecting rates and taxes instead of delivering services to the poor. This has led to people resorting to illegal activities. Mind you there are plumbers in the townships who can easily intercept the pipes and connect into people's yards.

Reference to the 'commercial motive' and concentration on 'collecting rates and taxes instead of delivering services to the poor' is confirmed by earlier reference made in this chapter about a critical report considered by council on revenue and expenditure. The report alluded to the need to collect rates and taxes, in order that the poor may benefit. Yet, there are those, as shown above, who would argue that the poor may not be receiving adequate services.

5.6 Failure to collect revenue and consequences for service delivery

Whereas the municipality makes the point about revenue collection, and this study also shows that revenue collection is a problem for municipalities, it is the view of

SANCO that part of the problem of non-payment may be blamed on the municipality itself.

In a complex way an illustration is provided that the challenge of revenue management is not simply caused by people not being able to afford, or them boycotting to pay, as was the case prior to 1995 as demonstrated above.

For SANCO the culture of non-payment can be attributed to the practice by the municipality failing to install water meters after providing a stand to a household. The practice is that a meter would only be provided after a long time. At that stage some households may have even accumulated close to R10 000 in debts to the municipality, which they will struggle to pay off. It is this debt owed to the municipality – estimated at R3, 6 billion as shown in Chapter 1 – that may be said to have an effect on the municipality's ability to provide adequate services.

As alluded to by the National Treasury, a major portion of debts owed to municipalities is household debt.

Earlier on it was demonstrated through referring to a report considered by council in 2011 that the municipality would have to impose austerity measures. An official from the municipality's Human Settlement and Housing Department conceded that the budget for water connections for new settlements is often cut. This leads to the situation whereby the municipality is unable to provide for all indigent households, which are said to be sixty three thousand (63 000) in total, taking into account the incorporation of the Nokeng tsa Taemane and Kungwini local municipalities.¹⁸

The incorporation of the latter municipalities has added to the burden of service delivery. As shown in Addendum 2 the number of indigent households have increased dramatically. This means that inability to collect revenue may lead to increased austerity measures.

¹⁸ Figure provided by SANCO.

5.7 Towards some overall impressions

An aggregation of the above observations suggests a number of possible generalisations. First, the municipality has consciously adopted fiscal austerity measures as a result of factors that have been imposed on it by varied circumstance. The global economic recession is one such factor that has affected all countries, and consequently all municipalities.

The second general point that can be deduced, and which relates to the first one, is that the municipalities, especially Category A municipalities in terms of the South African Constitution, that is, those municipalities which must raise their own revenue, are faced with challenges to collect such revenue. As a result, they are forced to adopt fiscal austerity measures that may lead to cuts in budget allocations. This leads in turn to pressures and inability to adequately offer services, including water services to the poorest of the poor. There is also a problem of failure to implement own policy by the municipality, an example being the indigent policy. If implemented well the policy might assist many households. There are however, still backlogs in terms of registering households; leading to many deserving households not benefitting from existing policy.

The third point, which is more complex, is that the municipality has attempted to strike and maintain a balance between provision of basic needs, thus trying to fulfil UN Water's categorisation of water as a human rights as outlined in Chapter 4 on the one hand, and aiming to raise revenue from water resources by ensuring that the quality of the water is of acceptable standards. This brings into sharp focus the claim that water is then treated as a commodity. Thus, a contradiction arises as to whether water is a right, or a commodity. It seems that the municipality treats it as both, even though the human rights (basic need) perspective is conscious and deliberate, while the commodification approach might be unconscious at best, and hidden at worst.

What also merges is that the municipality has taken what seems to be a conscious choice between abandoning Centurion Lake, which is seen as an elite project, in favour of trying to maintain the Rietvlei Dam, which forms part of the core mandate. This choice can be viewed as a direct consequence of the fiscal austerity measures that have been adopted by the municipality. In essence, the municipality has developed coping strategies against these measures by electing to maintain

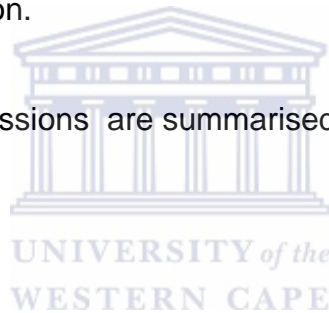
acceptable levels of water quality for consumption, even against the backdrop of challenges such as inability to fill vacancies as a result of lack of funding.

The latter point (non-filling of vacancies) is a clear demonstration of how lack of adequate financial resources can result in certain compromises being made, even if such compromises might not necessarily lead to deterioration in the standard of service, in this case water quality.

The fourth point that can be extrapolated from the above observations and others in this study is that the municipality has, consciously or unconsciously, taken previous decisions, or steps, which have led to fiscal austerity taking the untraditional route of being imposed on a process by uninformed, even if unconscious, wrong political and administrative decisions. This is particularly the case with the Centurion Lake.

The final point is that the municipality has failed to implement the IWRM framework. Instead, a top-down bureaucratic approach is followed, with only passing attention given to community consultation.

These observations and impressions are summarised in the next chapter.



CHAPTER 6: DISCUSSION AND CONCLUSION

From the onset it can be argued that there can be no contesting the fact that the fiscal policy of South Africa has affected almost all aspects of life in the country. Almost all policies, or considerations thereof, must take into account the country's economic policy.

6.1 South Africa's fiscal policy and its effects

Whereas the fiscal policy of the government of South Africa has its defenders, mainly from within government structures and those within the private sector, there is general consensus on the side of left-leaning individuals, organisation, academics and other commentators, that the fiscal policy is negative for the country.

The general argument in favour of the economic policy (GEAR), which informs the country's fiscal approach, and indeed those of municipalities, is that it was necessary for the country to self-impose some kind of Structural Adjustment Programme, instead of having such programmes imposed by the IMF and World Bank.¹⁹ The cogency or lack of, of this argument, is beyond the scope of this study. What must be tested are the effects of the policies that are characterised by fiscal austerity on the management of water resources.

A number of factors have been outlined thus far in the study, which have a direct bearing on the municipality's management of its water resources.

6.1.1 *Inability to collect adequate revenue*

The municipality's relative inability to collect all due revenue streams, places a strain on its fiscus. This is a phenomenon that, as we have shown in Chapter 1 is not unique to the City of Tshwane. All metropolitan municipalities are faced with the challenge of revenue collection.

¹⁹ This point was made to this student in June 1999 in a private meeting with the former Minister of Education, Professor Kader Asmal, an articulate proponent of the progressive liberal form of politics for South Africa.

Added to its historical challenge of collecting revenue is the fact that since May 2011 the City of Tshwane has incorporated the local municipalities of Kungwini and Nokeng tsa Taemane. The two municipalities were incorporated into Tshwane after it became clear that they were no longer financially viable (Shoba, 2011).

The municipality's leadership expressed concerns at the time of the incorporation that the move could put further strain on its fiscal resources (Ibid).

The municipality's inability to collect maximum levels of revenue means that it may not be in a position to allocate a full scale of financial resources for the management of water services. The practical effects and manifestation of these will be in a number of areas that need financial injections. As pointed out during the interviews with water scientists within the municipality (Chapter 5) the municipality may not be able to fill critical vacancies for scientists and other workers.

It has been established through this study that water quality is not a concern within and for the municipality. The municipality has instead won a number of Blue Drop Awards, thus indicating that the quality of water being processed for consumption needs exceeds minimum national standards (interview with Scientist 1 2011).

The major effect of constrained fiscal allocations is felt largely on the maintenance and refurbishment side of the infrastructure. Nonetheless, there seems to be greater care taken to protect the integrity of the Rietvlei Dam. On the other hand, it seems, and can be concluded, that the Centurion Lake is not a priority for the municipality. In fact, as demonstrated in Chapter 5, some view the lake as a burdensome luxury that can be done away with. A reference to the decision taken by the City of Johannesburg to close the Randburg Lake suggests that, in addition to other reasons, which include the fact that it would be more expensive to maintain the lake than to close it, the decision by the City of Johannesburg might have had an influence on the City of Tshwane's decision to ultimately close down Centurion Lake.

Responses or attempts to address the deterioration of the lake seemed to be forthcoming only, or mainly, whenever there was elite outcry directly from the management of the Centurion Lake Mall or through regional newspapers (Makhubo 2011).

There is no consensus on the ultimate future of the lake. In the medium term a decision was taken by the municipal council to close the lake (interview with Scientist 5 2011). However, there is no long-term consensus on what should ultimately happen to the lake, after its closing and 'greening' in the medium term.

The fact that the lake was created artificially, even though it was created because the area is a natural wetland, is seen by some as reason enough to close it permanently. Others argue that the lake is a fiscal strain on the municipality's resources, and the fact that it is an 'eyesore' – as one newspaper headline put it – should be reason enough for the municipality to close it. It does seem also, from interviews conducted for this study, that attempts to resuscitate the lake to its 'former glory' may prove to be quite expensive.

The most compelling reason for the municipality to consider closing down the Centurion Lake would be the fact that the lake is used for purely aesthetic reasons. In this regard it is viewed as being of benefit only to the elite section of the population, which may have more choices for recreation other than a facility that may, in the long run, put increased and unnecessary strain on the fiscus.

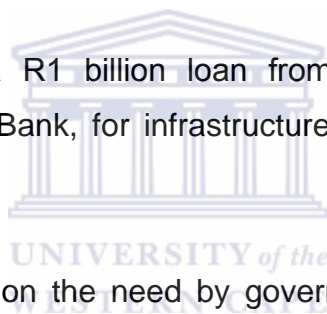
On the other hand there is a strong view that the debate about the lake should be re-opened at some stage. The main reason for that would be to take advantage of its tourism attraction potential, and to enhance the notion of creating a green city. It does seem that the two schools of thought might take time to reconcile. In the short term, the lake is surely destined for closure, with little prospects of being rebuilt.

6.1.2 Inadequate grant allocations

As a category A metropolitan municipality, the City of Tshwane is expected to generate most of its own income; the national and provincial governments both allocate grants for specific purposes only. The most important of such grants is the Municipal Infrastructure Grant (MIG), which is allocated by the National Treasury. The MIG can be used for a diversity of infrastructure projects. Other grants are in the fields of transport and energy.

Whereas these grants do assist the municipality to meet some of its obligations they remain inadequate for the municipality to address the multiplicity of demands placed on its fiscus. To this end the municipality has had to raise funds from the banking sector.

The municipality borrowed a R1 billion loan from one of the country's major commercial banks, Standard Bank, for infrastructure development (Standard Bank 2011)



The assertion from the bank on the need by government to raise funds from the commercial sector is illustrative. The bank's Thuli Kumalo, Director for Government, Institutions and BEE Finance said the following about the loan:

We are seeing an increased requirement for debt from various levels of government, including metros and provinces as they race to meet the 2014 deadline of the Millennium Development Goals to improve access to basic services. We expect the need for debt funding from local government to finance infrastructure spending to rise significantly in the next few years as they deal with pressure to improve service delivery (Ibid).

Reference to MDG funding and the need for such funding for the government to attain the 2014 deadline are illustrative of the fact that governments may have to rely on the private sector to meet their obligations to their populations. This in turn demonstrates the extent to which fiscal challenges faced by the governments would

have an impact on their ability to deliver basic services such as water, which has been established in this study to be a human right as per the provisions of the national constitution of South Africa and related water legislation.

6.1.3 Failure to privilege the poor: Disjuncture between policy and practice

On paper the municipality seems committed to delivering services to all residents, especially the poor. This is demonstrated by the existence of the indigent policy. However, it is in the implementation of this policy that a disjuncture emerges. Whereas the 12 kilolitre policy applies, there seems to be difficulties in implementing this policy.

The major problem is that not all households have been registered on the database. This means that many deserving households, including the increase brought about by the incorporation of the former Nokeng tsa Taemane and Kungwini local municipalities do not benefit from the services as they are rendered, irrespective of the inadequacies which we will consider below.

The other major challenge is the view by some that the allocation of 12 kilolitres is not enough. Indeed, in many townships people have more people living in households than the allocation would cater for. Even though water cut-offs are limited, the reality is that restrictions, which take the form of reduced pressure, means that water is low in quantity. I observed, during this study, in one house in Soshanguve, one of the townships in the municipality, how slow water comes out, and of very low qualities.

The other problem is that the municipality has not yet delivered on the United Nations prescript of a water point within 200 metres. Whereas there are claims in that regard, the reality is that some of the communal water tanks were provided by private individuals and not the municipality.²⁰

²⁰ Information provided by SANCO.

Whereas there is nothing wrong in principle with regards to accepting assistance from private individuals or companies, it should be of concern that the state – in this case the municipality – should fail to provide a basic service to its residents, to a point where private individuals or companies must fulfil what should be a function by the state itself.

6.2 Failure to implement IWRM

Whereas there seem not to be any fundamental water quality issues the major weakness is the implementation of IWRM framework guidelines. First, the municipality has clearly adopted a narrow natural science approach of concentrating purely on water quality. This is good and must be commended; but it is not enough. There is no effort to involve stakeholders. In the case of Centurion Lake there has not been adequate attention given to ensuring that engagement with businesses in and around the lake became part of the solution.

On the other hand there has not been any attention given to the inclusion of communities in the management of water resources. The approach in this regard is purely top-down. Communities are excluded and when they are included it is only when they must list their needs during the IDP processes, and also through the ward committees. These processes are however not meaningful enough to qualify as IWRM processes.

6.3 Internal competition over resources

It can be argued that, by their very nature, governments – and even more so municipalities – all over the world are faced with having to master the art of managing competition for resources. As a municipality that has to offer a range of services – from water to electricity, through to recreational services – the City of Tshwane must ensure that the fiscal resources are spread equitably for various services.

Equitable allocation is used deliberately here to indicate that, as the budget allocations of the municipality demonstrate, basic services departments such as

Public Works and Infrastructure – which includes water services; Roads and Transport – ironically the department that manages the Centurion Lake; and Housing and Human Settlement, would receive more allocations than other departments (City of Tshwane 2011).

On the other hand the municipality cannot ignore some of the obligations that it has in other areas such as environment management, community safety, health and social development, and sports and recreation. The budget allocation reflects the attempt to strike this balance.

While attempts are indeed made to maintain the above balance it is not always possible to achieve desired results. Certain areas would suffer and the effects of austerity would be manifest. From the evidence presented in this study it is clear that one such area where the effects of austerity would be visible and difficult to avoid is in the case of the Centurion Lake.

The municipality has clearly failed to maintain the lake to standards that would be acceptable to both tenants of the Centurion Lake Mall and adjacent hotels on the one hand, and the visitors, shoppers and ordinary residents in general. As already argued above, the solution to the inability to provide funding for the lake has not be to search for such funding but instead to divest from the management of the lake and to close it down.

The municipality could have considered leasing out the lake to private sector investors for them to develop and maintain it, on condition that the lake would be maintained as a lake and therefore the land on which it is located would not be turned into something else.

To the principal research question posed in Chapter 1, on whether the municipality is able to strike a balance between provisions of fiscal resources for the management of water resources, as opposed to other needs, the answer is a complex one.

Firstly, the municipality seems to be able, as already outlined, to maintain required standards with regards to provision of quality water for consumption purposes – whether such consumption is for domestic or industrial purposes. Through the pooling of the water resources drawn from and purified at the Rietvlei Dam into a common pool comprising of water resources drawn from other sources – such as Rand Water – the municipality is able to provide adequate quality water resources to its citizens in general, whether domestic or industrial.

There have not been questions of supply (quantity) or the quality of such supply. To this end it can be argued that the municipality is able to maintain a balance that seeks to fulfil the constitutional and legislative obligation of provision of water as a human right.

The above conclusion does not include concerns raised with regards to the supply of water by Magalies Water to the City of Tshwane and the quality thereof, as referred to in Chapter 3. That matter is beyond the scope of this study and therefore no opinion can be expressed on the subject. It is safe to assert that the water from the Rietvlei Dam is of good quality; at least according to the scientists interviewed for the study and the fact that the municipality has won successive Blue Drop Awards.

On the other hand the municipality can be said to have failed to maintain a balance in order that the Centurion Lake would not deteriorate. As already argued, there seemed to have been no will to maintain the lake in a good shape. Neither is it desirable, at least in the view of this study, to allocate further resources to maintain the lake.

The above assertion, based on the evidence presented for this study, that the municipality seems to lack the will to maintain the lake, and the view that the lake is no longer a good investment but a strain to the municipality's fiscus, do demonstrate the assumption that fiscal austerity leads to reduction in certain services.

In the case of this study the Centurion Lake has been sacrificed due largely to the fact that the municipality did not see in it a worthy project to maintain. On the other

hand all indications are that the Rietvlei Dam will continue to receive the necessary investments.

The reasons for continued support of Rietvlei Dam are that the municipality must provide basic services – the human rights discourse – which is a pronounced reason, and the need to generate income, which is an unpronounced reason.

6.4 Fiscal austerity as imposition of innovative management and tough choices

Taken to its logical conclusion the above observations, assertions, views and conclusion may suggest to us that the era of fiscal austerity does not only lead to cutting of social expenditure. This much has been established through many studies that have had as their focus the effects of fiscal austerity on the way governments are managed.

What emerges through this study is that the various documents produced by the Water and Sanitation division – principal amongst them being the Business Plan referred to in Chapter 3 – contain the argument that without adequate resource allocation there will be negative effects on services, this however has not translated into actual deterioration or collapse of certain sites.

Instead of deterioration or collapse in the case of Rietvlei Dam, the water and sanitation division of the municipality has continued to produce quality water using resources that may not be adequate. What this suggests – and can be gathered from the interviews referred to in Chapter 5 – is that the technical management has had to adopt innovation. What they have done is to maximise the use of resources and, instead of holding the view that resources can resolve every problem, adopted a positive attitude of using whatever resource are at their disposal – human and physical – to maintain high output standards and quality.

On the other hand, for the Roads and Transport department the challenge posed by the Centurion Lake seemed to have not been treated as a major priority. A comparison of the above efforts at Rietvlei Dam and the lack of enthusiasm shown

towards the maintenance of Centurion Lake suggest that the collective management of the municipality adopted the choice of maintenance for the one side, and gradual abandonment for the other. This choice does not seem to have been made consciously; it is an unconscious choice, even for other role-players themselves.

6.5 Recommendations

From the consideration of facts presented in this study it is possible to suggest a number of recommendations.

The first relates to budgetary allocations. Whereas the municipality is doing a good job in terms of ensuring water quality in terms of national standards there is a need to close the gap that exists with regards to the allocation of budgets for new settlements. Attempts should be made to ensure that new houses receive meters immediately, so that the culture of non-payment is reduced which results from people getting used to not paying for a long time, but also results from residents being unable to pay because of huge cumulative amounts.

The second recommendation would be for the Water and Sanitation division to change their formula or consideration of what they view as a household. The classical consideration of a household as a dwelling that is well-planned and constructed, in a well-kept site, while ideal, is out of touch with the South African reality.

The reality is that informal settlements are a feature of the South African human settlement landscape, and indications are that they will remain so in the foreseeable future. To this end informal households must be considered as households in their own right. Barring geological considerations such as dolomitic areas, services must be installed in these households so that the poor may also receive the benefits other households are afforded.

The third recommendation relates to the implementation of IWRM. This framework is enshrined in the national water policies and must therefore be implemented. With

regards to the Centurion Lake it is important that, until the lake is closed, attempts continue to be made to involve stakeholders in managing the crisis. The business community in and around the lake must form part of a committee or similar to find solutions.

Similarly, the task team comprising of the national, provincial and municipal, departments initially aimed at seeking solutions to pollution at source must be revived. There is absolutely no way that the municipality will be able to address the problems of the deterioration of the lake, even though it will be closed, without this task team. Even after being closed the problem will persist because the area where the lake is situated is itself a wetland that receives water from Ekurhuleni. As such, the task team must be revived irrespective of whichever decision – closing the lake or reviving it – is taken.

The final recommendation is that the municipality must divest from active maintenance of the lake. The reality is that the main beneficiaries from the lake being a recreational and aesthetic feature are the businesses around it. In the same manner that businesses would pay for being positioned in a prime spot the businesses around Centurion Lake must pay for being situated there.

The best way for the divesting of the lake would be to lease it to the businesses around it. The advantage of leasing is that the municipality will retain the area as a prime spot, while receiving remuneration from the agreement. Another option, if the business community does not accept the lease option and therefore itself divest from any interests on the lake, would be to turn the area into a park. This will be with an understanding that the wetland nature of the area must still be managed and hence the third recommendation above remains critical. The municipality may then have to devise revenue generation means, such as hiring out of the park for events. This will then assist with the maintenance of the lake.

6.6 Conclusion

The principal aim of this study was to establish the link between fiscal austerity and the effects thereof on the management of water resources. Using the key sites of Rietvlei Dam and Centurion Lake within the City of Tshwane the study sought to establish how the municipality is managing these two sites in the face of challenges that are not unique to it but that also affect other municipalities.

It was established that fiscal austerity measures are indeed applicable and have an effect on the City of Tshwane. It was established however that the municipality seems to be adhering to the notion of water services and the provision thereof being a human rights as per the constitution and applicable legislation, while on the other hand using water as a revenue source.

While the municipality does adhere to the notion of water services being a human right there is evidence to suggest that the allocation of fiscal resources for water services is not as would be expected by the technical management of these services.

What emerged though, is that while the fiscal allocations are not adequate this has not led to compromises in terms of supply output – quantity of water produced and supplied to citizens, both domestic and industrial – and quality. This suggests that the management has had to adjust to and manage with available resources.

On the other hand, the municipality seems to have taken the view, even though unconsciously, of privileging human rights obligations over elite aesthetic interest. To this end the Centurion Lake has not received the kind of attention that those who would like to extract benefit from it – the business owners adjacent to the lake – would like to see happening. Whereas this decision may seem short-sighted in that it has sacrificed the two fundamental and important notions of greening the environment and using assets for tourism attraction, it is a defensible position in that the focus for the municipality should be provision of water resources for poor people and not just for elite interests.

On the above point the municipality seems to have had led itself into fiscal austerity choices being imposed on it by circumstances which could have been prevented – those of initial and protracted neglect of a strategic asset. This may suggest that one of the key factors that arise in the era of fiscal austerity is not only the lack of adequate resources; but also that of having to avoid wrong choices that might be costly in the long term.



ADDENDUM 1: FUNDAMENTAL PRINCIPLES AND OBJECTIVES FOR A NEW WATER LAW FOR SOUTH AFRICA

LEGAL ASPECTS OF WATER

Principle 1

The water law shall be subject to and consistent with the Constitution in all matters including the determination of the public interest and the rights and obligations of all parties, public and private, with regards to water. While taking cognisance of existing uses, the water law will actively promote the values enshrined in the Bill of Rights.

Principle 2

All water, wherever it occurs in the water cycle, is a resource common to all, the use of which shall be subject to national control. All water shall have a consistent status in law, irrespective of where it occurs.

Principle 3

There shall be no ownership of water but only a right – for environmental and basic human needs – or an authorisation for its use. Any authorisation to use water in terms of the water law shall not be in perpetuity.

Principle 4

The location of the water resource in relation to land shall not in itself confer preferential rights to usage. The riparian principle shall not apply.

THE WATER CYCLE

Principle 5

In a relatively arid country such as South Africa, it is necessary to recognise the unity of the water cycle and the interdependence of its elements, where evaporation, clouds and rainfall are linked to groundwater, rivers, lakes, wetlands and the sea, and where the basic hydrological unit is the catchment.

Principle 6

The variable, uneven and unpredictable distribution of water in the water cycle should be acknowledged.

WATER RESOURCE MANAGEMENT PRIORITIES**Principle 7**

The objective of managing the quantity, quality and reliability of the Nation's water resources is to achieve optimum, long term, environmentally sustainable social and economic benefit for society from their use.

Principle 8

The water required to ensure that all people have access to sufficient water shall be reserved.

Principle 9

The quantity, quality and reliability of water required to maintain the ecological functions on which humans depend shall be reserved so that the human use of water does not individually or cumulatively compromise the long term sustainability of aquatic and associated ecosystems.

Principle 10

The water required to meet the basic human needs referred to in Principle 8 and the needs of the environment shall be identified as 'The Reserve' and shall enjoy priority of use by right. The use of water for all other purposes shall be subject to authorisation.

Principle 11

International water resources, specifically shared river systems, shall be managed in a manner that optimises the benefits for all parties in a spirit of mutual co-operation. Allocations agreed for downstream countries shall be respected.

WATER RESOURCE MANAGEMENT APPROACHES

Principle 12

The National Government is the custodian of the nation's water resources, as an indivisible national asset. Guided by its duty to promote the public trust, the National Government has ultimate responsibility for, and authority over, water resource management, the equitable allocation and usage of water and the transfer of water between catchments and international water matters.

Principle 13

As custodian of the nation's water resources, the National Government shall ensure that the development, apportionment, management and use of those resources is carried out using the criteria of public interest, sustainability, equity and efficiency of use in a manner which reflects its public trust obligations and the value of water to society while ensuring that basic domestic needs, the requirements of the environment and international obligations are met.

Principle 14

Water resources shall be developed, apportioned and managed in such a manner as to enable all user sectors to gain equitable access to the desired quantity, quality and reliability of water. Conservation and other measures to manage demand shall be actively promoted as a preferred option to achieve these objectives.

Principle 15

Water quality and quantity are interdependent and shall be managed in an integrated manner, which is consistent with broader environmental management approaches.

Principle 16

Water quality management options shall include the use of economic incentives and penalties to reduce pollution, and the possibility of irretrievable environmental degradation as a result of pollution shall be prevented.

Principle 17

Water resource development and supply activities shall be managed in a manner which is consistent with the broader national approaches to environmental management.

Principle 18

Since many land uses have a significant impact upon the water cycle, the regulation of land use shall, where appropriate, be used as an instrument to manage water resources within the broader integrated framework of land use management.

Principle 19

Any authorisation to use water shall be given in a timely fashion and in a manner which is clear, secure and predictable in respect of the assurance of availability, extent and duration of use. The purpose for which the water may be used shall not arbitrarily be restricted.

Principle 20

The conditions upon which authorisation is granted to use water shall take into consideration the investment made by the user in developing infrastructure to be able to use the water.

Principle 21

The development and management of water resources shall be carried out in a manner which limits to an acceptable minimum the danger to life and property due to natural or manmade disasters.

WATER INSTITUTIONS**Principle 22**

The institutional framework for water management shall as far as possible be simple, pragmatic and understandable. It shall be self-driven and minimise the necessity for State intervention. Administrative decisions shall be subject to appeal.

Principle 23

Responsibility for the development, apportionment and management of available water resources shall, where possible and appropriate, be delegated to a catchment or regional level in such a manner as to enable interested parties to participate.

Principle 24

Beneficiaries of the water management system shall contribute to the cost of its establishment and maintenance on an equitable basis.

WATER SERVICES**Principle 25**

The right of all citizens to have access to basic water services – the provision of potable water supply and the removal and disposal of human excreta and waste water – necessary to afford them a healthy environment on an equitable and economically and environmentally sustainable basis shall be supported.

Principle 26

Water services shall be regulated in a manner which is consistent with and supportive of the aims and approaches of the broader local government framework.

Principle 27

While the provision of water services is an activity distinct from the development and management of water resources, water services shall be provided in a manner consistent with the goals of water resource management.

Principle 28


Where water services are provided in a monopoly situation, the interests of the individual consumer and the wider public must be protected and the broad goals of public policy promoted.

ADDENDUM 2: SERVICE DELIVERY PATTERNS

Area ²¹	Category	Statistics
Kungwini	Total households	43150
Kungwini	Total population	124011
Kungwini	Water Backlog: households with below basic/ RDP level service	13065
Kungwini	Sanitation backlog: households below basic/ RDP level of service	13065
Kungwini	Number of indigent registered	1587
Nokeng	Total households	18389
Nokeng	Water backlog: households with below basic/ RDP level ¹⁰² of service	16416
Nokeng	Sanitation backlog: households with below basic/ RDP level of service	16416
Nokeng	Indigent registered	870
Metsweding	Housing backlogs	22000
City of Tshwane	Total households	686640
City of Tshwane	Total population	2345908
City of Tshwane	Estimated Formal households 2007	486101
City of Tshwane	Estimated Informal households 2007	184019

²¹ The names of the former two local municipalities of Kungwini and Nokeng tsa Taemane are used here to illustrate the extent of the additional backlogs that resulted from the incorporation, over all above those that the pre-incorporation City of Tshwane had. The latter is illustrated simply as CoT.

City of Tshwane	Households in formalised areas that have access to basic water	11985
City of Tshwane	Households in formalised areas that have access to full water service	399441
City of Tshwane	Water backlog formalised areas (households that must still receive metered stand water connections)	<p>Backlog by April 2011, 43306 (made up as follows)</p> <p>Original 2006 backlog= 24252</p> <p>Plus Densification up to 2009= 33078</p> <p>Minus 1600 delivered in Tswaing that will remain at basic</p> <p>Minus 830 delivered in Dilopye that will remain basic</p> <p>Minus 11 594 metered stand connections done.</p>
City of Tshwane	Sanitation backlog formalised areas (Households in Tshwane that must be taken from below basic to full sanitation)	<p>Backlog by April 2011 = 55371 (made up as follows)</p> <p>2006 backlog= 24210</p> <p>Minus 4867 basic connections provided in Winterveldt (it will remain basic)</p> <p>minus 2732 full sanitation connections provided</p>
City of Tshwane	Sanitation backlog:	Backlog by April 2011=

	informal areas: households with below basic sanitation	69987 made up as follows: Atteridgeville= 19825 Centurion= 7102 Mabopane = 4575 Mamelodi= 24282 Soshanguve=9752 Temba= 4103 Central= 348
City of Tshwane	Water backlog: informal areas: households with below basic sanitation 	Backlog by April 2011 =69987 made up of: Atteridgeville= 19825 Centurion= 7102 Mabopane = 4575 Mamelodi= 24282 Soshanguve=9752 Temba= 4103 Central= 348
City of Tshwane	Formalised areas: households with basic sanitation	4802
City of Tshwane	Formalised areas: households with access to full sanitation	385990
City of Tshwane	Number of indigent registered	82100
New CoT area	Estimated total households	748179
New CoT area	Estimated total population	2519308
New CoT area	Estimated total informal households	99468 made up of: 69987 in CoT, 16416 in

		<p>Nokeng that have below basic water and sanitation, and 13065 in Kungwini</p> <p>The CoT department of housing and sustainable human settlements indicates 120000 in CoT and 22000 as the Metsweding Housing Backlog.</p>
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Source: City of Tshwane Integrated Development Plan 2011 – 2016



ADDENDUM 3: KEY INFORMANTS

Interviewees

1. Lisa Mangcu, Strategic Executive Director: City of Tshwane Roads and Storm Water department (2011)
2. Leanne Coetzer, Deputy Director, Scientific Services, City of Tshwane Water and Sanitation division (2011)
3. Carel Taljaard, Manager, Rietvlei Water Treatment Works, City of Tshwane Water and Sanitation division (2010)
4. Jabulani Tshabalala, Regional Secretary, South African National Civic Organisations, Tshwane Region (2011)
5. Mduduzi Shabangu, Director: Bulk Services, City of Tshwane Water and Sanitation division (2011)
6. Godwin Monamudi, Deputy Director, City of Tshwane Roads and Storm Water department (2011)
7. Minky Mosime, Councillor, Mamelodi, City of Tshwane (2011)
8. Johanna Matentzi, Councillor, Mamelodi, City of Tshwane (2011)

Other informants

1. Philip J. van der Walt, Consulting Engineer & Project Manager., City of Tshwane Water and Sanitation division
2. Riaan Marais, City of Tshwane Agriculture and Environment Management Department



REFERENCES AND BIBLIOGRAPHY

Agarwal A E (2000) 'Integrated Water Resources Management', *Technical Advisory Committee Background Paper 4*. Global Water Partnership: Stockholm.

Al Radif A (1999) 'Integrated water resources management (IWRM): an approach to face the challenges of the next century and to avert future crises' *Desalination* 124 (1999): 145.

Ashley B (2003) 'Apartheid South Africa as a case study for the cancellation of the illegitimate debt'. Accessed on October 19 2011 at: <http://www.odiousdebts.org/odiousdebts/index.cfm?DSP=content&ContentID=8004>

Bakker K (2007) 'The "Commons" versus the "Commodity": Alter-globalisation, Anti-privatisation and the Human Rights to Water in the Global South', *Antipode* 39(3): 430-455.

Barchiesi F (2008) 'Wage labor, precarious employment, and social inclusion in the making of South Africa's postapartheid transition' *African studies review* 51(2): 119-142.

Barson M and Avenant-Oldenwage A (2006) 'Nematode parasites of *Clarius gariepinus* (Burchell, 1822) from the Rietvlei Dam, South Africa', *Onderstepoort Journal of veterinary Research* 73: 87 – 94.

Bateman B (2008) September 29). 'Centurion lake to be dredged in November' *Pretoria News*, September 29, 2008. Independent Newspapers: Pretoria, Gauteng.

Bateman B (2008). 'Council to tackle Centurion Lake pollution, pong', *Pretoria News*, September 4 2008. Independent Newspapers: Pretoria, Gauteng.

Bateman B (2010) 'Centurion Lake causing a stink', *Pretoria News*, February 15 2010. Independent Newspapers: Pretoria, Gauteng.

BBC (2010) 'Greece's Austerity Measures', *BBC*, May 5 2010 Retrieved November 5

Bello W (1994) *Dark victory: The United States, structural adjustment and global poverty*. Pluto Press: London.

Bhorat H (2004) 'Labour market challenges in the post-apartheid South Africa', *South African Journal of Economics* 72(5): 940-977,

Biswas A K (2004) 'Integrated water resource management: A reassessment', *Water International* 29(2).

Blomquist W; Heikkila T and Schlager E (2001) 'Institutions and conjunctive water management among three western states' *National Resources Journal* 41(3) .

Bond P (2005) *Elite Transition: from apartheid to neoliberalism in South Africa*. University of KwaZulu-Natal Press: Pietermaritzburg.

Bond P (2006) *Talk left, walk right: South Africa's frustrated global reforms*. University of KwaZulu-Natal Press: Pietermaritzburg.

Booth R; Wachman R and Vasagar J (2010) 'Austerity drive will hand billions to private sector', *The Mail and Guardian*, July 16 2010. Accessed on November 11 2010 at: <http://www.guardian.co.uk/politics/2010/jul/16/austerity-drive-billions-private-sector>

Brooks D B (2002) *Water: Local level management*. International Development Research Centre: Ottawa.

Bruschweiler S (2003) *Integrated Water Resource Management (IWRM): A way to sustainability*. InfoResources Focus No 1/03: Zollikofen.

Calder I R (2005) *Blue revolution: Integrated land and water resources management*. Earthscan: London.

City of Tshwane (2008) *Public Work and Infrastructure Water and Sanitation Division Business Plan 2008/09*. City of Tshwane: Pretoria.

City of Tshwane (2010) *Indigent policy review – a Council report. Council meeting of 28 October 2010*. Accessed on December 1 2011 at: <http://www.tshwane.gov.za/Council/OfficeofExecutiveMayor/Health%20and%20Social%20Development/2.%20Indigent%20Policy%20Review.pdf>

City of Tshwane (2011) *Integrated Development Plan 2011 – 2016*. City of Tshwane: Pretoria.

City of Tshwane (2011) *Medium Term Revenue and Expenditure Framework, 2011/12*. Pretoria, City of Tshwane

Clements, M and Haarhoff, J (2004) *Practical experiences with granular activated carbon (GAC) at the Rietvlei Water Treatment Plant*. Water SA Vol. 30 No. 1 January 2004

Conca K (2006) *Governing water: Contentious transnational politics and global institution building*. MIT Press: Cambridge, Massachusetts.

Danaher K (1994) *50 years is enough: the case against the World Bank and the International Monetary Fund*. South End Press: Boston.

De Coning C and Sherwill T (2004) *An assessment of the water policy process in South Africa (1994 to 2003)*. Water Research Commission: Pretoria.

Department of Finance, Republic of South Africa (1996) *Growth, Employment and Redistribution: A Macroeconomic Strategy*. Accessed on October 20 2011 at: <http://www.treasury.gov.za/publications/other/gear/all.pdf>

Department of Water Affairs and Forestry (2000) *Policy and Strategy for Groundwater Quality Management in South Africa (1st ed)*, number W.1.0.

du Plooy C (2006) 'Centurion Lake causes a stink', *Pretoria News*, March 30 2006. Independent Newspapers: Pretoria Gauteng.

Easter K W and Renwick M E (eds) (2004) *The economics of water resources: Institutions, instruments and policies of managing scarcity*. Ashgate Publishing: London.

Francis R (2005) *Water Justice in South Africa: Natural Resources Policy at the Intersection of Human Rights, Economic and Political Power*. Berkley Electronic Press Legal Series 518.

Gauteng Provincial Government (2000) *Gauteng Provincial Government Gazette 6770 of 2000*. Government Printers: Pretoria.

Gauteng Provincial Government (2010) *Gauteng Provincial Government Gazette 1866, 2010*. Government Printers: Pretoria.

Gordhan P (2010) *Budget speech by the South African Minister of Finance to the National Assembly, 17 February 2010*. Accessed on November 20 2011 at: <http://www.treasury.gov.za/documents/national%20budget/2010/speech/speech2010.pdf>

Government of South Africa (1997) *White Paper on a National Policy for South Africa*. SA Government Printers: Pretoria.

Guy J (2004) 'Somewhere over the rainbow: The nation-state, democracy and race in a globalising South Africa', in *Transformation: Critical perspectives on Southern Africa* 56: 68-89.

Hamann R and O'Riordan T (undated) *South Africa's policy transition to sustainability: environmental and water law*. Accessed September 04 2011 at: http://www.africanwater.org/SAPolicyEnv_and_water.htm

Hammond R & McGowan L A (1993) *The other side of the story: the real import of World Bank and IMF standard adjustment programmes*. Development Group of Alternative Policies: Washington, D.C.

Hassing J; Ipsen N; Clausen T J; Larsen H and Lindgaard-Jorgensen P (2010) *UN-Water*. Accessed on November 12 2010 at: <http://www.unwater.org/downloads/181891E.pdf>

Heintz J (2003) *Out of Gear? Economic policy and performance in post-apartheid South Africa. Research brief 2003-1*, Political Economic Research Institute: University Of Massachusetts, Amherst.

Hendricks L B (2009) 'Making water a tool for development in Africa', address by

Hendricks L B, (Minister of Water Affairs and Forestry) *at the fifth World Water Forum, Ministerial Roundtable* March 21 2009. Ceylan Intercontinental Hotel, Istanbul. Accessed on March 01 2010 at: [http://www.search.gov.za/info/previewDocument.jsp?dk=%2Fdata%2Fstatic%2Finfo%2Fspeeches%2F2009%2F09033110151003.htm%40Gov&q=\(+agriculture+%3CAND%3E+education+%3CAND%3E+policy+\)&t=L+Hendricks%3A+Fifth+World+Water+Forum](http://www.search.gov.za/info/previewDocument.jsp?dk=%2Fdata%2Fstatic%2Finfo%2Fspeeches%2F2009%2F09033110151003.htm%40Gov&q=(+agriculture+%3CAND%3E+education+%3CAND%3E+policy+)&t=L+Hendricks%3A+Fifth+World+Water+Forum)

Howe C W and Smith M G (1993) 'The value of water supply reliability in urban systems', Easter K W and Renwick M E (eds), *Economics of water resources* (2009). Hants: Ashgate.

Jessen C (2010) August 18). 'Tensions Rise in Greece as Austerity Measures Backfire', *Spiegel Online*, August 18 2010. Accessed on November 11 2010 at: <http://www.spiegel.de/international/europe/0,1518,712511,00.html>

Kelly K and Ntlabati P (2007) 'Marketisation of municipal services, daily life and HIV in South Africa: A Grahamstown case study', *Occasional Papers Series* 14. Ontario, Municipal Services Project: Ontario.

King C (2000) 'Post-postcommunism: Transition, comparison, and the end of "Eastern Europe"', *World Politics* 53(1): 143-172.

Kingdom G G and Knight J (2004) 'Race and the incidence of unemployment in South Africa', *Review of Development Economics* 8(2):198 – 222.

Larson K L Gustafson A and Hirt P (2009) 'Insatiable thirst and a finite supply: An assessment of municipal water-conservation policy in Greater Phoenix, Arizona, 1980-2007' *Journal of political history* 21(2): 107-137.

Leibbrandt M; Woolard I; Finn A and Argent J (2010) 'Trends in South African Income Distribution and Poverty since the fall of Apartheid', Paris, Organisation for Economic Co-operation and Development.

Little M and Marks L (2010) 'Ontario and British Columbia welfare policy: variants on a neoliberal theme', in *Comparative studies of South Asia, Africa and Middle East* 30(2): 192-203.

MacDonald M (2004) 'The political economy of identity politics', *The South Atlantic quarterly* 103(4): 629-656.

Magome M (2008) December 19). 'Centurion Lake remains an eyesore', *Pretoria News*, December 19 2008. Independent Newspapers: Pretoria, Gauteng..

Magome M (2008) November 20). 'Council puts off dredging of lake'. *Pretoria News*, November 20 2008. Independent Newspapers: Pretoria, Gauteng.

Magome M (2011) 'Tshwane it will be – mayor', *Pretoria News*, November 22 2011. Independent Newspapers: Pretoria, Gauteng.

Makhubo N (2011) 'Big stink set to continue as work at lake grinds to a halt', *Pretoria News*, November 1 2011.

Mangcu L (2010) *Progress report on Centurion Lake and the Hennops River/Kaalspruit Catchment Area*. City of Tshwane (Mayoral Committee): Pretoria.

Marx K and Engels F (1998) *Communist Manifesto: a modern edition*. Verso: London.

McDonald D A and Pape J (2002). *Cost recovery and the crisis of service delivery in South Africa*. Human Sciences Research Council: Cape Town.

McDonald D A and Ruiters G (eds) (2005) *The age of commodity: water privatization in Southern Africa*. Earthscan: London.

McInnes P (2005) 'Entrenching inequalities: The impact of corporatisation on water injustices in Pretoria', in McDonald D A and Ruiters G (eds), *The age of commodity: water privatization in Southern Africa*. Earthscan: London.

Mengisteab K and Logan B I (eds) (1995) *Beyond economic liberalization in Africa: Structural adjustment and alternatives*. Zed Books: London.

Mollinga P P; Dixit A and Athukorala K (eds) (2006) *Integrated water resources management: Global theory, emerging practice, and local needs*. Sage Publications: California.

Mosley P (1995) *Aid and power: the World Bank and policy-based lending (2nd ed)*. Routledge: New York.

Mtolo J (2008) 'An overview of water for growth and development in South Africa', in Butterworth J; Keijzer M; Smout I and Hagos F, *International symposium on Multiple-use water services (2008)*, November 4-6 2008. Addis Ababa, Ethiopia

Municipal Infrastructure Task Team (2004) *Policy framework for the introduction of the Municipal Infrastructure Grant*. Department of Provincial and Local Government: Pretoria.

National Treasury (2011) 'Local Government Revenue and Expenditure for the period ended 30 June 2011: Fourth Quarter Local Government Section 71 Report (Preliminary Results)', *Press release*, September 2 2011.

Nattrass N & Seekings J (2001a). 'Two nations?: Race and economic inequality in South Africa today', *Daedalus* 130(1): 45-70.

Nattrass N & Seekings J (2001b) 'Democracy and distribution in highly unequal economies: the case of South Africa', *The journal of modern African studies* 39(3,4): 471-498.

Neuman W L (2000) *Social research methods: Qualitative and quantitative approaches*. Allyn and Bacon: London.

Nomqophu W; Braune E and Mitchell S (2007) 'The changing water resources monitoring environment in South Africa', *South African Journal of Science* 103: 306-310.

Opoku D K (2008) 'Political Dilemmas of Indigenous Capitalist Development in Africa: Ghana under the Provisional National Defence Council', *Africa Today*, 55(2): 25-51.

Payer C (1974) *The debt trap: the IMF and the Third World*. Monthly Review Press: New York.

Payer C (1982) *The World Bank: a critical analysis*. Monthly Review Press: New York.

Perry J and Vanderklein E (1996) *Water quality: management of a natural resource*. Blackwell Science: Oxford.

Postel S (1992) *The last oasis: Facing water scarcity*. Earthscan: London.

Postel S (2000) 'Entering an era of water scarcity: The challenges ahead', *Ecological applications* 10(4): 941 – 948.

Purdy J (2004) 'A world of passions: How to think about globalization now'. *Indiana journal of global legal studies* 11(2):,1-49.

Ramokgopa K (2011) *Budget speech for the City of Tshwane, 28 April 2011*. Accessed on November 14 2011 at: <http://www.tshwane.gov.za/AboutTshwane/NewsandEvents/news/Pages/Budget-Speech.aspx>

Reddy R V (2002) 'Water security and management: Lessons from South Africa', *Economic and political weekly* 37(28):, 2878-2881. Roberts K M (1996) 'Neoliberalism and transformation of populism in Latin America: The Peruvian case', *World politics: A quarterly journal of international relations*: 82-116.

Ruiters G (2007) 'Contradictions in municipalities in contemporary South Africa: Disciplinary commodification and self-disconnections', *Critical Social Policy* 27(4): 487-508.

Sadasivam B (1997) 'The impact of structural adjustment on women: A governance and human rights agenda', *Human rights quarterly* 19(3): 630-665. Volume 19. Seanego K (2010) 'Council makes a clean sweep of befouled Centurion Lake', *Pretoria News*, May 20 2010. Independent Newspapers: Pretoria, Gauteng.

Seekings J and Nattrass N (2002). 'Class, distribution and redistribution in post-apartheid South Africa', *Transformation: Critical perspectives on Southern Africa*: 1-30.

Shackleton C M (2009) 'Will the real custodian of natural resource management please stand up', *South African Journal of Science* 105: 91-93.

Sherwill C D (2004 June). *An assesment of the water policy process in South Africa (1994-2003)*. Fetwater.co.za accessed on September 04 2001 at: http://www.fetwater.co.za/misc/FETDocuments/AnnexH_1_PolicyReview.pdf

Standard Bank (2011) 'Standard Bank Group loans City of Tshwane R1bn', *Standard Bank*, July 11 2011. Accessed on October 23 2010 at: http://corporateandinvestment.standardbank.co.za/sa/news_centre/news_centre.jsp?from=recent&mediaid=491

Shoba S (2011) 'Merger could strain Tshwane resources', *Business Day*, 13 May 2011. Avusa Media: Johannesburg, Gauteng

Smaldone W (2007) 'Socialist paths in a capitalist conundrum: Reconsidering the German catastrophe of 1933', *Journal of world history* 18(3): 29-323

South African Labour Bulletin (2002) 'Employment trends: Has the economy created jobs since GEAR?', *South African* 26(1): 38-40.

Swain A and Stalgren P (2000) 'Water conflicts and insecurity', in Tevera D and Moyo S (ed) (2000) *Environmental security in Southern Africa*. Sapes Books: Harare.

Torjman P (2005) 'What is Policy?', *United Nations*, October 1 2010. The Caledon Institute of Social Policy: Ontario. Accessed on November 12 2010 at: <http://www.un.org/apps/news/story.asp?NewsID=36308&Cr=water&Cr1=>

United Nations Water (2010) 'Water issues: Contributing to the success of the eighteenth and nineteenth sessions of the Commission on sustainable Development', *Un-water*. Accessed on September 25 2010 at: http://www.unwater.org/downloads/UN-Water_UNSGAB_CSD_18_19.pdf

Terreblanche S (2002) *A history of inequality in South Africa, 1652 – 2002*. University of Press: Pietermaritzburg

Unknown (Undated) 'Apartheid debt as illegitimate debt', *Jubilee South website*. Accessed on November 11 2010 at: http://www.jubileesouth.org/tribunal/accusation_3/south_africa.htm

Van Eeden P H (2004) 'Comments on beak deformities at Rietvlei Dam Nature Reserve', *Afring News*, 33: 45-48.

Van Eeden E S (2008) 'Weaknesses in environmental action in South Africa: A historical glance on the West Rand (Gauteng province)', *Water Resources Development* 24(3): 463-475.

Vavi Z (2010) Address by Zwelinzima Vavi, COSATU General Secretary, to the NEDLAC Labour Sector School, January 25 2010.

Wafer A (2008) 'Scale and identity in post-apartheid Soweto', *Transformation: Critical perspective on Southern Africa* 66/67: 98-115.

Weber E (2002) 'Shifting to the right: The evolution of equity in the South African government's developmental and education policies, 1990-1999', *Comparative education review* 46(3):, 261-290

Wouters P; Dukhovny V and Allan A (2007) 'Implementing Integrated Water Resources Management in Central Asia', *Journal of environmental law* 20(3):493-496.

Yeboah E A (2000) 'Structural adjustment and the emerging urban form in Accra, Ghana', *African Today* 47(2):60-89.

Zuma J G (2010) 'State of the nation address'. *president of the Republic of South Africa to a joint sitting of parliament*, February 11 2010. Accessed on November 20 2011 at: <http://www.info.gov.za/speeches/2010/10021119051001.htm>

