Perspectives on the Market Processes Followed in Setting South African Water Services Tariffs

Report to the
Water Research Commission

compiled by

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EXECUTIVE SUMMARY

South Africa's private sector and using market processes are often dismissed by the government as a service providing option because they increase costs and fail the poor population. There is some substance to the government's position, given that there is a natural monopoly advantage in water service production, it would be expected that a single firm would emerge as dominant in the provision of these services to urban customers. On its own this outcome would not necessarily be undesirable, but were this firm to be a private one, and unregulated, it could be expected to practice exploitative pricing, make excess profits and undersupply waste water management service. A private firm would also not provide services to the poor unless their service was subsidised. However most of these deficiencies can be regulated and also occur under public sector provision.

Are the private sector failures sufficient reasons to abandon the market and private sector as mechanisms to deliver water service in South Africa? This report finds why little use is made of market processes and the private sector in water service provision, despite there being legal provision for such involvement. It also finds that public water service providers are not subject to competition policy and consumer protection provisions, whereas private sector providers are the administration of questionnaires to municipalities and the DWA showed that the various water service providers often operate under unique circumstances, making it difficult to extrapolate from one to another .

The examination of a case study on Nelson Mandela Bay Municipal tariff setting reveals a mismatch between economic principle and policy practice, and indicates that economic principle plays a lesser role in the design of tariff structures than other factors. Given the problems of public sector water service provision, the study concludes the case for dismissing private sector or public utility models for water service delivery may be weaker than is believed by the South African government.

Conclusion

There is great variation in the circumstances and customers served on which different South African municipalities provide water services – so that it will be very difficult to improve uniform 'one size fits all' norms and standards. Even in tariff setting there are many unique features that have evolved. Two results of this diversity of circumstances are that the DWA's regulatory hand has been 'loose' rather than 'tight' on the reins, and there has been little obvious benefits of scale of operation, outside of the metropolitan areas.

It is recommended:
- that the National Government not lose sight of the potential benefits of increased market (economic impact) sensitivity through private sector or public utility provision of water services;
- that compliance with existing competition policy and consumer protection legislation not be excluded from public sector provision;
- that an independent regulator needs to be created to govern over the water services sector that is separate from the DWA and the National Treasury;
- that water services cost calculations are performed regularly and accurately.

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The following student participated and is in the process of contributing a masters dissertation on the topic: Ryan Norden

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ABBREVIATIONS AND ACRONYMS

CA	-	Competition Act
CAA	-	Competition Amendment Act
CPA	-	Consumer Protection Act
DWA	-	Department of Water Affairs
DWAF	-	Department of Water Affairs and Forestry
IBT	-	Increasing Block Tariff
IRT	-	Increasing Rate Tariff
LGBER	-	Local Government Budget and Expenditure Review
NMB	-	Nelson Mandela Bay Metropol
NWA	-	National Water Act
OECD	-	Organization for Economic Co-operation and Development
PDG	-	Palmer Development Group
PPP	-	Public-Private Partnership
RWPS	-	Raw Water Pricing Strategy
UPR	-	Uniform prices with rebates
WRC	-	Water Research Commission
WSA	-	Water Services Act
WSI	-	Water Services Institutions

Chapter One

Failure in Water Service Provision

1.1 The South African 'failure' of private sector water service provision

During the 2000s private sector participation in water service provision grew in popularity across the world (Hanke & Walters, 2011). In 1999 five per cent of the world's population was served by private water suppliers. By 2006 this proportion had risen to ten percent, and by 2010 to 12 percent (Hanke & Walters, 2011: 36). For this reason, it has been somewhat surprising that the thrust of South African government policy during the 2000s has been discouraging toward private sector participation in water service production, and indeed also other services, with the consequence of increasing the public to private sector balance within the economy.[1] In the water services sector this policy has not taken the form of reducing the current involvement of the private sector in the water economy. South Africa's water service production arrangements were already overwhelmingly government dominated. Instead, the policy has taken the form of disinterest in incorporating the participation of the private sector in the future roll-out of water service provision (National Treasury, 2011).

The South African model for water service provision is one where the national government, in the form of the Department of Water Affairs (DWA, previously the Department of Water Affairs and Forestry, DWAF) regulates supply, the National Treasury subsidises shortfalls in cost recovery (for service provided to the poor and for investment in infrastructure) and local government is the constitutionally mandated agent appointed to administer the delivery of the water services (National Treasury, 2011). This delivery is guided by the Water Services Act of 1997. The constitutional mandate provided to local government permits own provision or outsourcing to private firms or public entities, but there has been negligible use made of the private sector option.

To the extent there has been use made of the private sector, it has taken the form of isolated experimentation with outsourcing to private utility companies. These experiments were initiated during the 1980s under a National Party government policy of promoting privatisation and deregulating services (McDonald & Ruiters, 2005). They continued during the 1990s under an African National Congress government policy of opening up the markets of the country to foreign competition and privatising state enterprises (McDonald & Ruiters, 2005: 25), but, by the beginning of the 2000s, this isolated experimentation had all but ceased, and the conclusion was being drawn that private sector participation was not a good option (Snowball et al, 2007). The primary two criteria by which the merit of privatisation

[1] A similar trend has been discernible in the private health sector, where government proposes to introduce a new funding mechanism (the National Health Insurance scheme), based mainly on channelling income that would otherwise be spent on private sector provision into cost recovery of public sector provision (CDE, 2011).

was assessed by these authors were quality of service and cost of service. The conclusions they drew were that the cost increased more than expected and the Public Private Partnership (PPP) did not work as well as had been hoped it would.

Queenstown was the first South African town to privatise its water services. It did so in 1988. Stutterheim followed in 1994 and Fort Beaufort in 1995. In the case of Fort Beaufort, supplementary payments to the private water service supply company increased fourfold between 1995 and absorbed 20% of the Fort Beaufort budget (Ruiters, 2005). The water service users had their water service fees increased by 22% in 1997-1998 (Ruiters, 2002).

In 1999 a PPP was set up in a municipal district called Odi. It is located in the North West Province and contains a largely poor population of about half a million people. This municipal district is made up of a number of townships, villages and peri-urban areas (Pape, 2001). Prior to setting up the PPP, 50% of water delivered was lost in distribution. The arrangement collapsed due to the PPP's inability to collect sufficient revenue to cover the cost of water service provision (McDonald and Ruiters, 2005).

Resistance to private sector experimentation is not a phenomenon unique to South Africa. Many global assessments of individual private firm performance in water service provision note high levels of social dissatisfaction and opposition to the idea of privatizing water services (Hanke and Walters, 2011). However, they also consistently find that the private sector performance compares favourably in price and quality of service with those of public enterprises (McAleese, 2001; Mueller, 2003; Hanke and Walters, 2011:36). The lesson to be learned is that experiments in private water service provision will often be met with suspicion and accusations that they will yield inequitable outcomes and increase costs, but that these accusations are often founded on flawed evidence (Hanke and Walters, 2011:36). Were these few South African privatisation experiments a fair empirical test of the case for increased private sector participation in water service provision? The assessment of the merit of South African privatisation experiments has been very limited in basis and focus of attention – on cost changes rather than cost comparisons for the same service (Ruiters, 2002; McDonald & Ruiters, 2005). It has also been based on the unrealistic expectation (the PPP experiment) that private sector firms would (and should) cover the deficit between what the poor were politically promised and what they and the government (through cross-subsidisation) could afford.

There is no debate that there are major economic disadvantages in private sector provision of water services. The debate is whether these economic disadvantages outweigh those alleged to occur in public sector provision in South Africa, such as, management and investment inadequacy, personnel incompetence and market (economic impact and demand) insensitivity (Bate & Tren, 2002; Segal, 2009). The relevance of the debate is that all is not well with the government dominated model of water service provision and serious backlogs and challenges are becoming

evident (Jacoby, 2012). The last major capital injection into water sector infrastructure occurred in the 1970's and 1980's, with the result that huge infrastructure backlogs have built up (National Treasury, 2011).

1.2 Economic Measures

There are various measures to test economically whether the current arrangement of the South African water sector is optimal. The three that shall be addressed in this section, and used throughout the report are efficiency measures, welfare measures and equity measures.

1.2.1 Efficiency

Allocative and X-inefficiencies are important to public sector provision as they provide measures to compare optimum provision. X-inefficiency is the internal waste that occurs when a firm acquires monopoly power, and is no longer pressured by competitors to keep its costs competitive (Depoorter, 1999: 502). Competitive markets keep prices low through fear of market share losses. In the presence of a competitive market, the firm does not need to worry about competition, and is able to become lax in efficiently managing costs (Depoorter, 1999).

Allocative inefficiency occurs when the firm is able to charge a price higher than that of the marginal cost of the good. This results in a wealth transfer from the consumers of a product to the seller, resulting in dead weight losses (Depoorter, 1999).

In a study that was undertaken in China, the most efficient firms were found to be those operating in public-private partnerships, with the private firms holding the controlling stake. Firms were more efficient in this situation than in the cases where the firms was wholly controlled by the government, controlled by the government yet consisting of public and private shareholders, or wholly owned by private individuals (Lin et al, 2012:21). This report will identify key failures of public and private sector water service provision with an aim of generating conclusions and guidance on addressing these failures and recommendations as ways to use market insights to improve efficiency.

1.2.2 Welfare

When evaluating a social policy, the effects of the policy and the social desirability of these effects must be assessed. The latter step leads one into the realm of welfare economics (Kaplow & Shavell, 2000). Welfare economics provides a basis for judging achievements of markets, policy and resource allocation and their effects on the wellbeing of individuals (Besley, 2004; Kaplow & Shavell, 2000). When the wellbeing of the individuals is aggregated, an overall social judgement may be formed (Kaplow & Shavell, 2000). Two fundamental theorems of welfare economics, all perfectly competitive equilibria, are Pareto efficient, and any Pareto efficient allocation may be decentralized by suitable choices of lump-sum transfers (Besley, 2004).

1.2.3 Equity

Equity relates to equal treatment of people – either in outcome or process viz., a more equal distribution of utility amongst consumers (Bourguignon et al, 2007: 237).

In the case of a private sector provision, competition may exist in bringing about equity (Kahneman et al., 1986). The way in which the firm treats its consumers and/or utilizes methods of production are important. If the firm is perceived to deal in unfair or inequitable methods they are at risk of alienating the market and losing market share (Kahneman et al., 1986).

1.3 Aims and objectives

This report will contribute to the debate on the best market structure to support water service delivery. It pursues this aim through the following sub-objectives:

- providing and overview of the legal framework and national guidelines within which municipalities and water boards providing water services in South Africa (Water Services Act, DWA guidelines, etc.)
- assessing the consistency of water service provision in practice with the content and spirit of other South African Law
- outlining the nature of the social failure that can occur when choosing private sector provision of water services within this legal framework and DWA guidelines
- examining examples of alleged social failures in municipal water service provision with a view to comparing them with those occurring under private sector provision
- surveying selected elements with an interest in public water service provision with a view to deepening insight into the nature of social failure under public sector provision
- reporting a case study of tariff setting within the Nelson Mandela Bay Municipality
- drawing conclusions about the merit of inviting private sector participation on the basis of the various assessments and questionnaire evidence.

1.4 Water Research Commission context for this report

This assessment forms one part of a Water Research Commission (WRC) project that critically reviews the South African municipal water service tariff structure in the light of the twin objectives of cost recovery and affordability (a demand side perspective) – WRC Project K5/2087.

1.5 Methodology

The study employed four research methodologies:

- desktop analysis of relevant South African Law governing municipal water services and national guidelines for this provision
- economic modelling with a view to generating predictions about water service provision under the relevant market conditions (a natural monopoly)
- ethical assessment based on selected economic ethics, welfare, efficiency and equity

- structured questionnaires to elicit opinion on selected public sector water service provision activities.

1.6 Structure of Report

In line with the primary objective and sub-objectives of this study: chapter one identifies the research problem, chapter two overviews the legal framework governing water service provision and municipal practice that is evolved within this framework, chapter three assesses the consistency of water service provision in practice with the content and spirit of South African competition and consumer protection Law, chapter four identifies social failures of private sector provision, chapter five identifies social failures of public sector provision, chapter six questions selected elements with an interest in public water service provision, chapter seven reports a case study tariff setting within the Nelson Mandela Bay Municipality and chapter eights draws conclusions.

Chapter Two

An overview of the legal framework and national guidelines within which municipalities and water boards provide water services in South Africa

2.1 Introduction

There is a well-developed legal framework that regulates the municipal provision of water services in South Africa. Chapter 2 overviews this framework and the national guidelines within which South African municipalities and water boards provide water services to the residents they serve. This framework makes provision for private sector participation in water service delivery, and so constitutes an important element in addressing the problem statement this report set itself. For this reason the overview of this framework was also identified as a sub-objective of the report. Under the South African model for water service provision, the Department of Water Affairs (DWA) regulates supply, the Treasury subsidises shortfalls in cost recovery (for service provided to the poor and for investment in infrastructure) and local government is mandated to administer the delivery of the water services (National Treasury, 2011). The mandate provided permits own provision, or outsourcing to private firms or public entities, but very little use has been made of the private sector option. The main Act within which all this occurs is the Water Services Act of 1997 (see Chapter Two).

The relevant legal acts are the Water Services Act of 1997, which governs provision of water services, including the interaction between water treatment facilities and municipalities; the National Water Act of 1998, which governs the provision of raw water by the DWA to the water treatment facilities and/or distribution centres; and the Raw Water Pricing Strategy of 2007, a document detailing the necessary steps to maintain a financially viable treatment facility.

2.2 A brief Overview

South African law sets out that the water tariff must take into account the recovery costs for additional investment, the scarcity and other environmental concerns of water and promote social equity, while allowing for negotiation processes between the various boards and the DWA (WSA, 1997; RWPS, 2007). The DWA recommends 6kl of water is provisioned for poor households, recovered through water service authority's normal business operations (DWA, 2002). The water boards negotiate agreements for water provision with water service authorities for multiple years, while the DWA is not limited by a stipulated period (RWPS, 2007).

The DWA is the market regulator, as well as the custodian of all raw water suppliers. Its position is one of administering many regional natural monopolies, partly reinforced by various legal barriers to entry and partly held in check by the political need to meet certain levels of performance and not increase prices too rapidly

(Hirschey, 2006; National Treasury, 2011). The attempts of the DWA to diversify supply management have so far been unsuccessful due to delays in the process (National Treasury, 2011). An independent regulator (of the DWA) for the water services sector is planned for implementation in the near future (National Treasury, 2011). South Africa's water services sector is a government regulated government natural monopoly.

2.3 Water Services Act of 1997

The water sector is directly governed by the Minister of Water Affairs. The Water Services Act of 1997 sets the extent of the minister's power in the water services sector and defines the powers and functions of water services authorities, water services providers and water boards.

A water services authority is a municipality responsible for ensuring access to water services (DWAF, 2002:9). Water service authorities have a duty to all consumers in their area of jurisdiction to ensure efficient, affordable, economical and sustainable access to water services (WSA, 1997:18). This duty is moderated by the availability of resources, the need for equitable regulation of resources and the duty to conserve water resources (WSA, 1997:18). The duty is further moderated by the alternative ways of providing access to water services, the need for regional efficiency and low costs, the need to achieve benefits of scale, the requirements of equality and the availability of resources from neighbouring water services authorities (WSA, 1997:20).

A water services provider is an organisation that provides water services to consumers or to another water services institution (DWAF, 2002:9). A water services authority may perform the functions of a water services provider (WSA, 1997). When a water services authority serves in this dual role, it becomes a water services institution and must manage and account separately for the different functions (WSA, 1997: 24). Examples of dual functioning municipalities are Nelson Mandela Bay and Cape Town Metropolitan municipalities.

A water board is an organization that provides water to other water services institutions within its service area (WSA, 1997:30). The water board must strive to optimally use water resources, be financial sustainable, promote the efficiency of the water service authorities and provide efficient, reliable and sustainable water services (WSA, 1997: 34). Additionally, the water board must act in an equitable, transparent and fair manner (WSA, 1997: 34). A water board must prepare and adopt a five-year business plan, updated annually, that must reflect the tariff applicable to each service, the method by which it has been determined, the motivation for the tariff and the estimated tariff income, amongst other things (WSA, 1997: 38). This business plan must be submitted to the minister for amendment or approval (WSA, 1997: 38).

The Minister has certain powers over the water board, as laid out in section 49 of the Water Services Act of 1997. These powers include setting the regulations under which the water boards exist and monitoring the consistency of their activities, with the objectives of the Water Services Act and the (own) declared objectives of the water board (WSA, 1997: 22-23).

The Water Services Act of 1997 provides no overriding clause relieving any institution of complying with other laws relating to the abstraction and use of water and the disposal of effluent.

2.4 National Water Act of 1998

The National Water Act of 1998 governs the application and the distribution of untreated water. The possible uses of the untreated water include agriculture and preparation for domestic consumption through treatment by water boards and water service institutions. The National Water Act provides the framework under which the Department of Water Affairs set water use charges and formulate pricing strategies.
The following are features of the Act

- the pricing strategy must differentiate on an equitable basis between geographic areas and categories of water use;
- charges must be paid by consumers directly or by a water management institution;
- the pricing strategy must differentiate geographic areas on the basis of socio-economic aspects within the area in questions, the physical attributes of each area and the demographic attributes of each area;
- the pricing strategy must differentiate in respect of different water users on the basis of the extent of their water use and their economic circumstances;
- the pricing strategy may make provision for a differential rate for waste discharges;
- the water use charges may include incentives to promote the efficient and beneficial use of water, reduce detrimental impacts on water resources and discourages the waste of water (NWA, 1998: 33).

The Act itself is of less importance to the services sector than the Water Services Act of 1997, but details how the water should be treated in a sustainable manner. These objectives are further unpacked in the Raw Water Pricing Strategy of 2007.

2.5 Raw Water Pricing Strategy of 2007

The first Raw Water Pricing Strategy to be released was published in 1999. Since then it has since been revised once, in 2007. A further revision was in development (at the time of writing) for publication in 2012. The objectives that fuelled the formulation of the 2007 Raw Water Pricing Strategy (RWPS) were social equity, ecological sustainability, financial sustainability, and economic efficiency

(RWPS, 2007: 4-5). The strategy outlines what water charges should attempt to recover e.g., operations and maintenance costs, deprecation costs, refurbishment costs, return on asset charges, water resource development costs, capital unit charges and betterment costs (RWPS, 2007: 17). These charges are further broken down into subcomponents.

- O&M charges consist of:
  - direct charges, attributed to directly maintaining, operating and administrating water schemes
  - indirect costs, a more general charge associated with management of the general water scheme.

  The O&M charge is either estimated or based on an actual cost recovery basis.
- The depreciation cost is the systematic allocation of a depreciable amount of an asset over its useful life and is applied on a straight-line basis over the useful life of the assets.
- The return on asset charge is applicable to government-funded schemes only, and is designed to reflect payment towards the development and betterment capital value of waterworks on government water schemes (RWPS, 2007: 20-21).

The RWPS of 2007 includes discussions of the concept of an economic charge. Only the DWA can set this charge. The charge may be set on a scheme- or system-related basis. The income from it accrues to the National Treasury (RWPS, 2007: 29). The RWPS details two ways of setting the charge. The first is through an administrative mechanism to provide an incentive to increase economic efficiency in water use (RWPS, 2007: 29). The second is through market-orientated mechanisms, where the market bids for excess water after allocation, and excess supply is cleared through market forces (RWPS, 2007: 29).

The RWPS, as mandated by the National Water Act of 1998, differentiates between different water users. The Domestic/Industrial sector is subject to the following requirements.

- The resource management charges are for full cost recovery on abstraction and waste discharge related use.
- The resource development charges for on-budget government waterworks schemes include depreciation and return on asset charges and O&M costs.
- The off-budget schemes include capital unit, refurbishment, water resource development charges, and O&M costs.
- Water management institutions are allowed full cost recovery (RWPS, 2007: 30).

2.6 Local Government Municipal Systems Act of 2000

The Local Government Municipal Systems Act of 2000 provides that each municipality must implement a tariff policy on the levying of fees for municipal services and must adopt by-laws to give effect to the implementation and enforcement of its tariff policy (DWA, 2010: 41).

2.7 Water Sector Guidelines

The Minister of Water Affairs may prescribe national standards relating to the use of water resources, the provision of water services, and the quality of the water used and discharged (WSA, 1997:16). The Minister is legally obligated to ensure that the standards promote operational efficiency and economic viability of the water services, the standards are not in violation of any existing laws or standards, and environmental impact is taken into account (WSA, 1997:18). The standards need to be designed so as to consider social equity in provision, the financial sustainability of the services, reasonable recovery of costs, and a need for the return on capital invested for the provision of water services, as well as the need to provide water services during droughts (WSA, 1997:18).

The implication of Sections 9 and 10 of the Water Services Act of 1997 for the norms and standards for tariffs are discussed in a document released in 2002 (DWAF, 2002). The minimum tariff set by water services institution must cover the cost of raw water or bulk potable water, the cost of overhead and operational costs, the cost of capital and the cost of replacement and refurbishment and extension, after taking into account subsidies received (DWAF, 2002). The cost of capital includes the cost of constructing new works and the loans and interest charges associated with the construction cost (DWAF, 2002).

The 2002 water sector guidelines of DWAF encourage the use of subsidies for consumers who are unable to afford the basic level of service (DWAF, 2002). The subsidies can come from municipal grants, such as the Equitable Share Grant, or from other municipal revenues in the form of cross-subsidization (DWAF, 2002).

The 2002 guidelines emphasized the basic requirement of water services provision, namely that water services should be supplied at the lowest possible consumer price (DWAF, 2002). The guidelines recommend a three-tiered tariff structure, with an increasing cost-to-consumption ratio. This structure is known as a rising block, or increasing block, tariff system (DWAF, 2002). The three blocks recommended were for the free basic water, the normal consumption use of water, and the luxury consumption of water. The cost of the second block (normal use) was ideally to represent the actual or average cost of water (DWAF, 2002). The third block tariff (luxury use) was intended to allow the costs of developing new capacity to be captured. It was considered feasible to cross subsidize the first block and to promote conservation through appropriate third block tariff setting (DWAF, 2002). The retail and sanitation tariff structure guidelines were further updated in 2010, as already

mentioned (DWA, 2010). A notable change in the requirements set was that a six block rising tariff structure was advocated instead of a three block one (DWA, 2010). In addition, extra attention was focussed on the need for economical, efficient and effective use of resources. It also required full disclosure of the extent of subsidization of tariffs for poor households and other categories of users must be fully disclosed (DWA, 2010: 41-42).

In addition to the 2010 guidelines, there was also an update in 2006 for bulk potable water tariffs (DWAF, 2006). The most important of these are detailed below.

- The water board tariffs may be set to include a capital charge independent of a volumetric charge, if required.
- A single tariff for the water board's supply area may be set, or a separate tariff for each scheme or water treatment plant may be set. This price discrimination was allowed if supported by motivation on differentials in the cost of supplying from the different schemes to different customers.
- Free basic water is only supplied to households at the retail level. For this reason, a stepped tariff for water boards was not recommended. The subsidization of this water was categorized as a municipal concern only, and the subsidy was to be accessed through the Equitable Share Grant.
- Operating surpluses were allowed to fund future capital expansions, refurbishment, debt repayments and for reasonable contingencies. Any surplus in excess of these requirements had to be returned to the National Revenue fund.
- Tariff increases were to be smoothed over time, to take into account projected future infrastructure development costs (DWAF, 2006:3).

The 2006 guidelines update also outlined the methodology underlying tariff determinations, and recommended a four-step process. Firstly, the water board costs need to be benchmarked against industry standards, and then a long-term cash-flow projection model, over a 10-to-15 year period, needs to be compiled (DWAF, 2006). A standardised pro-forma tariff table reflecting the cost components of the bulk potable water tariff must also be constructed to promote transparency, showing the break-even tariff level and the anticipated surplus from operations (DWAF, 2006). Finally, the proposed tariff has to be processed through the outlined approval and regulatory processes (DWAF, 2006:4).

The calculation of the tariff in the 2010 update of the guidelines takes into consideration new concerns, such as the affordability of water services, while still stressing the importance of financial sustainability and expansion (DWA, 2010). Water tariffs are deemed affordable when they fall within a narrow band of expenditure as a ratio of household income (DWA, 2010). Studies have shown that water and sanitation charges can be considered as expensive when they exceed

3%-5% of the average household income, and the World Bank has set the target at 4% (DWA, 2010: 23). Depreciation, to provide for the replacement of plant and equipment at the end of their useful life, and amortization, to pay contractually obligated debt also form part of the considerations in the tariff setting process (DWA, 2010).

The 2010 guidelines outlined a detailed process which Water Boards must follow before increasing supply tariffs for the municipalities (DWA, 2010). Only after a 5 month process of negotiation with the municipalities can the Water Boards increase the prices they charge municipalities for water (DWA, 2010). This process is to allow the tariff setting to comply with the Municipal Finance Management Act of 2003. A 9-step process is specified:

1. The organ of state, or water board, must consult with all municipalities and municipal entities within their supply area on proposed pricing increases.
2. A request must be lodged with the National Treasury and organised local government seeking written comments on the proposed pricing increase.
3. The National Treasury and the organized local government may provide their responses on the proposed pricing increase.
4. The National Treasury and the organized local government must lodge a submission on the proposed pricing increase to its executive authority, if national legislation requires such approval.
5. The executive authority of the organ of state must table the pricing amendment and the documents referred to in (3) in Parliament or the relevant provincial legislature, as appropriate.
6. Unless approved by the Minister, an amendment to the pricing structure which has been tabled per the requirements in step 5 above; on or before March 15 in any year does not take effect before July 1 of that year for the affected municipalities or municipal entities; or after 15 March in any year does not take effect for the affected municipalities or municipal entities before 1 July the following year.
7. The organ of state must notify in writing all municipalities and municipal entities of the price increase (by the 15 March of that year).
8. Municipalities must comply with other regulatory processes prescribed for setting municipal tariffs.
9. Municipalities are required to present a draft budget before council (no later than 31 March of that year) (DWA, 2010: 32-33).

Other goals of the 2010 guidelines include the principles promoting equity, ecological sustainability, financial sustainability, efficiency and good practice (DWA, 2010). The tariffs should be fair in that they treat all consumers in the same circumstances in a consistent manner, and they should seek to generate revenue that is reasonably stable and predictable (DWA, 2010: 42-43).

2.8 Problems with the Framework

The Palmer Development Group identified nine problematic issues in the existing 2002 regulatory framework (PDG, 2004). The six areas of most importance were:

1) Water boards are not subject to adequate economic regulation
2) Where the Water Service Authority was a Water Service Provider, there is inadequate regulation
3) Public-public contracts need to undergo greater scrutiny to ensure that public interests are protected.
4) A clear regionalization policy is required on ownership and control of bulk water services infrastructure.
5) Economic regulation in the water sector is lacking in that methodologies for rate of returns for application to water boards and urban retail authorities are needed, as well as an economic assessment of lease and concession contracts.
6) Regulation of raw water pricing is inadequate due to the conflict of interest with the DWAF acting both as the regulator and operator (PDG, 2004:15-7).

2.9 Conclusion

The legal framework for water service provision in South Africa provides scope for private sector participation after all public options have been considered (WSA, 1997: 13). The private sector provider would be subject to the same requirements as a public sector provider. Certain aspects would be difficult, under private water sector provision, e.g., to cross-subsidize non-water services. However, cross-subsidization within water service provision would still be possible under private sector provision through a tiered tariff structure. Where a water service provider was unable to recover its costs, it would have to be subsidized. The Raw Water Pricing Strategy recommends a protracted negotiation process between water boards and municipalities in the setting of the bulk raw water prices (National Treasury, 2011). The themes and objectives of equity, ecological sustainability, financial sustainability and efficiency are common points of reference in the Acts and Guidelines.

Chapter Three

The South African Non-Water Law potentially relevant to water service delivery

3.1 Introduction

The various Water Acts (see Chapter Two) are quite specific over what area they govern, but other Non-Water Acts also have relevance to aspects of water service provision. Two other such Acts are the Competition Act of 1998 and the Consumer Protection Act of 2011.

3.2 Competition Act

Water service providers are often local natural monopolies (Depoorter, 1999; Dinar et al, 1997). A natural monopoly exists whenever it is less costly for one firm to provide a good or service than two or more (Chavez and Quiroga, 2002:4). The establishment of the monopoly allows the exploitation of market power by charging higher prices than would be possible in competitive market settings where average costs were not decreasing (Chavez & Quiroga, 2002). This exploitation is defined as a malpractice if it takes certain forms – and may be declared illegal. The relevant Act governing such practices in the Competition Act of 1998 and its associated policy is rectification known as competition policy.

The aims of competition policy, as well as the Competition Act of 1998, are to limit the abuse of dominant positions in market operations (Competition Act, 2002; Depoorter, 1999). The DWA holds a dominant position in the setting of bulk-water tariffs, has a dominant market share and is supported by legal and natural barriers to entry. The Competition Act stipulates that a firm has a dominant position if it has at least 45% market share, but the share is not an issue in itself, unless the dominant firm charges an excessive price, or sells goods or services below their average or marginal costs to drive out competition (Competition Act, 2002: 20-21). Other relevant aspects of the Competition Act govern how firms (in this case, water services institutions) interact with each other horizontally and vertically (Competition Act, 2002).

The relevant sections of the Competition Act of 1998 are Chapter 2, Part B, Sections 7, 8 and 9. Specifically (Competition Act, 2002: 20-22):

7. “A *firm* is dominant in a market if – it has at least 45% of that market”, “
8. “It is prohibited for a dominant *firm* to –
   (a) charge an *excessive* price to the detriment of consumers;
   (b) refuse to give a competitor access to an *essential facility* when it is economically feasible to do so;
   (c) engage in an *exclusionary act*, other than an act listed in paragraph (d), if the anti-competitive effect of that act outweighs its technological, efficiency or other pro-competitive gain; or

(d) engage in any of the following *exclusionary acts*, unless the *firm* concerned can show technological, efficiency or other pro-competitive gains which outweigh the anti-competitive effect of its act –

(i) requiring or inducing a supplier or customer to not deal with a competitor;
(ii) refusing to supply scarce goods to a competitor when supplying those goods is economically feasible;
(iii) selling *goods or services* on condition that the buyer purchases separate *goods or services* unrelated to the object of a contract, or forcing a buyer to accept a condition unrelated to the object of a contract;
(iv) selling *goods or services* below their marginal or average variable cost".

9-1. "An action by a dominant *firm*, as the seller of *goods or services* is prohibited price discrimination, if –
...
(b) it relates to the sale, in equivalent transactions, of *goods or services* of like grade and quality to different purchasers; and
(c) it involves discriminating between those purchasers in terms of – the price charged for the *goods or service*."

9-2. In spite of the above, "conduct involving differential treatment of purchasers in terms of any matter listed in paragraph (c) of that subsection is not prohibited price discrimination if the dominant *firm* establishes that the differential treatment –
(a) makes only reasonable allowance for differences in cost or likely cost of manufacture, distribution, sale, promotion or delivery resulting from the differing places to which, methods by which, or quantities in which, *goods or services* are supplied to different purchasers".

Government regulated monopolies were made exempt from the application of the Competition Act of 1998, (Competition Act, 2002). An amendment was later released on this particular section but left the exemption in force (CAA, 2009).

Chapter 1, Section 3 states (Competition Act, 1998:15, CAA, 2009:4):

5-3. "This Act applies to all economic activity within, or having an effect within, the Republic, except –
...
concerted conduct designed to achieve a non-commercial socio-economic objective or similar purpose."

The Act does not specifically exclude government organizations, but, as a public services provider is designed for non-commercial socio-economic objectives is exempt under this clause by extension (Depoorter, 1999; Ngepah, 2011).

One could argue that there was, in any case, no need to apply the competition policy because the public water service providers were already internally regulated – by the DWA. This report finds this argument unconvincing because the so-called regulator is an integral part of the supply chain. If there is nothing to hide, why not public water service providing firms be subject to the same checks and balances private firms would be were they commissioned to do the same job.

3.2.1 DWA internal conflict

The dual role of the DWA as regulator and core provider of the service make a conflict of interest virtually inevitable without strict control over within the public entity (Ngepah, 2011). In the case of a private company, if it were to exist simultaneously, the regulator and the supplier, there would be competition policy relevance (Ngepah, 2011). The creation of an independent regulator may well diminish the conflict of interest problem that the dual role of the DWA invites. An independent regulator will also allow other parties interested in water services with a forum to lobby the lobbyists to receive more attention from the DWA, while having less influence on the regulator's decisions concerning sector welfare (Ngepah, 2011).[2]

Another relevant concern for competition policy is the balance of power between the different waster service institutions (Ngepah, 2011). Water boards and water services providers are required to negotiate a raw water tariff increase, but the power relations are such that the DWA dominates and is in a position to dictate.

3.2.2 Price Discriminatory Behaviour

The block tariff system in place in South Africa is a price discriminatory structure – in which households that demand most services are charged a higher price for it. Competition policy also precludes price discrimination, unless the same deal is offered to all consumers. In this case there is a categorisation of consumers – with different prices charged to different categories. Moreover, the price discriminatory system is only feasible because of the monopoly power held by the water service providing institution.

3.3 Consumer Protection Act

The Consumer Protection Act, passed in April 2011, is designed to promote and advance the social and economic welfare of consumers in South Africa by, regulating the transactions between consumers and suppliers (CPA, 2011).

2 Mr. Charles Geldard, a regulatory expert, is of the opinion that the creation of the independent regulator must have clearly defined objectives to govern its operations (2011). The regulator must be created so as to conform to the required legal acts, while also maintaining the ability to functionally regulate the market (Geldard, 2011). The most important objective that the water sector's independent regulator must promote is the security of supply and the investment in maintenance and infrastructure, while also maintaining a strict control on the price of the good (Geldard, 2011). Mr. Geldard doubts whether South Africa possesses the skills to set up and maintain an additional independent regulator in the utility markets (2011).

The Consumer Protection Act, Section 5 lists the Act's affected parties (CPA, 2011: 19):

5-1. "This Act applies to —
...
every transaction occurring within the Republic, unless it is exempted by subsection (2), or in terms of subsections (3) and (4)";

5-3. "A regulatory authority may apply to the Minister for an industry-wide exemption from one or more provisions of this Act on the grounds that those provisions overlap or duplicate a regulatory scheme administered by that regulatory authority in terms of—
(a) any other national legislation".

This exemption is tailor-made for water service providing institutions but is unfortunate because the scope for lobbying consumer interests is currently overly thin. Section 13 of the CPA stipulates that a supplier must not require, as a condition of offering to supply or supplying any goods or services that the consumer must purchase any other particular goods or services from that supplier (CPA, 2011: 24). Firstly, the consumer has no choice but purchase from the water services provider and secondly by purchasing potable water from a water services authority, the consumer is also obligated to purchase wastewater services from the same authority (WSA, 1997; RWPS, 2007).

An important interest the CPA facilitates is the consumer's right to quality service commensurate to what is paid. The consumer has a right to the performance of the services in a manner and quality that persons are generally entitled to expect given what they pay (CPA, 2011). What is missing in the prevailing legal dispensation is what protects the consumer of water services when this correspondence breaks down, and poor service is provided at fixed high costs, possibly exceeding average cost of delivery. The Act would hold water services providers and authorities liable for such failures, if it were applicable, that is, there were not exempt (CPA, 2009: 57-58).

3.4 Conclusion

Both the Competition and Consumer Protection Acts contain clauses which allow government, but not private, water services provider to be exempt from the application of them; a situation that may not be desirable. If the water sector is working well, the exemption is not a problem, but if it is not, the absence of checks these Acts would facilitate, may be very unfortunate. The exemption of government providers from the consumer protection these Acts provide is an argument against government water service delivery and for private water service delivery. At best the Law offers protection for consumers if private firms supply the water services.

Chapter Four

An analysis of private sector failure in the provision of water services in South Africa

4.1 Introduction

It is a common misconception in South Africa that the water sector needs to be provided as a public service. The global trend for more water services to be supplied by private firms – global private water service provision has increased from 5% of the total in 1999 to 12% in 2010 (Hosking, 2011). There still is much resistance to providing important utility services privately globally, despite the favourable comparison of the private sector provision in price and quality of service (Hosking, 2011).

Chapter Four identifies four social failures in a water services market served by a private firm, considers the scope for these failures to also occur in a market served by a public entity and describes ways for addressing these failures through subsidy and regulatory arrangements.

4.2 Four predicted key social welfare failures of a market under private sector provision

Given the expected natural monopoly advantage that exists in the various stages of water service production, it would be expected that, at each stage of production, a single firm would emerge as dominant in the provision of the service to urban customers (Depoorter, 1999). Moreover, in a capitalist market setting, a single private firm would typically emerge to supply the service as the outcome for each (not necessarily all) stage in production – bulk water supply, distribution of potable water and receipt and disposal of waste water (Hukka & Katko, 2003).

The four cases are discussed more detail below with reference to a market model.

4.2.1 A model of private sector water service provision

The predicted social outcomes of private sector water service provision may be identified more precisely in the model of private sector water service provision (Figure 4.1).

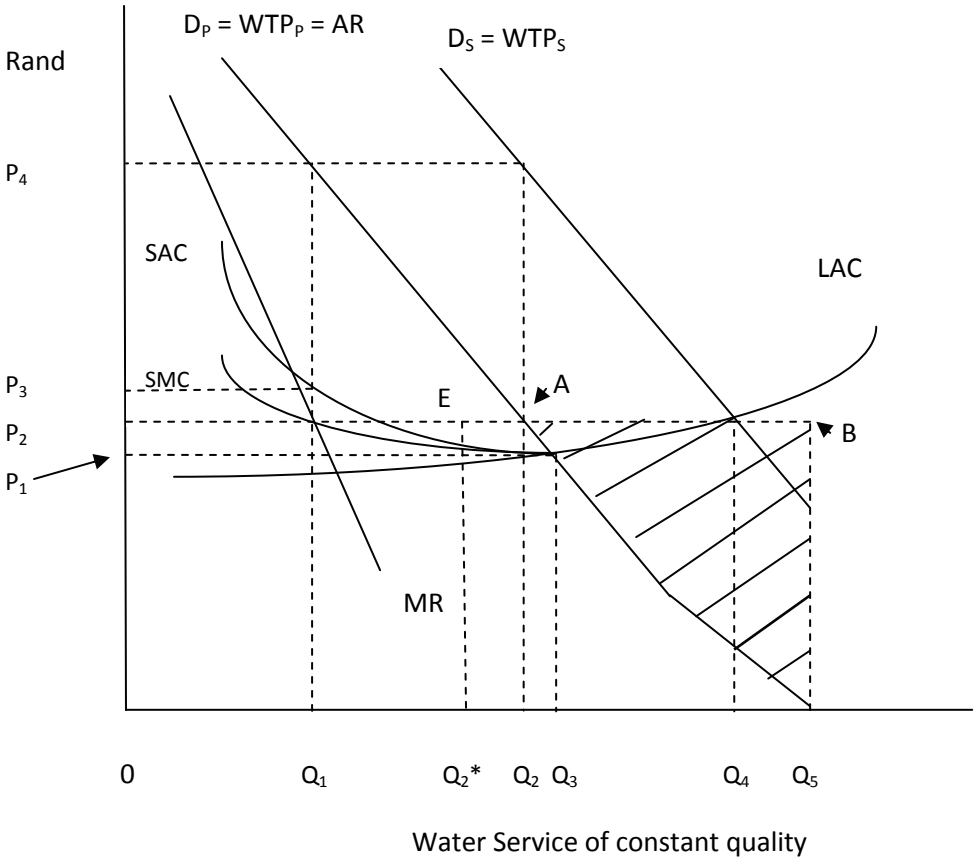

Figure 4.1: Modelling an unregulated market of private sector water service provision

Figure 4.1 shows a model where there are two demand curves, a marginal revenue curve and three cost curves. The cost curves are a marginal cost, a short run average cost and a long run average cost curve. The two demand curves relate to the private (D_P) and social (D_S) willingness to pay for water services. The social willingness to pay exceeds the private willingness to pay because of:
- the free-riding incentive not to pay for the waste water management service, and
- the social willingness to pay to cover the cost of a minimal (basic) service provided to those who cannot afford to pay for it in one's community. This utility generating redistribution is motivated by the desire to provide insurance against poverty and from the satisfaction gained from providing charity to the needy (Mueller, 2004).

For every level of service, the private willingness to pay (WTP_P) is less than the social willingness to pay (WTP_S) and the private average revenue (AR) function lies below the social demand function (D_S).

As there are economies of scale, the model predicts (it is only feasible for) one firm to supply the market. An unregulated and unsubsidised single private firm would provide Q_1 water service, where the short run marginal cost (SMC) equals the marginal revenue (MR), and set a profit maximising price of P_4. It would make a profit of the difference between short run average cost (SAC) and average revenue (AR) multiplied by the quantity of service supplied, Q_1, that is a profit of $(P_3P_4).Q_1$. The latter profit would be made where a single price (P_4) was charged. More profit could be made if price discrimination was practiced. If consumers were charged what they were willing to pay, Q_3 service would be provided at a range of prices above P_1 and the profit made would correspond to the whole area above the P_1 line and below the private demand (D_P = AR) curve, up to Q_3 level of service (Figure 4.1).

Within the framework of this model, four social failures may be identified: abuse of dominance in pricing, abnormal profit making and inefficient allocation, undersupplied waste water management and disinterest in providing service to the poor (see sections 4.2.2 to 4.2.5).

4.2.2 Abuse of dominance in pricing

By charging each consumer the maximum they were willing to pay (price discrimination), the private firm would be exploiting the relative bargaining (market) weakness of the consumer and, in so doing, be abusing its position of dominance in the market – a practice the Competition Act of 1998 specifically sets out to prevent (see Chapter Three). The reason why the firm can charge consumers of the water service the maximum they would be willing to pay is there is an asymmetrical distribution of market power between the consumer and the firm. It constitutes an abuse of dominance from a moral perspective because the consumer has no option but to accept the deal. It also would constitute an abuse of dominance from a legal perspective, in that the Competition Act of 1998 specifically prohibits such a practice. Similarly, it could also potentially constitute a breach of the Chapter 2, Section 8 of the Consumer Protection Act, 2008 (number 68) that protects the consumer from discriminatory marketing treatment. Permitting a system that appropriates all consumer surpluses to the firm as revenue is not protecting consumer interest.

Even if perfect price discrimination was not feasible (because of re-selling of service), a less than perfect price discriminating structure would still be advantageous to the firm (as revenue raising), and exploit the consumer's relative weak bargaining position.

As could be expected, the result is that the producer captures consumer surplus from the water service users – in the case of perfect price discrimination, all of the consumer's surplus (Hirschey, 2006).

4.2.3 Abnormal profit making and inefficient level of provision

Profit making is derived from the same market circumstance that facilitates discriminatory pricing – a position of dominance in the market. Irrespective of whether price discrimination or a single tariff (price) structure was implemented, abnormal profit could still be sustained, because declining long-run average costs (natural monopoly) and legal barriers to entry would prevent competition from entering into the industry and competing down revenues and profits (Hirschey, 2006).

Under a single tariff structure, the additional problem occurs of less-than-efficient levels of service being supplied and deadweight losses of consumer and producer surpluses, contrary to the claim that the market and private sector can be relied upon to automatically regulate water service provision toward efficient levels (Bate & Tren, 2002). An efficient level of service would be Q_4, but Q_1 would be supplied under these market circumstances (See Figure 4.1).

4.2.4 Undersupplied waste management

The reason the firm would under-supply waste management service in densely populated areas is because, in such environments, waste water management assumes public good characteristics and free-riding behaviour among consumers undermines the capacity of the firm to collect revenue for this service. The public good characteristics of waste water management and voluntary (utility enhancing) redistribution desire with respect to water services, mean that, at all levels of provision, society would be willing to pay more for the service than would be revealed by the market – and for that reason, social demand would exceed private market demand. At price P_4 the firm would supply Q_1Q_2 less than the amount for which society would be willing to pay. At a price of P_2 = LAC, the firm would provide Q_2 water service, but society would demand Q_4, in other words, more.

4.2.5 Disinterest in providing service to the poor

The human and legal right of the poor to a minimum level of essential (basic) service could also be infringed if they are not provided with water services. This right is identified in the Constitution of South Africa (1996), although the Constitutional Court have chosen to interpret in the obligation it imposes as being subject to the circumstances and discretion of the provider, the municipality (The Constitutional Court ruling on the Johannesburg Municipality vs. Phiri Residents Case, 2010). Given that there is no legal specification of this right, the matter has become more one of moral than legal rightness – that some minimum basic level of water service, both potable and waste water management, should be provided. Further insight into what these levels should be is discussed in Hosking, Jacoby, Sharp and Hosking (2011). All consumers are denied access to service who are unwilling to pay (at least) a price of P_4. These consumers include those whose social willingness to pay exceeds the long run average cost of production (covering Q_1Q_4 water services), as well as those unwilling and unable (the poor) to pay the average cost of production

for this essential basic service (above Q_4). One could argue that the guarantee of (at least) a defined minimum level of water service is a morally required market outcome.

4.3 Interventions to regulate the social (welfare) failures of private sector provision

All of the private sector failures may be reduced through regulation of the private sector provision: by regulating against price discrimination (competition policy), regulating against abnormal profit (competition policy and consumer protection), regulating against free-riding and under cost recovery in waste water management (linking and mutually designing the tariff structure) and by the government underwriting the costs that cannot be collected through the provision of basic water services to those who cannot afford it.

4.3.1 Regulating against price discrimination

Discriminatory pricing, based on market dominance, is already prohibited under the Competition Act of 1998. Moreover, the Consumer Protection Act of 2011 makes it illegal to impose unreasonable restrictions of the consumer's right fair treatment from the firm in the product it provides. In order to address this social failure it would appear that the primary task of the water services regulator would simply be ensuring compliance by the private sector firm with the relevant consumer protecting Acts.

4.3.2 Regulating against abnormal profit

A firm is sustainable in the market economy if it raises sufficient revenue to cover its costs (Hall, 2009). This revenue constraint serves to eliminate inefficient management in the market economy and encourage and reward efficient management. If revenues are insufficient to cover costs, insolvency ultimately follows and the firm, or its assets, are sold to a new set of managers. If the firm makes profits, the managers can use these to expand the asset base of the firm. For this reason, the making of some profit by the firm is healthy and desirable.

There are many solutions that may be advanced to the problem of abnormal profit making in natural monopolies. First and foremost among these, is imposing a constraint of making no more than a normal profit level. This level of profit could also be called reasonable or fair or socially acceptable. It is sometimes measured as the risk adjusted average market rate of return on investment.

This solution imposes a further regulatory requirement. Under the no-more-than-normal profit constraint, there has to be a process put in place to ensure that the costs of the firm are maintained at an efficient level, otherwise the abnormal profit

can find its way into management or worker remuneration in the form of 'organisational slack' or X-inefficiency (Niskanen, 1971)[3].

Yet another solution to the abnormal profit and discriminatory pricing failures is to create a public utility company – completely public owned but bound by socially acceptable rules governing pricing and profit, such that it would act like a private firm in cost control.

4.3.3 Regulating against free-riding and under cost recovery in waste water management

Free-riding on the recovery of the costs of waste water management provision is easily averted by the incorporation of the costs of waste water management into a linked single water service charge. Under this solution, the consumer does not have the option of purchasing potable water service only, and under-bidding for waste water management service. An alternative solution is for the cost of waste water management to be recovered in the same way as most other public goods, through normal tax revenue collection (McCullough et al, 1993).

4.3.4 Providing a guarantee of basic service provision

The problem of providing a guarantee of basic service is, in fact, not a problem specific to the private sector model, but is a problem for all the models – including local government and public utility companies. The solution to this 'failure' is the same in both the private and public models – by the government underwriting the costs that cannot be collected through the provision of basic water services to those who cannot afford it.

4.4 Why did private sector participation fail in South Africa?

There is no overwhelming *prima facie* reason for favouring regulated and subsidised (outsourced) public entity provision over (outsourced) private sector provision. Within the private sector market model, failures can be expected to occur, but with regulation and subsidies, improvements can be affected in social welfare, efficiency and equity. Within a public sector market model, similar failures also occur (for different reasons), and they too can be redressed with regulation. For this reason, no general conclusion can be drawn on the relative welfare merit of private versus public entity provision of water services. The social welfare failures associated with private sector provision of services in the water markets do not provide justification for rejecting the private sector option in favour of a public sector one.

[3] The scope for organisation slack or X-inefficiency is equally probable in a public or private setting where reasonable profit is set as the objective, but perhaps it is even greater where breakeven is the approximate objective and there is greater flexibility in the scale of subsidy or cross-subsidisation (see Section 6 below).

This report argued that the broad ranging political antagonism evident within the South African national government towards participation by the private sector in service provision (see Chapter One) is misplaced (or misinformed). Economic theory does not support the case for this antagonism, and nor does empirical analysis. The tests or experiments so far conducted in South Africa are insufficient empirical basis for deducing the private firms to be inferior to public ones in water service provision (see Chapter One).

This is not to say that these tests were of no use. Typically these experiments yield a number of important lessons. International experience (Hanke and Walters, 2011) reveals that improvement can often be achieved through:

- both parties performing better due diligence assessments on the start position
- the contract being specified in measurable outcomes rather than inputs
- increased flexibility to adjust contract periods with reference to measured outcome performance (in order to increase the competitive threat), and
- better communication between parties over the performance issues that arose.

Why then, did the South African experiment of private sector participation in the water services sector fail (see Chapter One)? In order to properly understand this failure a more comprehensive analysis is required than has so far been carried out and further experimentation is needed in more diverse municipal settings, e.g., ones where the circumstances are not already over strained.

4.5 Conclusion

If South African municipalities are to reap success from privatisation of their water services, they will need to pay careful attention to the preconditions for private sector success. If these preconditions are not met, a distorted outcome can easily result from private sector experimentation. Internationally recognised public sector specialist, Zane Spindler (2004), has been very explicit on this point. He has warned that unless:

> the political process finally results in the establishment of well-defined, well-defended and freely marketable ownership rights in the privatised entity, it will not achieve its potential efficiency gains (Spindler, 2004: xii).

The most effective regulation of price discrimination in South Africa would be to ensure that the provider follows the existing legislature, including the Competition Act of 1998's prohibition of price discrimination (Hosking, 2011). Regulation against abnormal profits could be solved by specifying only normal profits as a result of production (Hosking, 2011). This specification would also include an additional constraint that the costs of production be maintained at an efficient level (Hosking, 2011). The creation of a public utility company is also an attractive method by which to avert the generation and capturing of abnormal profits (Hosking, 2011).

A way to regulate against the under-cost recovery in the wastewater sector and the free-riding problem is to include a clause that links the water service charges together (Hosking, 2011). An alternative solution is to recover the wastewater charges through tax revenue collection, similar to other public goods (Hosking, 2011).

Chapter Five

Failure in Public Sector Water Service Provision Options and Failures

5.1 Introduction

The Constitution of South Africa permits authorised municipalities to provide water services in-house or outsource the provision of water services to external entities, public or private. These external public entities may be water boards, public utilities or even other municipalities. To what extent are the failures identified with private sector provision also applicable to these entities and is the public sector also prone to other types of failure?

Chapter Five identifies reasons for failure in public sector water service provision – a sub-objective identified in Chapter One. The failures are identified under two alternative modes of delivery – supply through a public utility and supply by a municipality.

5.2 Cases Leading to Government Failure

5.2.1 Outsourcing processes induce rent seeking

Government can fail in a myriad of ways in the process of public service provision. One of these ways is the occurrence of rent seeking behaviour. Rent seeking is the "expenditure of scarce resources to capture an artificially created transfer" (Tollison, 1982: 578). Producers would pay to acquire monopoly status to supply unimpeded (Cullis & Jones, 2009). This situation can be further aggravated by other firms lobbying against the acquisition of monopoly-status, resulting in further resource expenditure (Cullis & Jones, 2009). The problems that arise during rent seeking behaviours are the wasted resources allocated towards the efforts to gain or prevent the production environment changing through the use of lobbying (Cullis & Jones, 2009). If this were to not occur, the resources could be reallocated elsewhere to improve efficiency and/or other projects. If the government contracts in water service provision have built in rent, rent seeking will inevitably result.

5.2.2 Inefficiency and innovation

Without direct owner or shareholder influence, there is reduced interest in the yield of the assets tied up in the nationalized industry (Cullis & Jones, 2009). When an industry is nationally owned, the minister in charge of the assets does not have to raise capital by selling shares or by selling assets and it does not have an incentive to be innovative (Cullis & Jones, 2009). This lack of incentive can lead to unemployment and bankruptcy in a private firm. However in a nationalized industry, in place of this, come requests for bail-outs and grants, and accommodation of slack work behaviour (Cullis & Jones, 2009). The lack of efficiency that arises from the absence of competition makes it difficult to correctly estimate the appropriate capital investments required for the industry (Cullis & Jones, 2009).

5.3 Public utilities versus Private Sector Failure

Where the public entity is an independent one, with performance targets that have to be met, little difference could be expected between the market outcomes under public sector provision from those occurring under private sector provision. The performance (profit) incentive induces the public entity to abuse its dominance in pricing, make excess profits and be reluctant to supply those who cannot, or do not, pay for their service. The problem of undersupplied waste water management also still occurs because this problem is not caused by the incentive facing the firm, but the free-rider incentive facing the water users who seek to dispose their waste water.

5.4 Municipality Water Service Failure

Where the public entity is a municipality (the authorised one or the outsourced one), the profit incentive falls away, as does the problem of reluctance to supply the poor. However, there are other failures that occur under this arrangement. The incentive structure facing elected municipal officials and municipal water service personnel is strong to prioritise appeasement of voter majorities and lobby support for position within political parties (Cullis & Jones, 2009). By way of contrast, the incentive to promote long run economic growth and be sensitive to market demand is weak – because appointment and position are governed by short-run interest rather than long-run economic improvement (Niskanen, 1971; Mueller, 2003). Under this incentive structure, public decisions on the provision of water services will only weakly and indirectly are influenced by market demand and be less cost effective and efficient than they would under a private sector firm aiming at profit maximisation (Cullis & Jones, 2009). In addition, because their survival is not threatened by failure to recover full costs, they could be expected to be less strongly constrained by the imperative of full cost recovery.

5.5 Tariff Design

An important aspect of public sector service provision is the determination and recovery cost determination and recovery. How cost recovery is attempted, applying marginal or average cost pricing and implementing a cost recovery tariff structure are telling aspects of public sector service provision.

5.5.1 Costing Water

There are two different ways to construct water tariffs: the marginal cost or the average cost method (Depoorter, 1999). The major objectives affecting the decision are financial cost recovery and efficient allocation of the water resource. In terms of the former objective one should use average cost as the tariff reference, while in terms of the latter, one should use the marginal cost theory (Mohayidin et al., 2009).

Chavez & Quiroga (2002:5) argue that using the marginal costing approach is impractical because it is too difficult to estimate, and it is theoretically deficient because setting a price equal to the marginal cost may not, in fact, allow the cost-recovery requirement to be met.

The most used pricing method is the average cost pricing method, dispute its inefficiency, as measured by the degree the average and marginal costs diverge (Mohayidin et al, 2009; Chavez & Quiroga, 2002:6).

5.5.2 Cost Recovery

There are four methods of cost recovery tariff setting: the rate of return, or cost-plus, method, the price-cap method, the yard-stick method and the franchise method (DWA, 2010).

The cost-plus method is designed to allow the operator to recover its costs, including a normal profit return (OECD, 2004; Chavez & Quiroga, 2002; DWA, 2010). This method is one of the most popular due to the simplicity of the method and the transparency of the regulators mark-up, and is used widely around the world, including in Canada, Japan and the U.S.A. (OECD, 2004). The major problems with this pricing method are that there is little to no incentive for innovation and cost reduction (Armstrong & Sappington, 2005; Chavez & Quiroga, 2002; DWA, 2010). There is incentive to overstate costs, under invest in supplying capacity and cross-subsidize consumers from different categories (Chavez & Quiroga, 2002; DWA, 2010).

The price-cap method places an upper cap on the tariff which consumers can be charged (OECD, 2004). It allows incentive to the providers to produce the good at a certain price, and any reduction in the cost from this price is returned to the operator as profit (DWA, 2010). The incentive to cut costs on quality control or maintenance is juggled with the removal of the asymmetric information problem of the cost-plus method, while still encouraging innovation (DWA, 2010; Chavez & Quiroga, 2002; Armstrong & Sappington, 2005). The level the price-cap is set is paramount. If it is too low, investments and savings from operational activity will be affected, but if it is too high excessive profits are made (DWA, 2010; Chavez & Quiroga, 2002; Armstrong & Sappington, 2005). Depoorter (1999) recommends the price-cap method, due to its lower information requirements compared to the cost-plus method. This method is favoured in regions of by the UK, Argentina, New Zealand and Chile (OECD, 2004; Chavez & Quiroga, 2002).

The yard-stick method measures the current prices used by the water utility against the ‘yard-stick’ price of international water utilities – costs and prices for similar utilities (Chavez & Quiroga, 2002).

The franchise method requires there to be a bidding contest amongst potential providers where the lowest bid wins the right to provide water (Chavez & Quiroga, 2002:10; Armstrong & Sappington, 2005). Restrictions are imposed by a water sector regulator governing water quality and quantity (Chavez & Quiroga, 2002: 10). This system is different from the other three systems in that the efforts required to collect data on costs is minimal. It is up to the winning firm to supply water as the

contract stipulates (Chavez & Quiroga, 2002). A benefit of the franchise method is that prices in this setting are the same prices that are implemented in a regulated monopoly setting, partially removing the need for strict regulation after awarding the contract (Armstrong & Sappington, 2005: 26).

5.5.3 Tariff Components

There are four major components to a water tariff (PDG, 2000: 40). These are development charges, connection charges, fixed fees and consumption charges (PDG, 2000). In addition to the water tariff, there are also other charges, viz. disconnection fees, reconnection fees and meter checking fees (PDG, 2000).

Any tariff system implemented in South Africa should adhere to the following guidelines (Van Vuuren et al., 2004: 6-12):

1) Tariffs should cover all costs
2) Tariffs should be as clear and simple as possible
3) Tariffs should be collected regularly and efficiently
4) The tariff policy should be informed with sound date
5) Tariffs should be designed around either short-term or long-term price elasticities of demand
6) Water accounts should be simple, understandable and user friendly
7) Suitably located payment points should be provided for the low income groups
8) Users should be informed of how the payment system operates and the economic value of water
9) The low-income water users need to have particular attention paid to them when payment strategies are formulated
10) Subsidies should be explicit and clearly targeted
11) Policy should consider social welfare
12) The water sector should be viewed holistically so that policy making is not departmentalized.

5.5.4 Price Elasticity of Demand

The impact of tariff pricing systems on revenue collection is partly dependent on the price elasticity of demand. It has been argued (theoretically) in South Africa that the price elasticity of demand for water decreases as income changes (Van Vuuren et al, 2004: 6-7); an argument that calls into question the usefulness of cross-subsidization of the tariff pricing systems (Van Vuuren et al, 2004). Charging the rich (or anyone) more than average cost induces them to demand alternatives to municipal water supply, such as borehole water and bottled water (Van Vuuren et al, 2004).

In South Africa, all the three (low, middle and high) income groups have been found to have relatively inelastic price elasticities of demand (Van Vuuren et al, 2004). The elasticities were measured in the Cape Town, EThekwini and Tshwane municipalities (Van Vuuren et al, 2004). The low income group tends towards a relatively higher price elasticity of demand than the middle income group, which

likewise, has a relatively higher price elasticity of demand than the high income group (Van Vuuren et al, 2004). This pattern was also found by Bailey & Buckley (2004: 763), who found that the high income groups had a price elasticity of demand of 0.10, the medium income group 0.14, and the low income group 0.5. This indicates that it is possible to increase the tariffs of the upper blocks of the water services and increase revenue, allowing additional options to increase cost recovery. This is contrary to the initial expectations of this report. It was expected that as consumers entered the higher tariff blocks, potable water would become more price elastic as boreholes and other private water sources became available as substitutes. The research contradicts this hypothesis.

5.5.5 Tariff Pricing Systems

There are a several tariff pricing structures that may be employed to recover costs: increasing block tariffs (IBT), uniform tariff prices with rebates (UPR) and increasing rate tariffs (IRT).

Uniform pricing with rebates (UPR) is a system whereby water is priced at a single rate and only the poorest, or lowest income groups receive a rebate on the price of water they pay for (Boland and Whittington, 2000). Under the UPR system it is possible to collect too much revenue (Boland and Whittington, 2000). The UPR system is a marginal cost pricing system where a fixed monthly rebate is awarded (Boland and Whittington, 2000).

The Increasing Rate Tariff (IRT), like the IBT, is linked to different blocks of water consumption (Liu et al, 2003). The difference between the two is that the price of the highest block consumed in the tariff system is charged to the household for all the water consumed, and not charged on a per-block basis (Liu et al, 2003). Liu et al (2003:213) also recommends that this charge system be levied across individuals in the household and not across a single connection, so as to avoid discrimination against large indigent households. This means that instead of charging a tariff irrespective of household size, the water charge is adjusted for the number of individuals in the household to an average per-capita consumption charge (Liu et al, 2003). The purpose of this system is to avoid small affluent households benefitting from a system designed to ease the hardships of the poor (Liu et al, 2003).

South Africa employs a hybrid of structures, with most municipalities using the increasing block tariff (IBT) system. Often there is a zero charge for an initial block, although some municipalities, like Nelson Mandela Bay, use a combination of the IBT and a rebate system, (for indigent households) while still using an IBT system with a non-zero charge for the first block (National Treasury, 2011).

The Maharashtra Province in India sets a tariff that varies across sectors (Maharashtra Province, 2009). The tariffs charged vary according to the type of charge and to the needs of the sector being supplied. For example, agriculture is

charged 21% of the operations and maintenance charge, the domestic sector is charged 23% and the industrial sector is charged the remaining 56% in the O&M allocation to the raw water tariff charged to the sectors (Maharashtra Province, 2009).

A single tariff system based upon a price between the short- run and long-run marginal costs may be ineffective where seasonal resource levels vary. It may lead to too low a consumption level during low-demand seasons, resulting in underutilization of the plant, and it may lead to pricing below the long-run marginal cost results in the resource being provided it's less than what it costs to provide (Chavez & Quiroga, 2002:7).

Seasonal rates are an option for water utilities which wish to take into account water in various periods of the year and improve efficiency. If the water scarcity is a gradual effect, building up to a relatively large shortfall in supply in the middle of summer, a season-related tariff structure may be more efficient than a regular one (Mohayidin et al, 2009).

The erratic nature of South African rainfall may in some instances make it attractive taking water scarcity over time into account – on a regional basis (PDG, 2000: 43). The PDG (2000) divided South Africa into areas where different types of scarcity tariffs could be considered: the Western Cape, the Highveld and the Lowveld. The areas where a drought tariff, brought on by an extended period without seasonal rainfall, could regularly attractive options were thought to be the Highveld and the Karoo, with the Lowveld and the Eastern Cape. The Western Cape and the Natal coastal regions were thought to only require drought tariffs as an emergency measure only (PDG, 2000, 44).

5.6 The problems of the near-poor in tariffs designed for cross-subsidization

Once a popularly supported basic minimum level of potable and waste management service is selected by the national government, the social challenge facing the political leadership of a municipality is reduced to finding the funding to cover the costs of those who are selected not contribute to cost recovery. Two types of non-contributors can be identified:

- those unable to pay the full cost of service provided because they are too poor (involuntary), but are willing to pay a portion of it, and
- those who choose not to pay (voluntary), but have the means. In the strict sense they are free-riders, but this group may also include many elements that face similar economic hardships to the group unable to pay the full cost. These similarities give rise to the complicating problem of perceived 'closeness' in meriting equity linked reduced payment advantages. Under an equity rationale for providing service to the poor, those falling within this group who consider themselves as 'close enough' in the condition or circumstance of the poor, will feel that they merit equivalent advantageous treatment to the poor.

This complication makes it technically difficult to draw up precise rules (for instance, based upon asserted total income earned) for diving up society into those who qualify for favoured treatment and those who do not. This difficulty makes these divisions arbitrary from the perspective of many of the water users. Where the users' socio-economic circumstances differ only minimally, many of those near-but-not-qualifying, will deem dispensations motivated by equity to be, in fact, inequitable.
This problem may be reduced, but not eliminated, by introducing sliding scales of favoured treatment with small differences in favoured treatment differentiating the various groups. In support of such a sliding scale, it must be remembered that almost all the poor are willing to pay something towards the cost of their service, just not the full cost of service.
Insight into this matter is provided in Figure 4.1 (Chapter 4). Where the redistributions are to be incorporated into the social contract, the people from whom the transfers are to be made would need to agree upon:
- the scale of the guaranteed minimum basic level of service (Q_2Q_5would be 'reasonable'), and
- the shortfall in ability, or willingness, to contribute to cost of basic level of service (area ABQ_5 in Figure 4.1).

One departs from the equity rationale if nothing is collected from the poor nor the group unhappy to pay because of 'closeness-to-the-equity' benefactors (who would presumably account for the highest proportion of bad debt). Under these circumstances the total subsidy (transfer) requirement will escalate sharply. In Figure 4.1 it is:
$ABQ_5Q_2 + AEQ_2{*}Q_2 = BEQ_2{*} Q_5$,
that is, more than double the subsidy that would otherwise be paid. Of this sum, only ABQ_5 could be considered a voluntary redistribution. The remainder ($EAQ_5Q_2{*}$) is a political 'taking' (Mueller, 2006:103). It follows that under equity rational, the casual drawing up of rules for qualifying for transfer benefits, can very easily lead to the abuse of the people from whom the transfers are targeted, and to a sharp increase in the proportion of the total cost for which cross-subsidisation must be found. In this case, the proportion increases from $ABQ_5/ 0P_2BQ_5$, to $BEQ_2{*} Q_5/0P_2BQ_5$.

5.7 Regulation as a way of redressing failures in public sector water service

Natural monopoly regulation can be achieved through the appointment of an external regulatory agent or through self-regulation (Chavez & Quiroga, 2002). The regulatory agent would design regulatory schemes for the monopoly and enforce them. Under a self-regulatory arrangement, the provider us regulated by its own mission statement of objectives (Chavez & Quiroga, 2002).

There exist additional regulatory complications that occur when a regulator regulates both price and quality (Michael Spence, 1975). The main complication is information – regulation takes place in a two-party nonzero sum game setting with incomplete information (Michael Spence, 1975: 13). The incomplete information affects the

price-quality substitution rates that occur within the regulatory decisions (Michael Spence, 1975). The information asymmetry can lead to detrimental effects within the regulatory market (Armstrong and Sappington, 2005). The regulated firm has more information than the regulatory body, and this gives rise to an unavoidable trade-off between rent (profit) and efficiency (Armstrong & Sappington, 2005: 9): In the situation where there is profit accrual there will be reduced benefits enjoyed by consumers (Armstrong & Sappington, 2005: 9).

5.8 Conclusion

There are many options for organising public sector water service provision, and a number of potential failures that can occur. South African government (municipal) suppliers of water are susceptible to many of these failures, including organizational slack, rent seeking behaviour, ministerial disinterest, and abuse of dominance. Given the potential for government failure in water services provision, there is a need for regulation of the government providers. The regulatory and tariff setting aspects of the public sector are almost as important as they would be for the private sector, diminishing the advantage of the public sector over the private sector in their respect.

Chapter Six

Perception of selected parties with an interest in public water service provision

6.1 Introduction

In order to determine whether or not the legislature outlined in the various acts and strategies is correctly followed, one must ask questions of various institutions and persons to clarify matters.

This chapter reports the results of questionnaires administered to selected parties with knowledge and interest in water service delivery in South Africa, mainly municipalities (15 of them) but also water boards and staff of the DWA and other organisations.

6.2 Questionnaire Design

The questionnaires administered do not qualify as surveys. A survey is a sample of scientifically chosen individuals from a population, so that each individual has a measurable chance of selection and the results can be reliably projected from the sample to the larger population (Scheuren, 2004). The purpose of a survey is to obtain a composite profile of the larger population, in this case, the habits of South African municipalities (Scheuren, 2004).

The survey method applied could not be applied as these being questioned did not make up a single defined group (except possibly the municipalities). Different questionnaires were designed for different institutions. There are many ways to elicit facts and opinions, including selected interviews of well-informed people and staff.

The design of the questionnaires was done in collaboration with people within the targeted organization in question. The rationale behind each questionnaire is explained below.

6.2.1 Department of Water Affairs (DWA)

The Department of Water Affairs is the governing body of the water sector, as well as the primary supplier of raw water. In the case where they do not supply raw water to the water service providers, they control the bodies that do (WSA, 1997). This situation puts the DWA in the unique position whereby they can exert some degree of control over the water service product from bulk supply to retail as a product to the end of its life as potable water.

The questionnaire to the DWA consisted of ten questions, five dealing with pricing and five with regulatory functions (See Appendix A).

The first question asked for issue of geographic costs, and the process used in pricing water.

The second question asked what the scarcity costs were. Scarcity costs are the opportunity costs of water, and their inclusion in the pricing process is important (RWPS, 2007: 5).

The third question asked how water pricing differed between the water boards and the water services authorities. Was it possible to include an increasing block tariff structure in the water board pricing scheme, similar to the system in place with the water services authorities (DWAF, 2002)?

The fourth question asked what quality of water was provided to the water services institutions. Due to differing quality issues and many different geographical water sources, the cost of treating water varies.

The final pricing question asked whether appeals against a price increase were proposed (DWA, 2010).

Three of the five regulatory questions revolve dealt with proposed creation of the independent regulator for the water sector (National Treasury, 2011). The questions asked how this decision has been arrived at, when the regulator will become operational, and if the water services institutions were aware of this process.

6.2.2 Municipalities

The WSA prescribes a series of processes that must be followed by water service institutions (see Chapter Two). However, there are references in discussions that the South African water sector, to a greater or lesser extent, does not follow this legislation completely (Jacoby, 2010; Groenewald, 2011). Parts on which there appears a need for greater guidance include the number and size of blocks to be used in the increasing block tariff and the pricing of these blocks.

The questionnaire distributed to 15 municipalities. It consisted of 11 questions. The questions dealt with a range of issues.

Four of the eleven questions were presented in a table format. (See Appendix B)

The first of the four tables asked how many consumer groups were supplied. Five groups were identified. The first, Non-Revenue, is consumers who were provided with, but do not pay, for water services. According to the Water Services Act guidelines, these consumers can be indigent, or poverty stricken, households (DWAF, 2002:12-13; Groenewald, 2011). The second group was residential consumers. These are all the households that consume and use the water provided by the municipalities in their day-to-day functions. The third group were non-residential users, which, not exclusively, can be seen as the business sector. Other municipalities are listed as the fourth group – to cover the case that a municipality provides water to another municipality, or acts as a water services provider as well

as a water services authority. The last group was a catch-all group, “Others not specified”.

The second and third tables asked if an availability charge is levied, as well as details of the waste water management pricing charges. The two tables further requested the total water sales per annum and water, in kilolitres, distributed. The primary purpose of these questions was to distinguish the number of blocks in each municipalities tariff structure, the rate at which each block is provided, and to identify other similarities, or lack thereof.

The fourth and final table the municipalities were asked to fill in related to their water services: Self-Supplied, DWA, Water Board and Other. Self-supplied water is water provided by municipality-run schemes, and treated by municipality sources. Self-supplied water falls under the control of municipalities who dual as both water service providers and water service institutions. The Department of Water Affairs (DWA) was expected to be main supplier of water and water boards the main supplier to smaller municipalities. Other suppliers of water include catchment management agencies and other municipalities.

The next question that was asked to the municipalities was their cost of supply. It was expected that because the water infrastructure is mainly fixed assets with life-spans over tens of years, there would be decreasing costs as the scale of production increases (Hirschey, 2006).

Other questions asked how water was sourced if an emergency exists, the process involved in pricing potable water whether there was a difference in the quality of water provided from the various sources, whether any appeals or queries have been made by the municipality concerning proposed DWA or water board increases, who these appeals or queries have been submitted to, and if the appeals have elected a satisfactory response. The terms of the Municipal Finance Management Act of 2003, municipalities must inform their residents of proposed increases within a sufficient time frame to feasibly implement them.

Finally, municipalities were asked how often a review was made of the way water services are provided, with specific reference to the Municipal Systems Act of 2000, Section 77.

6.3. Summary of Responses

6.3.1 Department of Water Affairs

The response to the questionnaire administered to the DWA was informed from email correspondence with Mr M. Vawda of the DWA.

Pricing practices differ in the different regions of South Africa (NWA, 1998). The raw water pricing strategy is allowed to differentiate on an equitable basis between geographic areas, different categories of water use and different water users (NWA, 1998: 32). The RWPS strategy further clarifies that the tariff charges are designed to ensure that the debt on a project will be repaid within a reasonable time period (RWPS, 2007: 24). As such, the tariff charge for water from various schemes and projects will vary from scheme to scheme and region to region.

Scarcity costs of water are not included directly by the DWA, but are rather left for indirect recovery at a later stage (Vawda, 2011). The scarcity costs are the opportunity costs of the water, i.e. the costs of not using this water for alternative uses.

The DWA was asked whether or not they support the implementation of a tiered tariff structure in other aspects of the water sector, specifically the water boards' product sold to the WSI. Their response was that there was no clear cut point when the water product switches over from the necessity good to the luxury good. This division was also hampered due to the nature of the WSI supply structure, whereby leakages amount for a large proportion of the water supplied (Vawda, 2011).

The quality of water provided to water boards did differ and ultimately was a municipality concern (Vawda, 2011).

The majority of objections to proposed changes in price originated from agricultural users. The agricultural users account for 60% of South Africa's water resources (see Figure 6.1) and consume water at a reduced tariff rate (Vawda, 2011).

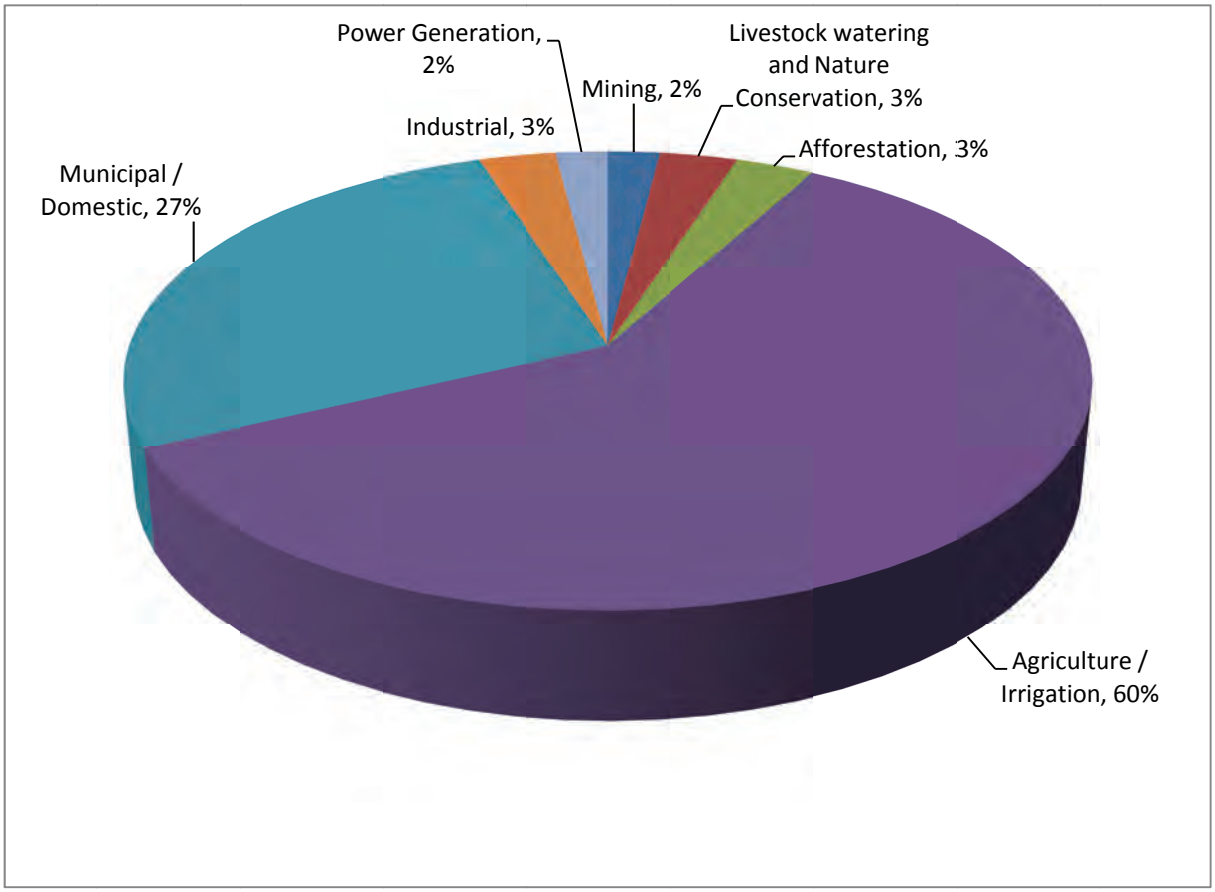

Figure 6.1: South Africa use of water per main economic sector
Source: National Treasury (2011)

The DWA has plans for establishing an independent water regulator to manage the DWA's role as supplier in the market and regulator of the market. This independent body will serve to separate the DWA from the regulatory aspects of the market, leaving the DWA to function solely on the supply side. The water sector as a whole has not been consulted on this matter as yet, as the process has yet to be formally initiated. The regulator is expected to be operational in three to four years' time (as at the time of writing, 2012).

The Raw Water Pricing Strategy of 2007 is also currently under revision. The revised pricing strategy will aim to achieve full cost recovery from all users (Vawda, 2011). However, if there is a political decision to continue subsidization, then on-going fiscal transfers will be required to meet the resultant shortage in operational income and to fund infrastructure maintenance and development (Vawda, 2011).

6.3.2 Municipalities

Fifteen municipalities were questioned as part of this investigation, less than 10% of the 169 municipalities authorized to provide water and sanitation services (National Treasury, 2011). Not all questions were answered.

The majority of the water supplied by the municipalities is used for residential use. Two municipalities, Polokwane and Amathole, use the majority of the water for non-revenue purposes, and George supplies 40% of their water to non-residential clients. Non-revenue water incorporates losses and unauthorized use from a water supply scheme (National Treasury, 2011:137). Of the remaining 12 municipalities, eight supply 90% or more of their water to residential clients, and Kouga, Nelson Mandela Bay and Sol Plaatijie supply between 60%-70% of their water. Stellenbosch supplies only 57% of their total supply to residential consumers. The remaining water is split between non-residential, non-revenue, other municipalities and other sources (see Table 6.1).

Table 6.1 Municipality Supply Breakdown 2009/10

	Non-Revenue Users	Residential Users	Non-Residential Users	Other Municipalities Supplied	Other users not specified here	**Total Users**	% of all surveyed	% of 2009 users supplied
George	17 000	15 000	20 000			52 000	1.43%	0.47%
Buffalo City		222 379	6 179			228 558	6.30%	2.08%
Ekurhuleni Metropolitan Municipality		430 914	20 524			451 438	12.44%	4.11%
Amathole	805 348	85 320	500			891 168	24.56%	8.12%
Polokwane	88 047	39 502	2 803	1	1	130 352	3.59%	1.19%
Midvaal	86	11 677	563			12 326	0.34%	0.11%
Sol Plaatijie	15 000	38 000	2 300			55 300	1.52%	0.50%
Stellenbosch	10 372	32 559	12 925		1 489	55 856	1.54%	0.51%
uMhlathuze		33 169	1 655			34 824	0.96%	0.32%
Cape Town		581 331	25 357	Stellenbosch, Drakenstein & Other Private consumers	10 014	606 688	16.72%	5.53%
eThekwini		646 420	37 150			683 570	18.84%	6.23%
Nelson Mandela Bay		289 000	7 003	Not Supplied	763	296 003	8.16%	2.70%
Overstrand	0	29 000	29 000	0	0	58 000	1.60%	0.53%
Steve Tshwete S		34 223	1 385			35 608	0.98%	0.32%
Steve Tshwete W		35 942	1 263			37 205	1.03%	0.34%
Questionnaire Total	**935 853**	**2 524 436**	**168 607**	**Indeterminate**	**12 267**	**3 628 896**		33.06%
National Total of 2009*						**10 976 750**		

*National Total of 2009 sourced from National Treasury, 2011

Only Cape Town, Polokwane and the Nelson Mandela Bay provide water to other municipalities.

The DWAF guidelines of 2002 recommend at least a three-block tariff structure and a more recent recommendation is for six-blocks (DWA, 2011). Table 6.2 reports the number of blocks making up the IBT at the 15 municipalities. The average is about 4.7, about the average of the two recommendations.

Table 6.2 Number of blocks in Increasing Block Tariff systems

Municipality	Number of blocks	Lowest Block Charge
George	3	(Not Supplied)
Buffalo City	5	R 5.88
Ekurhuleni Metropolitan Municipality	6	R 0.00
Kouga	6	R 4.63
Amathole	6	R 7.02
Polokwane	4	R 8.25
Midvaal	4	R 0.00
Sol Plaatijie	7	R 0.00
Stellenbosch	5	R 3.11
uMhlathuze	3	R 0.00
Cape Town	6	R 0.00
eThekwini	5	R 0.00
Nelson Mandela Bay	3	R 4.25
Overstrand	4	R 0.00
Steve Tshwete	4	R 0.00

Of the 14 municipalities that provided answers on the pricing of the lowest block, eight reported R0. Nelson Mandela Bay does not list their price for the initial block as R0, but do provide the first 8kl for zero cost to indigent households (Groenewald, 2011). This practice enjoys National Treasury support (National Treasury, 2011). The size of the first block's supplied is typically 0-6kl; Kouga being an exception (DWAF, 2002; DWA, 2010). The majority of the municipalities charge R15.11 to R92 per month for availability. One municipality charges an annual fee of R845.88 (an average of R70.49 per month). Another municipality charges for availability only to those who exceed 9kl of usage per month. The initial 9kl of potable water consumed in this municipality is provided free of charge. The mean availability charge is R50 per month for the 10 municipalities who replied to this question.

Smaller municipalities receive substantially less revenue than do the larger metropolis (Table 6.3). Total revenue ranges from R15.0 million in Overstrand to R981.5 million in Cape Town. The average revenue for the 9 municipal respondents

was R268.45 million, heavily skewed by the responses of eThekwini and Cape Town municipalities. The average revenue is above that of Buffalo City's revenue of R171.01 million, the third highest.

Table 6.3 Revenue from providing water potable water services 2009/10

Municipality	Revenue (R millions)
George	50.26
Buffalo City	171.01
Midvaal	33.12
Sol Plaatijie	124.13
uMhlathuze	27.30
Cape Town	981.49
eThekwini	978.60
Overstrand	15.00
Steve Tshwete	35.18
Average	**268.45**

Most water consumption occurs within the first two blocks

Cost recovery for waste water management pricing was predominantly in the form of a block tariff structure. Some municipalities charge a flat tariff for this service. The eThekwini municipality included this charge (cost) in their water service tariff structure for the 2009/2010 year. Buffalo City charged for this service through an annual charge, based on the household's size of dwelling. The block tariff structure for waste water management pricing is inconsistently applied – with some using increasing schedules and others using decreasing schedules.

Table 6.4 Returns to Scale of Municipalities (Excluding Kouga and uMhlathuze) 2009/10

	Increasing	Decreasing	Remaining Constant	Total
Total	7	2	4	13

Seven of the municipalities experienced increasing unit costs as supply is expanded, four experienced consistent unit costs as more product is supplied, and two experienced decreasing unit costs (Table 6.4). Given that the infrastructure is in place already the unit costs would be expected to decrease as more if supplied.

Table 6.5 Supply structure of municipalities (Excluding uMhlathuze) 2009/10

Municipality	Major Supplier	%
George	Self	100
Buffalo City	Self	57
Ekurhuleni Metropolitan Municipality	Water Board	99
Kouga	Other	55
Amathole	Self	74
Polokwane	Self	70
Midvaal	Water Board	90
Sol Plaatijie	DWA	100
Stellenbosch	Self	46
Cape Town	DWA	62
eThekwini	Water Board	97
Nelson Mandela Bay	Self	100
Overstrand	Self	100
Steve Tshwete	Self	91

The majority of the municipalities questioned supplied their own water (Table 6.5). Three had most of their water supplied by water boards, two were mostly supplied by the DWA and one (Kouga) was mainly supplied by another (Nelson Mandela Bay municipality).

The duration of their supply contracts ranged from continuous agreements to 3 years to 30 years (in the case of Buffalo City's agreement with the Amatole Water Board).Many municipalities are provided with water at the DWA's area rate as they demand it.

The municipalities use various sources to cover short run increase in demand – increased demand from water boards and using ground water (boreholes and reclaimed mine water). Polokwane and Cape Town were currently discussing the situation of further supply with the DWA and further supply through the use of feasibility studies. Polokwane was discussing their future supply source from the De Hoop Dam with the DWA. Cape Town was currently conducting feasibility studies for the implementation of desalination plants and accessing the Table Mountain Group Aquifer. George and Nelson Mandela Bay both had sufficient supply for the immediate future.

Six of the eleven responders consulted with their respective water boards before accepting increased raw water tariffs and sending them off to their city councils for approval. The remaining five municipalities did not follow a consultation process, but simply referred the increased raw water tariff to their city councils, before incorporating this increase in their own retail water tariffs. Some municipalities

involved the National Treasury in their negotiations over the wholesale price of the water service. Four municipalities, Buffalo City, Ekurhuleni Metropolitan, Amathole and eThekwini, appealed against the wholesale tariff increases – all four won reductions through their appeals.

Eleven municipalities do not take the quality of the water supplied into account when setting tariffs, while three do.

Table 6.6 Municipal Services Revision (Excluding uMhlathuze and Steve Tshwete)

Municipality	**Revision**
George	Annually
Buffalo City	5 years
Ekurhuleni Metropolitan Municipality	Not Often
Kouga	Annually
Amathole	As required
Polokwane	Annually
Midvaal	Annually
Sol Plaatijie	Annually
Stellenbosch	Bi-Annually
Cape Town	One section 78 assessment undertaken in 2003. One realignment/right-sizing of internal structure and function allocation across branches undertaken in 2010, being implemented 2011.
eThekwini	Annually
Nelson Mandela Bay	Water and Sanitation Master Plans are reviewed every 5 years and are aligned with the WSDP and IDP – Master Plans currently under review
Overstrand	When required by significant changes

Six municipalities revise the service provision methods annually, while two revise every five years (Table 6.6). One municipality revises ever two years, while the remaining municipalities range from ‘not often’, to ‘infrequent revisions’ to ‘when required’.

6.4 Water Boards [4]

Water boards are main water service providers in South Africa and act as liaisons between the DWA, catchment management agencies and the water service authorities, the municipalities (WSA, 1997). The water boards receive the raw water, treat it, and distribute it as a bulk potable water product for residential consumption (WSA, 1997). The water boards are independently set their tariffs for this water.

There were 14 water boards in existence at the beginning of 2011 (National Treasury, 2011). Two water boards were to be amalgamated within larger structures, reducing this number to 12 at the end of 2011, but by that time only one had been, , the Albany Water Board (Amatola, 2011A).

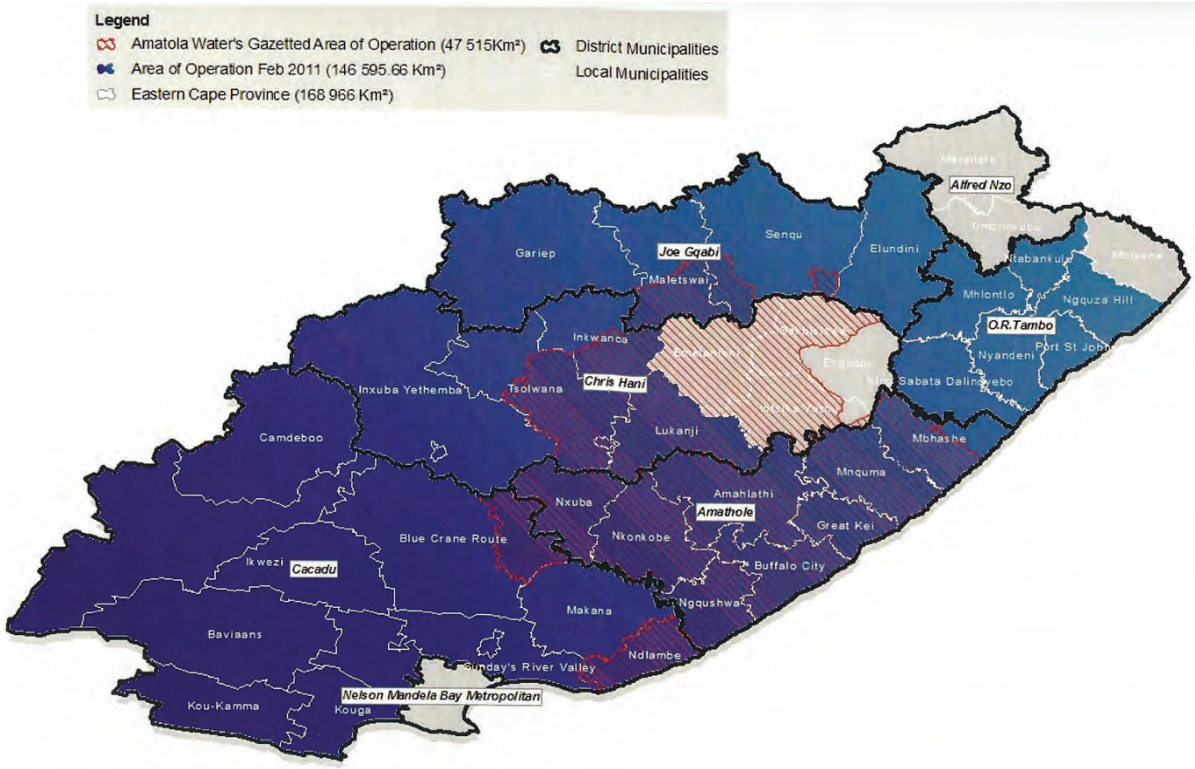

Figure 6.2 Amatola Water Area of Operation & Gazetted Area 2011
Source: Amatola Water (2011A)

The objectives Amatola Water Board are: to grow a profitable, sustainable and affordable business, satisfy and attract new customers with quality water services,

[4] The 5-year business plans and the annual reports of the Amatola Water Board and the Umgeni Water Board, as well as the 2011 Local Government Budgets and Expenditure Review (LGBER) were consulted for this section.

foster a developmental culture in employees, and maximize organizational efficiency and responsiveness to ensure continuous improvement (Amatola, 2011B).

The Amatola Water Board has no written contract guaranteeing raw water supply (Amatola Water, 2011A). There have been ongoing talks that commenced in 2006/7, to draw up a raw water agreement with the DWA, but as at 2012 there had been no finalization of this agreement (Amatola Water, 2011A).

The Umgeni Water Board sources their water from various dams in the region. The majority of the supply is sourced from DWA-owned storage dam (Umgeni Water, 2011A). The Umgeni Water Board manages some of the DWA-owned storage facilities (Umgeni Water, 2011A).

The DWA has increased the supply jurisdiction of the Amatola Water Board to cover the majority of the Eastern Cape Province, as seen in Figure 6.2.

Table 6.7 Comparing Water Tariffs

	Raw Water Average Tariff	Potable Water Average Tariff	% Mark-up on Cost
Amatola Water Board	R1.353	R4.739	184.97%
Umgeni Water Board	R2.410	R3.430	43.32%
National	-	R3.84	-

(Amatola Water, 2011A; Umgeni Water, 2011B; National Treasury, 2011)

The input and supply prices for the two water boards differ substantially (Table 6.7). In 2011, the average input price of water supplied to the Amatola Water Board was R1.353 per kilolitre, whereas for the Umgeni Water Board it was R2.410 per kilolitre. In 2011, the average tariff of water supplied by the Amatola Water Board was R4.739, whereas for the Umgeni Water Board it was R3.430 per kilolitre. The mark-up on cost after treatment and distribution was 43% in the case of the Umgeni Water Board and almost 185% in the case of the Amatola Water Board. The national potable water tariff average was R3.84 per kilolitre in 2011, with a minimum charge of R2.78 per kilolitre, and a maximum of R7.26 per kilolitre (National Treasury, 2011).

Chapter Seven

Is there integrity in tariff setting by South African municipalities? A case study of the Nelson Mandela Bay Municipality

7.1 Introduction

During the period of 2006-2010, the Nelson Mandela Bay area experienced a protracted drought in its river catchments. One of its drought survival strategies was to introduce drought tariffs that punished high water use (Rogers, 2011). Each household within the municipality were told to restrict their water usage to 500 litres of water a day (Groenewald, 2011). After the use of these 500 litres, 'punitive' tariffs to discourage additional water use were applied (Groenewald, 2011). When the drought was broken the punitive tariffs were retained, calling into question the integrity of the principles informing water service tariff setting within the metropolitan region, and raising the question that revenue raising is prioritised above principles (Rogers, 2011).

Chapter Seven addresses this question. Mr Stan Groenewald of the NMB water department was approached to explain the process in determining these tariffs and tariff increases.

7.2 Tariff Determination

Since 1987, the NMB municipality has been using a three-stepped tariff structure where, depending on the quantity of water available for supply, a different set of tariffs are charged to the residents of the municipality (2011). These steps are applicable during periods of normal supply, critical supply and emergency circumstances. Instead of applying to the DWA for the implementation of increasing prices, the NMB council is petitioned during times of need to change the tariff structure (Groenewald, 2011). This process effectively cuts out the DWA's intervention in the setting of drought tariffs, although the increased tariffs are ultimately approved during the DWA regulatory processes (Groenewald, 2011).

When the NMB discovered itself to be facing a critical supply shortage in water reserves stored, they consulted with an independent organization, Aurecon, over the tariff setting process (Groenewald, 2011). This organization collected information from a number of municipalities that may be compared to the NMB in size of supply and/or function. This data revealed that the NMB water tariff structure had a smaller number of blocks within their increasing-block tariff structure (compared to other municipalities), as shown in Figure 7.1 and Figure 7.2, and Table 7.1 and 7.2 (Aurecon, 2010). The NMB's size of the blocks was found to be more regular than the others (Aurecon, 2010; Groenewald, 2011). Based on these observed differences, the NMB council decided to increase the number of blocks in the metro's tariff structure (Groenewald, 2011). The municipality also debated the implementation of alternative supply, such as desalination plants, and the more

effective usage of existing sources, such as the Gariep Dam to Fish River scheme (Groenewald, 2011). It also considered options to better manage its supplies of non-revenue-water, e.g. that being supplied to its indigent households better (Groenewald, 2011).

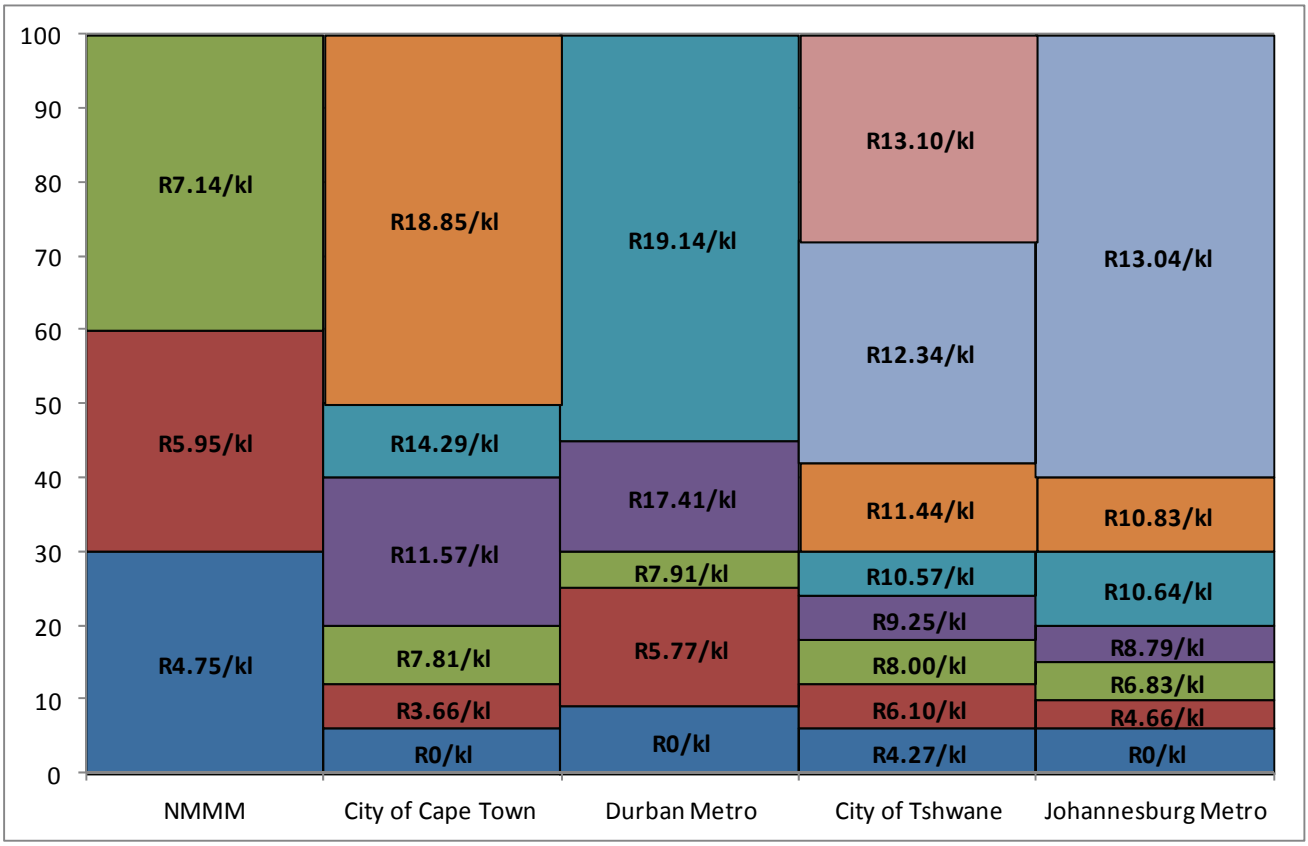

Figure 7.1 Comparative Summaries of Water Tariffs 2009/10 – Normal Conditions

Source: Aurecon (2010)

Table 7.1 Comparative Summaries of Water Tariffs 2009/10 – Normal Conditions

Source: Aurecon (2010)

	NMMM		City of Cape Town		Durban Metro		City of Tshwane		Johannesburg Metro	
	Block Size (kl)	**Price**	**Block Size (kl)**	**Price**	**Block Size (kl)**	**Price**	**Block Size (kl)**	**Price**	**Block Size (kl)**	**Price**
2009/10	0-30	R 4.75	0-6	R 0.00	0-9	R 0.00	0-6	R 4.27	0-6	R 0.00
	30-60	R 5.95	6-12	R 3.66	9-25	R 5.77	6-12	R 6.10	6-10	R 4.66
	60-100	R 7.14	12-20	R 7.81	25-30	R 7.91	12-18	R 8.00	10-15	R 6.83
			20-40	R 11.57	30-45	R 17.41	18-24	R 9.25	15-20	R 8.79
			40-50	R 14.29	45-100	R 19.14	24-30	R 10.57	20-30	R 10.64
			50-100	R 18.85			30-42	R 11.44	30-40	R 10.83
							42-72	R 12.34	40-100	R 13.04
							72-100	R 13.10		

Table 7.2 Comparative Summaries of Water Tariffs 2009/10 – Emergency Conditions

Source: Aurecon (2010)

	NMMM		City of Cape Town		Durban Metro	
	Block Size (kl)	**Price**	**Block Size (kl)**	**Price**	**Block Size (kl)**	**Price**
2009/10	0-15	R 5.95	0-6	R 0.00	0-9	R 0.00
	15-100	R 13.39	6-12	R 4.02	9-25	R 5.77
			12-20	R 14.94	25-30	R 7.91
			20-40	R 38.30	30-45	R 17.41
			40-50	R 76.59	45-100	R 19.14
			50-100	R 153.19		

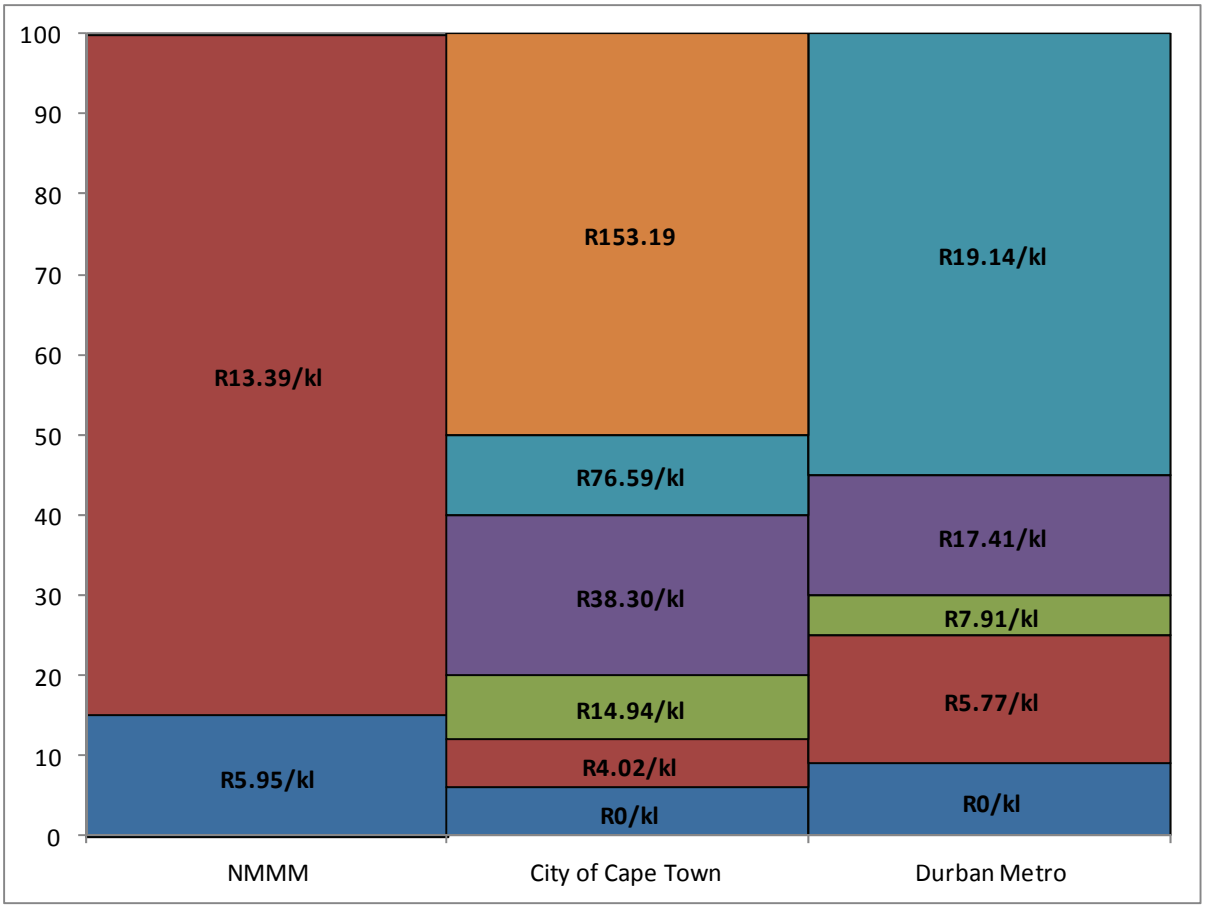

Figure 7.2 Comparative Summaries of Water Tariffs 2009/10 – Emergency Conditions

Source: Aurecon (2010)

7.3 The process of tariff setting followed

In order to reduce scarce water demand, the municipality decided to reduce the upper limit of their block structure to 15kl per month per household and substantially higher tariffs (Groenewald, 2011).

The method used to derive the 15kl ceiling to the first block was not based on advice on what would be the optimum quantities at which tariffs and block limitations should be set, but purely on consumers' water usage statistics (Groenewald, 2011). Historically, most households in the NMB municipality consume less than 15kl per month (see Figure 6.3).

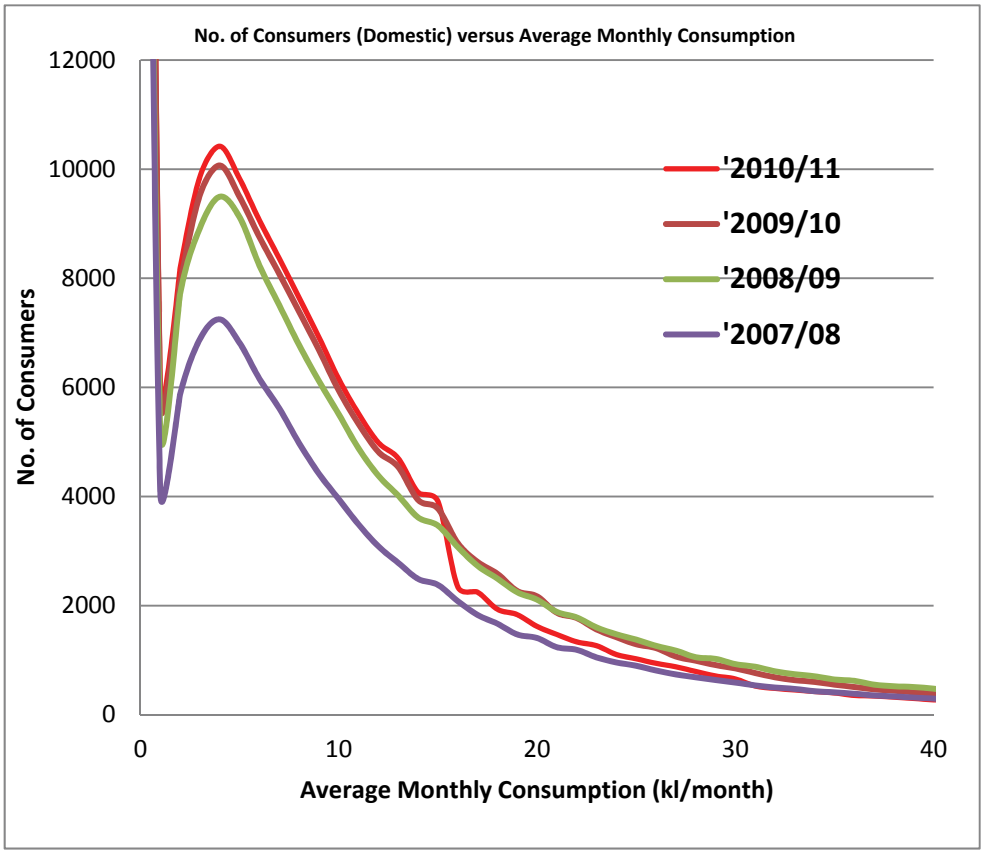

Figure 7.3 Consumer's Monthly Consumption in Nelson Mandela Bay
Source: Aurecon (2010)

The WSA requires that each block tariff structure should be designed so as to promote efficiency of supply, the sustainability of supply, and the ability to cross subsidize the initial, free water supply from higher blocks (WSA, 1997). It appears that the objectives considered by the NMB municipality the process they followed: (a) sustainability in (short-run) supply for the drought situation; (b) efficiency of matching tariffs set to average cost incurred. Given the preferences of their 'reference group' for the 6-8 kl sized first block (basic allocation), it is strange they set the block so big. The punitive drought tariff was set at over 100% of the normal rate, so should have had the desired discouraging effect on demand. The increased block rates for higher water (presumed richer) consumers after allow for some cross-subsidization.

7.4 Tariff rate increases

Table 7.3 NMB initial tariff step comparison
Source: Groenewald (2011)

Year	Step 1 (0-30 kl)	Step 2 (30-60 kl)	Step 3 (60-100 kl)
2009/10	4.75	4.75	5.95
2010/11	5.87	5.87	7.33
% Increase	23.58	23.58	23.19

The NMB municipality increased their tariffs by 12% from 2009/2010 to 2010/11; this being the maximum allowable increase by the National Treasury (Groenewald, 2011). The National Treasury has no legislated role in the water market, but it has had a de facto influence for quite some time (RWPS, 2007; WSA, 1997; DWA, 2010; DWAF, 2002; DWAF, 2006; NWA, 1998). By implication, the NMB municipality would increase water service tariffs by a higher percentage, if the National Treasury permitted them to do this. What is unclear is whether the requirement is because costs have been increasing or because of other reasons, such as increased transfers (like bad debts) or mismanagement.

The NMB water restrictions were initially put in place on 12 October 2009, and were finally lifted on 1 August 2011.

7.5 Demand-side Management

Demand-side management has been preferred as an option for conserving water resources (Renwick & Green, 2000: 37). The Nelson Mandela Bay municipality has not pursued this option directly, but has explored ways to contain wasteful use (Groenewald, 2011). It has investigated the feasibility of implementing water meters fitted to cut-off supply after the daily amount has been exceeded (Groenewald, 2011).

Metered indigent households makes up 40% of the total metered households connected to the NMB supply infrastructure (Groenewald, 2011). Due to the combination of cross-subsidization and the Equitable Share Grant, the metropol makes provision to supply 8kl of water to each of these households (instead of the recommended 6kl), but in reality these households are supplied with as much water as they can use (Groenewald, 2011). Certain indigent households have been using over 30kl of water a month, which puts them within the highest block tariff, but as they are unable to pay for this use no revenue is collected (Groenewald, 2011; WSA,

1997). The households also have no incentive to fix the leak at their own expense, due to their indifference over their water usage (Groenewald, 2011).

The NMB municipality have investigated the worst water wasters of the indigent households in an attempt to discover what the cause of the excess usage was (Groenewald, 2011). In the case where leaks were the primary cause, the municipality employed plumbers to fix the leaks (Groenewald, 2011).

7.6 Conclusion

The NMB municipal example of water service tariff setting reveals:

- a degree of arbitrariness in block setting in the increasing tariff block structure
- National Treasury ceilings on tariff increases have become a binding contract in municipalities, driven by revenue raising
- evidence that principles have been displaced in favour of revenue raising in the tariff setting process (the retention of punitive drought tariffs after the drought had been broken).

Chapter Eight

Conclusion and Recommendations

8.1 Social Failures in the South African Water Sector

The legal framework for water service provision in South Africa provides scope for private sector participation after all public options have been considered (WSA, 1997: 13). The themes and objectives of equity, ecological sustainability, financial sustainability and efficiency are common points of reference in the Acts and guidelines. Ecological sustainability, while of importance, was beyond the scope this report.

An investigation into the equity concerns has discovered that while the Competition and Consumer Protection Acts contain clauses which allow government, but not private, water services provider to be exempt from the application of them; this situation that may not be desirable. The exemption was created as a public entity should be providing so as to maximize social welfare, and as a result promote equitable treatment. However, without effective regulation to ensure welfare maximization occurs, there is no way to confirm that this is the case. The water sector has already exhibited deviations from the recommended guidelines through investigation, and the likelihood that the necessary regulation is in place to maximize welfare is low.

Under the South African model for water service provision, the Department of Water Affairs (DWA) regulates supply, the Treasury subsidises shortfalls in cost recovery (for service provided to the poor and for investment in infrastructure) and local government is mandated to administer the delivery of the water services (National Treasury, 2011). However, this has been shown to not be the case. The DWA has relegated the task of relegation to the National Treasury, and beyond the occasional guideline has not shown any presence in the regulatory process that has been discovered. The National Treasury, as the regulator of the market, seems to disregard the guidelines in favour of household protection, limiting the ability of municipalities to recover water sector costs by raising tariffs. Whether the National Treasury is saving public funds by providing increased subsidies instead of allowing the municipalities to adjust costs as they need to is questionable and needs to be investigated further to determine the optimal outcome. As it stands, the water services sector is unable to function within the cost recovery specifications provided for by the Water Services Act and subsequent guidelines, and does not seem to be financially sustainable or efficient.

A natural monopoly, when efficiently managed, should experience in economies of scale. Depoorter (1999) classifies a natural monopoly that achieves this as ‘strong’, where a natural monopoly that experiences decreasing returns to scale as ‘weak’. In the case where a natural monopoly is ‘weak’, the argument for a natural monopoly

becomes weaker as it loses a core proponent for the structure in that one firm does not experience economies of scale. However, the DWA's regulatory hand has been 'loose' on the reins, and there have been little obvious benefits of scale of operation, outside of the metropolitan areas. There is too little evidence to judge whether the 'weak' natural monopoly results are from an efficiently governed market, or as a result of regulatory mismanagement.

8.2 Public Sector vs. Private Sector

There exists a staunch opposition to privatization in the current political environment of South Africa. This does not mean that public provision is necessarily the way forward into the future. Efficient provision coupled with strict oversight by a regulatory body should be sufficient, under any form of provision, to provide sustainable services, as echoed by Hukka & Katko (2003) Until such a time, especially in the current situation where regulation is not enforced as strictly as necessary, it is probable that public sector provision or public-private partnerships are required in the current political landscape going forward. With respect to the former, public failures such as rent-seeking and ministerial indifference should be guarded against. In the case of the latter, it is of interest that China, a fellow member of BRICS, has experienced greater success with PPP provision of services than either of the other options. The possibility that South Africa could benefit from PPP should not be entirely discounted, although the need for effective regulation is still paramount.

8.3 Regulatory Aspects

The planned introduction of the independent regulator is a process that needs to be closely monitored to ensure that the regulator is set up with the right focuses and management directives (National Treasury, 2011; Geldard, 2011). The regulator must be constructed to conform to the existing legal infrastructure, that is, the Municipal Systems Act, the Municipal Finance Management Act, the Raw Water Pricing Strategy and the Water Services Act, and any guidelines prescribed by the DWA (Geldard, 2011).

The regulator must focus on the following critical areas:

- Supply security
- Investment in maintenance and infrastructure
- Price of the good.

(Geldard, 2011)

Any disruption of supply in the water sector will induce a negative reaction to the water sector in that tariffs then have to increase to reflect this scarcity. However, any negligence-created scarcity is not necessarily passed onto the consumer in all scenarios, and care must be taken to identify where this inefficiency ends up. If the regulator maintains a stance more in line with the current stance, increased cross-subsidization will be required to finance this inefficiency (DWA, 2010). If the regulator

allows the negligence-created scarcity to affect consumption tariffs, then the consumers are affected more directly through the regulatory process.

8.4 Municipality Concerns

There is a problem with both the legislature and guidelines currently in place in the water sector and these need to be reviewed. The problem is not so much that the legislature is incorrectly designed but rather that compliance with the legislature and guidelines is low. This is an issue that is perpetuated by both the regulator and the sector itself, whereby the regulator is not enforcing compliance with the documentation, while the sector is not participating within the regulatory structure as they should be. The fact that the National Treasury is helping as the water sector regulator is not as much of an issue as the National Treasury not following the guidelines laid out for the section they are governing. The inability of the municipalities to perform effective cost calculations, and their subsequent reluctance to perform these calculations, is reacting negatively with their ability to recover costs as set out in the DWA guidelines (DWAF, 2002; DWA, 2010; Groenewald, 2011). However, as compliance is low, the effectiveness of the legislation and guidelines, while theoretically able to achieve the purposes they are constructed for, is indeterminate.

8.5 Final Recommendations

An independent regulator needs to be created as soon as possible to govern over the water services sector. This independent regulator needs to be empowered correctly with the necessary skills and training to regulate the water sector effectively according to the legislature.

It is a recommendation of this report that the municipalities need to perform water services cost calculations so that an effective base for cost recovery can be established. The regulator needs to endorse and follow the legislation and guidelines when governing the water services sector, while still testing for efficiency

The consumer protection allowable under the Competition Act and the Consumer Protection Act be extended to the water sector despite the present public services provider, especially in the case of ineffective regulation, or regulation of indeterminate effect.

Any reforms that are put into place should, as put by Cordova (1994:277), have “economic rationality in its design, political sensitivity in its implementation and close and constant attention to political-economic interactions and social-institutional factors, so as to determine in each case the dynamics to follow”. It is further recommended that any reforms should be launched after sufficient and extensive awareness campaigns, where a clear economic rationale and broad reform agenda are presented (Dinar, 2003). The reforms should precisely target objectives, and be hard to modify once begun (Dinar, 2003). Reforms should also be politically

amicable, so as to prevent revision when a new organization comes into power (Dinar, 2003).

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Appendix A

Questionnaire to the Department of Water Affairs

Questionnaire Distributed to Department of Water Affairs of South Africa

This questionnaire is distributed to assist the Water Research Commission's enquiry into the efficiency of the Water sector. The answers will be used in an M Com report of Ryan Norden, Nelson Mandela Metropolitan University.

This survey contains 3 pages containing 10 questions. Please answer the questions and complete the schedules in the spaces provided to the best of your knowledge. You are welcome to attach extra pages as additional explanation.

Questionnaire

Pricing

1. How does the DWA price water in the different regions?

   _____

2. How important are the costs of water scarcity in this pricing process?

   _____

3. Would you support the case for extending the increasing block tariff structure to the setting of bulk water tariffs – so that the municipalities would pay more for water where a higher proportion of their water is used to satisfy luxury demand, e.g., swimming pools, landscaping, etc.? .

YES	NO

   Please provide reasons for your answer

   _____

4. Does the DWA believe that the water sold to the Water Boards and Water Service Authorities is of like standard/quality?

YES	NO

5. A) When the DWA increases prices and/or moderates pricing strategies, how do the Water Service Institutions react?

_____

B) Is there an appeal process or a complaints board?

YES	NO

If yes, how effective would the DWA say this process is? If no, why not?

_____

C) Would I be able to access the records of these complaints and the subsequent responses?

YES	NO

Regulation

6. The DWA has recently approved an independent regulator for the South African Water Services market. What led the DWA to this decision?

_____

7. When will the independent regulator become operational?

_____

8. Were the Water Services Institutions consulted during the process to implement the independent regulator?

YES	NO

9. Which are the main issues under revision in the Raw Water Pricing Strategy of 2011?

_____

10. From whom may I obtain a draft copy of the 2011 Raw Water Pricing Strategy?

_____

Thank you for taking the time to fulfil this survey.
Please also fill in your name for our reference purposes only. Your details will not be revealed in the dissertation or the WRC report.

Name: _____

Title: _____

Date: _____

Signature: _____

Appendix B

Questionnaire to Various South African Municipalities

1) Who are the water services supplied to?

	Type of user	**Number of users. (1)**	**% of the total users supplied**
1	Non-Revenue		
2	Residential		
3	Non-Residential		
4	Other Municipalities		
5	Other not specified here		
	Total (100%)		100%

(1) Number of indicated users supplied by this organization.

2) What are the pricing block tariffs for residential users (and also water sales per block, if determinable – last two columns)?

	Price Block	Potable Water Pricing (R/kl)	Waste Water Management Pricing (R/kl)	Water Sales per annum (R Mill)	Water Distributed per annum (Kilo Ltrs)
	Availability Charge				
1	Block 1				
2	Block 2				
3	Block3				
4	Block4				
5	Block5				
6	Block6				
7	Other Blocks				
	Single (flat) tariff				
	Average Cost Price of water sold				
			Total		

3) What are the pricing block tariffs for non-residential (business) users (and also water sales per block, if determinable – last two columns)?

	Price Block	Potable Water Pricing (R/kl)	Waste Water Management Pricing (R/kl)	Water Sales per annum (R Mill)	Water Distributed per annum (Kilo Ltrs)
	Availability Charge				
1	Block 1				
2	Block 2				
3	Block3				
4	Block4				
5	Block5				
6	Block6				
7	Other Blocks				
	Single (flat) tariff				
	Average Cost Price of water sold				
			Total		

4) Do the extra costs of providing water services to specific customers increase, decrease or stay constant as more of the service is provided? (Circle the correct answer)

Increase	Decrease	Remain Constant

5) How is the supply of bulk potable water obtained?

	Supply Organisation	% of Total Bulk Water Supply **(1)**	Duration of Contract **(2)**
1	Self-Supplied		
2	DWA		
3	Water Board		
4	Other		

(1) What percentage does this organisation constitute of your total source of water supplied?

(2) What was the initial duration period of the current contract?

6) If more potable bulk water is required, how is it obtained?

_____
_____
_____
_____
_____
_____

7) What process is followed in the setting of the tariffs for the potable bulk water?

_____
_____
_____

8) Is the quality of the bulk water supplied a factor taken into consideration in setting the tariff?

Yes	No

9 a) Did your organization/municipality submit responses to changes proposed for pricing to be applied/charged by the bulk supplier of water to your organization/municipality?

Yes	No

b) If “Yes”, what was the nature of the response and was it submitted to the DWA, the regional Water Board, or an alternate supplier?

_____
_____
_____
_____
_____

10) Did your response have any effect on the price set?

Yes	No

11) How often is a review made of the way municipal water services are provided, as required by Section 77, Municipal Systems Act, No. 32 of 2000?

_____
_____
_____

APPENDIX C: CAPACITY BUILDING REPORT

Table C.1: Capacity building through Project K5/2087

Student name	Employment	Degree (year submitted/ awarded)	Title of dissertation
Ryan Norden	Student, Nelson Mandela Metropolitan University, Port Elizabeth	Masters (submitted December 2012)	PERSPECTIVES ON THE MARKET PROCESSES FOLLOWED IN SETTING SOUTH AFRICAN WATER SERVICES TARIFFS