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**COMMUNITY MANAGEMENT OF RURAL
WATER SUPPLIES IN SOUTH AFRICA :
ALFRED NZO DISTRICT MUNICIPALITY
CASE STUDY**

Dissertation submitted in partial fulfilment of the requirements of the degree

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by

Robert Dyer

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EXECUTIVE SUMMARY

South African legislation, as summarised in The Strategic Framework for Water Services (Department of Water Affairs and Forestry, 2003), makes local authorities responsible for all water services to individual consumers. As Water Services Authorities (WSAs), municipalities must appoint Water Services Providers (WSPs) to implement water services. The legislation allows a range of organisations to act as WSPs.

The Strategic Framework also lays down norms and standards with regards to continuity of water supplies and water quality.

The country has adopted a policy of “Free Basic Water”, which requires WSAs to provide a basic level of services free of charge. Six kilolitres per household per month is the norm adopted by most municipalities.

In deciding on the institutional arrangements for the provision of water services, municipalities need to decide what functions, if any, to outsource.

Most international literature that reviews experiences of the International Water Decade advocates community management of rural water supplies, pointing to failures of government run, centralised management of rural schemes. A strong reason given for choosing community management is the sense of “ownership” this gives to local communities.

Traditional theories on management by government organisations use a “steering” model, in which the government sets the course for policy and administrators implement the policies decided upon. Since the 1980s, a new paradigm for analysing government has emerged, emphasising the limits to governments’ power to act as it wishes. The new model is one of networks of various interdependent organisations, often with the government at the centre. Such a model can be used to depict organisational relationships in rural areas of South Africa.

In the early 1990s, a number of NGOs implemented rural water schemes using the community management approach. However, after the passing of legislation making municipalities WSAs, very few municipalities have seriously considered community management, or any formal role for local community based organisations.

Efforts to assess the effectiveness of municipalities’ water service delivery is severely hampered by a lack of usable data.

Since starting to take responsibility for water schemes from DWAF and other bodies in 2000, municipalities have struggled to manage service delivery effectively, largely due to a shortage of management and technical skills.

Alfred Nzo District Municipality (ANDM) is one of the poorest municipalities in the country, with high levels of poverty. Approximately 50% of the rural population have adequate water services, that is 25 litres per person available within 200 metres of the household (Smith, 2006). The operation of services is paid mainly from the municipality's equitable share from national government.

This report attempts to assess the effectiveness and efficiency of community management of rural water supplies. This is done by examining ANDM's community management model as a case study. The roles and responsibilities of various actors in the programme were analysed by interviewing the Support Services Agents (SSAs) engaged to co-ordinate the programme. The effectiveness of the water services were analysed using the SSAs' monthly reports, and this was compared with other available data. The experiences of other rural municipalities were also examined, focusing on their experiences with community participation.

The model used by ANDM consisted of a water committee or board for each water scheme, which supervised the work of local operators and administrators. Operators carried out minor repairs, while the SSAs did monthly servicing of pumps and motors, and implemented major repairs, largely by supervising local operators and casual labourers. Committees submitted monthly reports to the SSAs, which were used as a basis for reports from the SSAs to the municipality. SSAs also reported on water quality.

The figures for continuity of supply (measuring the operability of the infrastructure) varied considerably between the three SSAs. A possible reason for low figures from one SSA was that the figures also reflected water shortages in some schemes. Figures for water quality varied more than those for continuity, leading to a concern about the extent to which sampling and testing procedures were standardised.

The figures were compared with figures from attitude surveys on water services recording consumers' perceptions about continuity of supply. The difference in data being measured, and concerns about the meaning of the figures from the SSAs' reports make direct comparisons impossible. However, the data indicates that for schemes served by two of the SSAs at least, a reasonably effective service was rendered.

The cost to the municipality of providing water services was R4,19 per person per month, a relatively low figure compared with other municipalities.

The four KwaZulu-Natal District Municipalities interviewed all reported negative experiences with community management of rural schemes that they inherited, and all four have opted for a centralised system, one using a partnership with a water board. None of the four municipalities had systematic data on continuity of service.

Despite the difficulties in comparing the performance of ANDM to that of other municipalities, it is clear that the system employed by the municipality to use community management with the support of external consultants and NGOs was workable, sustainable and efficient. The participation of local community organisations assisted in some of the common problems that beset rural water schemes such as vandalism and water wastage.

The report recommends that:

- Municipalities with remote rural water schemes seriously consider community management as an effective and efficient delivery mechanism.
- Where community management is employed, it is backed up with effective managerial and technical support.
- The Alfred Nzo District Municipality reinstate the contracts with external Support Services Agents, which were the basis of effective management of and reporting on its rural water supply programme, unless equivalent internal capacity has been acquired to do the work done by the Support Services Agents.
- Water Services Providers be required by water services authorities to submit regular data on service availability, continuity of supply and water quality, and Water Services Authorities in turn be required to submit similar data to DWAF.
- DWAF issues guidelines on how proper separation of regulation and implementation roles be effected between WSAs and WSPs respectively when the WSP function is carried out internally.

Declaration

I hereby state that this dissertation has been independently written by myself. All material used, findings reported and conclusions drawn are my own unless otherwise referred to.

A handwritten signature in black ink, appearing to read 'R A Dyer'. The letters are stylized and cursive, with the 'R' and 'A' being particularly prominent.

R A Dyer

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Abbreviations

ANDM	Alfred Nzo District Municipality
CBO	Community Based Organisation
DWAF	Department of Water Affairs and Forestry
FBW	Free Basic Water
HSRC	Human Sciences Research Council
KPI	Key Performance Indicator
NGO	Non governmental organisation
O&M	Operation and Maintenance
SSA	Support Services Agent
VLAP	Village Level Action Plan
WSA	Water Services Authority
WSP	Water Services Provider

1. INTRODUCTION

1.1 Background and motivation

This study examines the provision of potable water to rural areas by South African municipalities, focusing on the experience of the Alfred Nzo District Municipality (ANDM). Managing rural water supply systems effectively and efficiently is a challenge to any municipality due to the long distances between consumers and municipal centres, the low income of most residents and the government's policy of "Free Basic Water" (FBW) (Department of Water Affairs and Forestry, 2002). This policy obliges municipalities to supply a basic quantity of water, usually set at 6 kilolitres per month, to each household, free of charge. Many rural municipalities face additional challenges of limited revenue and limited managerial and technical capacity.

There is little empirical data on how successful municipalities have been up to now in providing water to rural areas. The information that is available suggest that results have been mixed.

Much has been written internationally on developing countries' efforts to improve water supplies to poor consumers. Most of this literature recommends community management as an effective alternative to centralised management systems, many of which have failed. In South Africa, despite an initial orientation towards community management in the early 1990s, most municipalities, which are legally responsible for all water services to individual consumers, have chosen not to involve communities formally in the operation and maintenance of rural water schemes (Davids, 2006).

1.2 Research objectives

A few municipalities, notably ANDM in the Eastern Cape, have made extensive use of local committees, both during the construction of water supply schemes and for the subsequent management and operation of schemes. It could be argued that ANDM has taken this route by default, being one of the poorest areas of the country and having very limited resources. Several studies of the municipality have indicated significant achievements in providing water to its residents. This raises the question whether community management may indeed be an effective and efficient way to manage the supply of water to remote rural areas. The objectives of this report are to answer the following questions:

- How effective and efficient is ANDM in the provision of water supplies?
- Is the ANDM approach one that other local authorities could adopt?
- What are the risks in community management?
- Based on the findings of this study, what lessons can other municipalities embarking on similar programmes learn from the ANDM experience?

The answers to these questions will inform the overall purpose of the report, which is to provide recommendations regarding community management of rural water schemes in South Africa.

1.3 Overview of chapters

The introduction is followed by a chapter reviewing the development of legislation relating to water services since 1994, and the associated institutional framework. The chapter describes how water services are regulated, required norms and standards and the “Free Basic Water” and “Equitable Share” policies that have an important bearing on the financing of water services.

Then follows a chapter on theories of management as applied to rural water supplies. It reviews classical management theories, particularly with regard to decentralisation and outsourcing. It looks at lessons on managing rural water supplies from the international water decade and a relatively new approach to theories on managing in network settings. Literature on community management of rural water in South Africa is reviewed, followed by an assessment of available data on rural water provision in the country.

The challenges facing municipalities in the delivery of services is then described, noting the problems of capacity that beset municipalities.

The following chapter provides some details on the Alfred Nzo District Municipality – its demographics, existing services, financial resources. It then provides an account of the development of a community management model for water provision in the municipality.

The research methodology is then described in Chapter 6, starting with the research objectives and explaining how the achievement of these objectives was planned using a case study approach. The chapter describes the sample design (what data was examined), data collection, the design of interviews with key informants, and concluding with a review of how the data was analysed.

The following chapter covers the research findings. It describes the roles and responsibilities in the municipality's community management model, highlighting some of the main problems faced. The main part of the chapter is the findings on the continuity of water supply and quality of water supplied, and also the cost of providing water services. The figures were then compared with available data for other municipalities. The chapter closed with the findings from the interviews with representatives of four other Water Services Authorities, particularly their experiences with community management.

Chapter 8 covered the discussions and conclusions arising from the findings chapter in the light of the research objectives. It discussed the effectiveness and efficiency of ANDM's water services. It concluded that the ANDM approach is indeed one that could be replicated by other municipalities, reviewed the risks in community management and drew lessons that other municipalities could draw on if embarking on a similar programme. In the light of the difficulties in obtaining data from other municipalities, the chapter discussed the problems around monitoring of water services and regulatory independence.

The main recommendations in the recommendations chapter was that community management provides significant advantages to municipalities providing rural water services, but that communities require well planned and organised external support.

A further recommendations made is that collection of data by Water Services Authorities needs to be strengthened, with closer monitoring by DWAF (DWAF). The final recommendation is on the need to strengthen the separation between implementation and regulation of water services.

Chapter 10 discussed the limitations in the research, noting questions around the accuracy of the data on continuity of supply and water quality provided by ANDM. It also noted the dearth of comparable data from other municipalities, making direct comparisons impossible. The chapter made recommendations on future research in the Chris Hani District Municipality which is currently using a community management approach, and more intensive research into how well municipalities are achieving prescribed norms and standards.

The final conclusion states that the community management model adopted by ANDM was successful, being effective and efficient, and notes the importance of external support to community committees and operators. It further comments that replication of the effective reporting in ANDM in other municipalities will require closer regulation by DWAF.

2. LEGISLATION AND INSTITUTIONAL FRAMEWORK

2.1 Introduction

This chapter outlines the laws, regulations and institutions that governed the provision of water to rural areas on South Africa since the 1994 elections. It describes the development of legislation governing water provision, which set out various institutional models for water supply authorities. It outlines the way in which water provision is regulated, the norms and standards to be adhered to, and examines the implications of the policy of “Free Basic Water” adopted by the government. Finally, the chapter describes the “Equitable Share” mechanism through which national government subsidises the provision of water to poor communities. Collectively, these laws, regulations and policies constitute the framework within which water authorities make management decisions on how to provide water to their customers.

2.2 Development of legislation after 1994

From 1995 the government began a large scale programme of investment in the construction of new rural water schemes. The initial policy framework for this programme was the Reconstruction and Development Programme (African National Congress, 1994), and the Water White Paper (Department of Water Affairs and Forestry, 1997). These documents were not clear on many important questions about rural water. In particular, there was no legislative framework for ongoing operations and maintenance of rural water schemes after they had been constructed. Consequently, there were significant differences in design standards and visions for sustainability for the new schemes.

Up until 1995, Non Government Organisations (NGOs) had funded and implemented or facilitated the implementation of a number of rural water schemes. With no government institutions ready to support the operation of these schemes, NGOs and others involved in implementing them adopted a community based approach, both for implementation and subsequent operation. They planned for the costs of implementation to be recovered from consumers by a community water committee, with no support from any government institution.

Initially DWAF appeared to operate using the same assumptions about community management of completed schemes.

In 1996 the country's Constitution was promulgated (Republic of South Africa, 1996). Section 4, Part B of the Constitution allocated responsibility for domestic water and sanitation services to local government. This was given force by the Water Services Act (Republic of South Africa, 1997). The Act set out the responsibilities of Water Services Authorities (WSAs) which were defined as the municipalities responsible for providing water and sanitation services. One of the duties of WSAs was to nominate a Water Services Provider (WSP), which was defined as "any person who provides water services to consumers or to another water services institution." The Act also stated that WSAs could perform the functions of a WSP directly.

The Act made provision for the establishment of community based Water Services Committees (Republic of South Africa, 1997). According to Philip Davids, Policy Specialist on Local Government at the Mvula Trust, only one such Water Services Committee was formally established, when the transitional local authority for the town of Butterworth in the Eastern Cape was dissolved in 1999. Otherwise this part of the legislation has never been put into effect (Davids, 2006).

The Municipal Structures Act (Republic of South Africa, 1998) set out the structure of local government. The Act introduced a two tiered structure for rural local government. The higher level was the District Municipality, which was divided between a number of Local Municipalities. In many cases (not including KwaZulu-Natal), District Municipalities were entirely new institutions, while Local Municipalities were generally built around previous town councils. In KwaZulu-Natal, most District Municipalities were based on the previous Joint Service Boards, and had an existing staff and infrastructure.

In both KwaZulu-Natal and the Eastern Cape, the role of WSAs was given to District Municipalities (although in some other provinces the role was given to Local Municipalities).

A key decision for WSAs has been the institutional framework for operation and maintenance (O&M), i.e. how to manage the O&M of rural water schemes. The Municipal Systems Act (Republic of South Africa, 2000, p.37) set out a procedure to be followed by municipalities in making such a decision. Under Section 78 of the Act, WSAs must produce a report, commonly referred to as a Section 78 Assessment Report before making this decision. The objective of a Section 78 reports is to assess the potential service delivery mechanism (for all municipal services, not only water) that will ensure access to efficient, affordable and

sustainable services. According to Section 73 of the Act, all municipal services provided, including water, should be:

- Equitable and accessible
- Conducive to prudent, economic, efficient use of available resources, and improving over time
- Financially and environmentally sustainable
- Regularly reviewed, with a view to improvements
- (Republic of South Africa, 2000, p.35)

In 2003, DWAF published a “Strategic Framework” (Department of Water Affairs and Forestry, 2003), which consolidated previous legislation governing water services, and set out a framework for regulation and monitoring of water services. The document also set national norms and standards, and identified related benchmarks and targets.

2.3 Institutional models for water service provision

The Framework provides various institutional models for water service provision, stating specifically that a diverse range of arrangements is likely, that the list provided in the document is not exhaustive. The models listed include:

- Full municipal provision
- Community based provision
- Local municipal-owned utilities
- Water boards
- Integrated regional water utilities
- Private sector involvement

(Department of Water Affairs and Forestry, 2003, p.18)

The Framework provides for “water services agents” which are legal entities that provide support to WSPs, while not assuming full responsibility for service delivery. Services to the WSP should be through a written contract (Department of Water Affairs and Forestry, 2003, p.19).

In the early 2000s, some NGOs, particularly the Mvula Trust, saw a real possibility of community committees becoming Water Service Providers, as provided for in the Strategic

Framework (Mvula Trust, 2003). As the newly formed municipalities started exercising their powers as Water Services Authorities it became clear that no municipality had any interest in taking this route (Davids, 2006). The provision for water services agents in the Strategic Framework, however, allows municipalities to use community structures, or any other institutions for that matter, to play a support role to the Water Services Provider, whether the WSP is the WSA itself or an external organisation (Department of Water Affairs and Forestry, 2003, p.19).

2.4 Regulation

The Strategic Framework (Department of Water Affairs and Forestry, 2003, p.8) confirms the role of DWAF as the national regulator, responsible for regulation of norms and standards, economic regulation and regulation of contracts. Local regulation is made the responsibility of the Water Services Authority. Two key principles informing the vision of regulation are:

- Separation of regulatory and operational responsibilities
- Integration with local government regulatory framework

(Department of Water Affairs and Forestry, 2003, p.50).

Where the WSA appoints an external WSP, regulation by the WSA of the WSP must be by a contract that is consistent with the national norms and standards (Department of Water Affairs and Forestry, 2003, p.53) The Framework says little on regulation where the WSA is also the WSP, other than to mention that WSAs are ultimately responsible to citizens for service delivery (Department of Water Affairs and Forestry, 2003, p.52), and that the primary mechanism for regulation is through by-laws (Department of Water Affairs and Forestry, 2003, p.52).

2.5 Norms and Standards

The Strategic Framework has the following definitions:

Basic water supply facility: “The infrastructure necessary to provide 25 litres of potable water per person per day supplied within 200 metres of a household and with a minimum flow of 10 litres per minute (in the case of communal water points) or 6,000 litres of potable water supplied per formal connection per month (in the case of yard or house connections)” (Department of Water Affairs and Forestry, 2003, p.46).

Basic water supply service: “The provision of a basic water supply facility, the sustainable operation of the facility (available for at least 350 days per year and not interrupted for more than 48 hours per incident) and the communication of good water-use, hygiene and related practises.” (Department of Water Affairs and Forestry, 2003, p.46).

Potable water quality: “Water supplied by water service providers intended to be used for drinking or domestic purposes ... must be of a quality consistent with SABS 241 (Specifications for Drinking Water), as may be amended from time to time.” (Department of Water Affairs and Forestry, 2003, p.46).

2.6 Free Basic Water

On 13th October 2000 the then Minister of Water Affairs and Forestry, Ronnie Kasrils, announced a new policy whereby poor households would receive a “free basic” allocation of water (Kasrils, 2000). This allocation was set at 6,000 litres per household per month, with some freedom for municipalities to vary this figure.

In August 2002 DWAF published a document titled “The Implementation of Free Basic Water in Remote Rural Communities: Strategies and Guidelines” (Department of Water Affairs and Forestry, 2002). In practise, free basic water in rural areas meant free water from a public standpipe, since the physical effort in transporting water up to 200 metres from the standpipe to the household kept consumption of most households well below the 6,000 litres per month.

A study by the Balfour *et al* (2004) which examined Free Basic Water in rural areas reported many problems in implementing the policy. These were summarised as:

- “Very weak local government
- Poor financial state of the rural areas, with limited possibilities for cross subsidisation
- Limited infrastructure
- Poor state of extant water committees
- Ill-defined relationship between water committees and local government” (Balfour *et al*, 2004, p.20)

2.7 Equitable Share

With most District Municipalities having very limited revenue to fund the operation of water services, they have had to rely on subsidies from national government. The Constitution

states that provinces and local government are entitled to an equitable share of the revenue raised by national government through taxation (Republic of South Africa, 1996, Section 227 (1)).

The “Equitable Share” was first introduced in 1998, based on a formula relating to the number of poor households living in a municipality (Balfour *et al*, 2004, p.15). The portion of the equitable share for services was set at R1,032 per household per annum, with an estimate that R240 of this (23.3%) would be for provision of water (Balfour *et al*, 2004, p.26).

In 1998 poor households were defined as those with an income of less than R800 per month. This was increased to R1,100 per month in 2001/2002, and remained at that level until 2004/2005 (Hazelton, 2004, p.5). For poor rural municipalities, this grant is almost the only income available for water – there is usually very little available from tariffs.

In 2004/2005 the recommended Equitable Share subsidy for Alfred Nzo District Municipality was R75,020,211, and the recommended amount for water (23.3%) was R40,779,709, or R240 per household (Hazelton, 2004, p.8).

2.8 Conclusion

The chapter describes the development of water legislation leading up the DWAF’s Strategic Framework for Water Services (Department of Water Affairs and Forestry, 2003), which both consolidated what was in previous legislation and prescribed norms and standards to be followed by Water Services Providers. It also laid out the regulatory framework governing monitoring and regulation of water services. The chapter also described the Free Basic Water policy and the Equitable Share legislation, both of which have a crucial bearing on financing the operation of rural water supplies. The legislation and institutional framework provide the context following chapter which looks at management theories, both general and as applicable to rural water provision in South Africa.

3. THEORIES OF MANAGEMENT AS APPLIED TO RURAL WATER SUPPLIES

3.1 Introduction

This chapter reviews current literature in the light of the key management challenge facing Water Services Authorities. It reviews traditional management theories developed in the business context, particularly with regard to outsourcing decisions. It then looks at literature spawned by the international Water and Sanitation Decade (1981 to 1990) with reference to community management and participation in rural water provision. This is followed by a discussion on theories developed in the 1980s and 1990s on management of networks consisting of government and non-government organisations, suggesting that these theories could be useful in analysing local government in rural South Africa. The experience of community management of rural water provision in South Africa is then reviewed, followed by a brief assessment of data enabling researchers to assess the success of differing management approaches to water provision.

3.2 The management challenge facing WSAs

The task facing South African Water Services Authorities can be viewed as a management problem – how best to manage the provision of water services to their consumers or customers. To quote a standard management textbook (Smit & Cronjé, 1997, p.9), management must “combine, allocate, co-ordinate and deploy resources or inputs in such a way that the organisation’s goals are achieved as productively as possible”. In the case of WSAs, they must provide adequate water services to their consumers productively and efficiently.

In achieving the goal of providing potable water, WSAs, especially those in poor rural areas, face considerable constraints. Important among these is a lack of resources (Carter *et al* (1993, p.647). The poverty of their customers, and the government’s Free Basic Water policy places severe restrictions on income derived from water tariffs – income from selling their primary product. District Municipalities with few or no large towns that provide revenue from water tariffs have to rely almost exclusively on grants from central government in the form of the Equitable Share. Lack of financial resources in turn places limits on their ability

to hire suitably skilled staff, leading to a lack of management and technical capacity within the municipalities.

Under these circumstances, decentralisation and/or outsourcing are possible strategies that WSAs might adopt. Although the legislation does not allow WSAs to decentralise or outsource their overall responsibility for water services, it certainly provides scope for outsourcing a range of functions. The question of outsourcing is a key element of the Section 78 assessment required of each WSA by the Municipal Systems Act (Republic of South Africa, 2000). An important factor in both decentralisation and outsourcing is the inevitable loss of a certain degree of control by the organisation. This is an important issue in any outsourcing decision.

3.3 Traditional Management Theory

Early management theory focused on the need to manage unskilled workers (Cronjé, p.38) – this was inherent in the approach of F. W. Taylor, a nineteenth century theorist who is generally regarded as the pioneer in applying methodical analysis and rational organisation to production processes (Cronjé, p.39). Henri Fayol was one of the first theorists who considered the tension between control and decentralisation (Cronjé, p.40). One of his 14 principles was the need to find the “proper” degree of centralisation and decentralisation (Cronjé, p.41). Although Fayol was looking at centralisation and decentralisation within a single organisation, it will be argued that decentralisation can also refer to a network of organisations.

Fayol’s centralisation/decentralisation principle relies on a considerable degree of interpretation in order to be useful tools for guiding action. How does one determine the “proper” degree of decentralisation?

The contingency approach to management is a contemporary approach that sets out to analyse organisations in their particular contexts (Cronjé, p.48). It argues that each situation is unique – organisations need to respond to their particular situations and develop strategies accordingly (Cronjé, p.49). It advocates a degree of flexibility in the choice of strategic decisions. In assessing a situation, factors to consider are:

- The external environment
- The organisation’s own capabilities

- The organisation's management and workers
- Technology

(Cronjé, p.50)

As with Fayol's centralisation/decentralisation theory, the contingency approach requires interpretation to be a useful tool. What are the determining factors in a situation, and once decided upon, how do they influence the organisation's strategy?

The specific element of an organisation's strategy being considered in this dissertation is the classic choice on whether to outsource or not – “make or buy” decisions. The standard textbook approach is that a decision to buy could be made for one or more of the following reasons:

- Lower acquisition cost
- To obtain a specific technical or management ability
- Inadequate capacity to make the product or provide the service in-house
- Inadequate managerial or technical resources to make or provide in-house.
- Frees management to deal with primary business

(Heizer & Render, 2001, p.438)

Given the relative lack of financial and human resources faced by the poorer WSAs, the literature quoted above tends to point to outsourcing certain technical and management functions as a rational strategy to be followed. In reality, all WSAs, including the large and well resourced metropolitan councils, rely extensively on outsourced technical services for much of their work, particularly capital projects such as the provision of new infrastructure. However, they have been much less ready to outsource management of operation and maintenance of water schemes, one of their key functions. It can be argued that control over an organisation's key functions is needed, and that these should not be contracted to outside organisations. This argument is advanced in Thompson and Strickland under the heading “The Pitfalls of Outsourcing” (Thompson and Strickland, 2003, p.185).

This study does not directly address this debate about the merits of privatisation of water. The outsourcing being considered is primarily to community organisations – organs of civil society, rather than commercial entities.

3.4 Lessons From The Water And Sanitation Decade

There is a considerable body of literature on the management of rural water services in developing countries. Most of this literature has been informed by the Water Decade, which lasted from 1980 to 1990, and was then extended to the following decade. Much of this literature is referenced in Black (1998, p.73). Although this literature is not couched within the framework of traditional management theory, it offers useful information about failures and successes across many countries.

A frequent theme in this literature was the apparent widespread failure of previous efforts to serve the unserved. According to a study published by the United Nations Development Program/World Bank Water and Sanitation Program, “in Africa and India, for example, only 1/3 and 1/2 of the respective populations nominally served by new systems actually use them” (McCommon *et al*, 1990, p.1). One reason proposed for these failures was inappropriate technology – the use of technologies too complex in relation to the resources available to operate and maintain them. Black (1998, p.12) refers to the dominant role of engineers schooled in the provision of centralised water and sanitation systems. These same centralised systems were adopted in developing countries, leading to many failures (Black, 1998, p.12). According to this critique, a major problem with these centralised systems was their cost – they were simply unaffordable for the countries and their inhabitants.

Another major perceived reason for failure was inappropriate, central management in a context where areas covered by a district or provincial office were large. Discussing the failure of handpump maintenance, Black (1998, p.19) describes how “Teams of mechanics operating by vehicle from district headquarters usually covered a large area containing many hundreds of pumps.” Carter *et al* (1993, p.647) also mention severe capacity problems in the water utilities. These included under-resourcing, both in physical assets and finance, inadequately managed staff, ineffective in-service training and autocratic management culture. The poor success rate achieved in rural areas is also widely attributed to a lack of insight into the appropriate roles of public institutions and the management of rural water and sanitation systems (McCommon *et al*, 1990, p.2). This view assumes that the role of the state is to provide an enabling environment, not to be the main implementing agent (Black, 1998, p.54).

Most studies concluded that “community management” was essential in the planning, construction and operation of rural water and sanitation systems. Carter *et al* (1993, p.647)

state that an important result of the decade was the change of attitude to water consumers, emphasising that communities should be involved in management of water rather than be treated only as consumers. To quote McCommon *et al* (1990, p.1) "...it is widely believed that community managed schemes can succeed where top down methods have failed."

There have been a few sceptical voices, however (Carter *et al*, 1993, p.648) express agreement with pre-decade comments made by the widely respected Richard Feachem, who cautioned that there was insufficient evidence that community management is a sustainable model. Carter *et al* (1993, p.650) conclude that the role of government institutions is important, and that institution building should focus on both communities and government agencies.

It is noteworthy that community management is not a concept or an approach applicable only in less developed countries. In the USA in 1990 there were approximately 52,000 community water systems serving 3,300 people or fewer. 38% of these were government owned, 29% private and 33% institutional (McCommon *et al*, 1990, p.23).

Although much has been written in support of community management of rural water, with numerous successful case studies reported upon, there is relatively little information on the results of a programmatic approach to community management. In discussing the World Bank/UNDP's efforts in the late 1980s and early 1990s to "scale up" new approaches to water and sanitation, Black (1998, p.36) states: "It was widely believed that there were too many small-scale examples of excellence in basic services delivery, and too few cases where this excellence had been capable of replication on an extensive, or national, scale." Black (1998, p.40) describes only one successful "scaled up" programme. One example of larger scale success in rural water provision was reported in "field note" by the Water and Sanitation Programme. This report, entitled "Multi-village Rural Water Supply Schemes - An Emerging Challenge" (Water and Sanitation Program, 2001) examined eight reticulated water schemes in four countries, most of which were running effectively. Not all of these were community managed, but the report notes that success in these schemes often depended on decentralised management, and close contact with local consumers (Water and Sanitation Program, 2001, p.5). The ANDM experience provides a useful opportunity to investigate how community management can be institutionalised, and what measure of success can be achieved.

It is necessary to explore further what is meant by community management in water projects or programmes. In the fullest sense of the term, it entails a community based organisation

taking a leading role in the planning, construction and operation of the water scheme (McCommon *et al*, p.1 and Rall, 1999, p.7). This includes the initial decisions on the choice of technology and the collection of tariffs to pay for the running of the scheme. The term “demand responsive approach” has been used to describe this all-encompassing involvement of communities in water and sanitation services. This concept has various interpretations – for some the idea is closely connected with the belief that water is an economic good, for which there is a demand that can be expressed in economic terms (Black, 1998, p.55 and Rall, 1999, p.1). This view is closely linked to the concept of consumers’ “willingness to pay” – that people will be more likely to pay for a service when they have participated in the choice of technology, level of service and the associated cost of the service. For others, the demand responsive approach is more about encouraging community “ownership” of projects and water schemes through empowering them to make informed choices in project selection, design, implementation and operation (Gichuri, and Kariuki, 1997, p.4).

In practice, there is a wide range of roles that can be played by a community organisation, usually in some form of partnership with a government institution.

In South Africa, as described in Chapter 2, the final responsibility for provision of water rests squarely with local authorities (Republic of South Africa, 1996, Section 4, Part B). This rules out community ownership of water schemes, and places limits on communities’ responsibility for operation and maintenance. Moreover, the Free Basic Water policy (Department of Water Affairs and Forestry, 2002) ensures that local authorities are integrally involved with the finances of each water scheme, and that water only becomes an economic good to the consumer once (s)he consumes more than the free basic allocation. There is, nevertheless, considerable scope for communities to participate in the provision of water.

Although there is a strongly held view that community participation in the planning and construction of schemes greatly enhances their chances of success (Brikké, 2000, p.166 and p.175), this study is confined to examining the relationship between community organisations and other institutions in the operation and maintenance of schemes. It analyses the effectiveness of water schemes irrespective of how their construction was managed. Indeed, the results of the study indicate that community decision-making during the project selection, design and construction phase is not an essential requirement for community management of operations and maintenance.

3.5 Managing In Network Settings

The literature on management of rural water in developing countries does not fit neatly into the traditional management paradigms outlined earlier. In these paradigms, the organisation is viewed as an entity in which managers plan, organise, lead and control in order to achieve the organisation's goals (Smit & Cronjé, 1997, p.9). Applied to government institutions, the conventional model for management is one of "steering", a "mono-actor model" in which the government body is all-powerful (Kiekert *et al*, 1997, p.7). Agranoff and McGuire (1990, p.21) assert that "The classical management approach...informed both public and business administration for more than a century..."

Klijn (1997, p.15) describes how approaches to political science theory moved from a "rational actor" approach, where the government actor was the central decision maker, through a "bounded rationality" approach, where government made decisions in an uncertain environment, to a process model in which a variety of actors with differing interests and having a share of power choose courses of action through consensus.

This process, or network model was built on the critique of the mono actor model, but focussed on the often complex relationships between the government and other actors (Kickert *et al*, 1997, p.9). This new paradigm emphasised the interdependence between government bodies and other actors, and downplayed the notion of hierarchies.

Agranoff and McGuire (1999, p.20) analysed the role of networks in various contexts, from economic policy development in cities to management within rural enterprise alliances. They examined the scope of networks, their political dimensions and the skills required to manage them effectively (Agranoff and McGuire, 1999, p.28). A feature of networks which reflects the diversity of their members is that they have no single organisational goal. In such circumstances, the skills required by network managers clearly go beyond those associated with the traditional "plan, organises, lead and control". Managers operate in an environment of collaborative problem solving in which skills such as negotiation and mediation are important (Kickert & Koppenjan, 1997, p.58).

Relationships between network organisations can range from voluntary and informal to contractual, depending on the context and encompassing environment (Agranoff and McGuire, 1999, p.23).

The collaborative nature of networks cannot wish away the realities of power – government actors invariably wield more power in a network than others Agranoff and McGuire (1999, p.31-32). The network model, however, depicts the realities that constrain government power and authority, and illustrates how government policies and objectives can be enhanced with the assistance of network partners.

Given the organisational and financial constraints that encumber South African Water Services Authorities, and given the range and complexity of civil society organisations that have an interest in the provision of water and other services in rural South Africa, the network model appears to be a useful tool to describe the environment inhabited by WSAs. Moreover, mobilisation of networks is one way in which WSAs could enhance their capacity to fulfil their mandate.

3.6 Community management in South Africa

Much of the international literature on community management refers to relatively basic services such as handpumps and spring protection. For example, a book published by the highly regarded Intermediate Technology Development Group entitled “Community Water Development”, approximately 80% of those sections of the book dealing with technology refers to handpumps (Kerr, 1989). In South Africa, on the other hand, reticulated (piped) water is seen as the norm, with very few schemes implemented post 1994 comprising only handpumps. This has important implications for community management, since reticulated schemes link larger communities together than do handpump schemes, where each handpump serves a small local population around the pump. Larger communities, being more heterogeneous, are likely to contain more interest groups, with potentially more scope for intra-community conflict.

Since the early 1990s South Africa developed significant experience of community participation and management. The Mvula Trust, in particular, financed and facilitated over 100 rural water schemes using community management during all phases of the project cycle (Blaxall *et al.*, 1996, p.4). An external evaluation of the Trust’s work carried out in 1996 found that the water programme was largely successful, with most schemes providing water, even though they had no support from any institutions external to the local community (Blaxall *et al.* 1996, p.15). Other studies were less sanguine about the record of rural water schemes, pointing to institutional and financial problems. An example is a report by Van Schalkwyk, which, in reviewing current literature, stated that “.many water supply projects

implemented before 1994 (were) failing and indeed this situation is still prevailing now” (Van Schalkwyk, 2001, p.5).

Two studies were published by the Water Research Commission on community management in the north eastern part of the Eastern Cape. In the first of these Cain *et al* (1999) looked at 9 project areas during early 1998, examining operation and maintenance arrangements, levels of service, tariff structures and community attitudes. This was in the pre-Free Basic Water era, before local authorities had effectively taken over responsibility for water services. Virtually all O&M was managed by local community organisations, and costs were recovered by consumers. Significant findings of this study were:

- There was substantial local support for Village Water Committees to act as Water Services Providers
- All but one of the water schemes were in good working order, with basic maintenance being carried out by local operators
- Outside support was needed for technically more complex maintenance, as well as for book-keeping. (Cain *et al*, 1999, p.58).

The second study by Cain and Gibson (2004) was carried out in ANDM during 2003/2004. The municipality had in 2001 adopted a pilot CBO (Community Based Organisation) approach to operation and maintenance, and from July 2002 had extended the policy to all schemes within its jurisdiction. This policy included the employment by the Municipality of three Support Services Agents, and one of the authors of the study, Jim Gibson, managed the work of one of the Support Services Agents. The study proposed a model for Water Services Authorities to use when using community management for water schemes (Cain and Gibson, 2004, p.550). The model included Key Performance Areas with linked tasks and outputs for CBOs to achieve, and provided a classification system to enable comparisons between different schemes.

3.7 Data on water service provision in rural South Africa

Several other studies have been carried out into the effectiveness of water service provision in rural South Africa. Prior to the Free Basic Water policy, an important focus of most studies was cost recovery, which was a major challenge facing community managed water schemes (Van Schalkwyk, 2001, p.31). Very little data is available on the extent to which water provision meets the requirements of the Strategic Framework. Two studies with comparative

data are noteworthy. These are an HSRC report into water services in KwaZulu-Natal, and a WRC report on Free Basic Water.

The HSRC report by Hemson (2003) was based on assessments of 23 projects in KwaZulu-Natal in late 2002. This was a time when municipalities were starting to take over responsibility for projects, although the study found that only in the Ugu District (based in Port Shepstone on the South Coast) was there evidence of support for water schemes from the municipality (Hemson, 2003, p.6). In other schemes, the projects were being run by community water committees, either on their own or with support from the project implementing agent (Hemson, 2003, p.19). Where municipal support was lacking, the Free Basic Water policy was obviously not being applied, and consumers were having to pay for water. The report found that 10 projects (43.4 %) were sustainable or functioning at RDP standards, 8 (34.8 %) were working but problematic, while 5 (21.7 %) were not working (Hemson, 2003, p.5).

The WRC report by Balfour *et al*, (2004) focussed on the costs of providing Free Basic Water in four District Municipalities in KwaZulu-Natal and Eastern Cape. Costs per capita per month were found to range from R1.00 to R6.09 (Balfour *et al*, 2004, p.95). The effectiveness of the service varied across the various schemes examined, but was not explored in any depth. It is noteworthy that the lowest cost of R1 per capita per day was for a scheme managed entirely by the local water committee with no external support. This scheme – Nhlungwane in the uMzinyathi District in KwaZulu-Natal, is unusual, having a few exceptional individuals on the water committee. ANDM's costs were also relatively low at R2.44 per capita per month (Balfour *et al*, 2004, p.95). (These were the costs in the Umzimvubu North section of the municipality.)

The report did not include a systematic assessment of the effectiveness of services provided. A major recommendation of the report is that the Water Services Authorities need to undertake a thorough investigation of the status of water schemes in their areas (Balfour *et al*, p.99).

The Human Sciences Research Council has undertaken periodic surveys on social attitudes which include attitudes of South Africans on water services. In a paper on the 2003 survey, Hemson and Owusu-Ampomah (2004) review the results of the survey, and ask questions relating to effectiveness, efficiency and equity in water service provision.

In rural areas, 46.7% of respondents nationally reported that there were no interruptions to water supplies in the past year, 12.5% reported some (one or two) interruptions, and 38.9% reported several interruptions (Hemson and Owusu-Ampomah, 2004, p.14). Broken down into provinces with tribal areas, the lowest figure for no interruptions was from Limpopo (31%), Eastern Cape was next lowest (40%) and KwaZulu-Natal had the best figure (71%) (Hemson and Owusu-Ampomah, 2004, p.14).

Reasons for interruptions were also reported, with 38.9% citing “repairs” as the cause, although the figure for those who did not know the cause was a high 39.3%. A figure of 9.5% gave reasons relating to a shortage of water (Hemson and Owusu-Ampomah, 2004, p.17).

The HSRC undertook another survey in August 2005 (Hemson, 2005), which showed some improvement in rural water service delivery. Nationally, 46.5% of respondents reported no interruptions, 31.9% reported one or two and 21.1% reported several. In tribal areas, 38% reported several interruptions (Hemson, 2005, p.17). Reasons for interruptions related to faults or maintenance were 76.9%, with only 7.1% related to a shortage of water (Hemson, 2005, p.19).

3.8 Conclusion

Management of rural water supplies is a challenging task. This chapter has examined what can be applied from traditional management theory, and has also explored a relatively new approach to public management, using a network model. International literature on management of rural water supplies has been reviewed, with a focus on recommendations regarding community management. The record of rural water provision in South Africa has been reviewed, including some data on costs and effectiveness of service. The context of municipal water delivery is one in which municipalities have struggled to fulfil their obligations to their residents and customers, and the following chapter explores the problems facing municipalities in more detail.

4. MUNICIPAL SERVICE DELIVERY CRISIS

4.1 Introduction

There have been many reports about lack of service delivery by municipalities, including reports of public protests. This chapter gives a brief account of some protests with some comments by political and business leaders on the reasons for poor delivery. This illustrates the difficult context in which rural municipalities are having to fulfil their constitutional and social obligations.

4.2 Public protests

In September 2004 public protests broke out in Harrismith in the Free State province, with residents protesting against poor service delivery (Rademeyer, 2004). After visiting the area, Free State Premier Beatrice Marshoff said that “she believed the community had some ‘legitimate concerns’, among them “the implementation of free basic services...” (Rademeyer, 2004). Since then there have been periodic protests in other municipalities, and reports about municipalities not delivering services effectively (Ndlangisa, 2005).

4.3 Local government capacity

On 29th October 2004, the Department of Provincial and Local Government launched “Project Consolidate”, aimed at providing support to struggling municipalities (Ministry for Provincial and Local Government, 2004). One of the specific areas addressed by Project Consolidate was: “Indigent policy, free basic services, billing systems and municipal debt”. The initiative clearly identified lack of skilled personnel as one of the main obstacles to service delivery, and planned to second experts to those municipalities with the greatest need (Ministry for Provincial and Local Government, 2004).

An article in the journal *Water and Sewage Effluent* (Holtzhausen, 2005) reported on a speech given by Stewart Gibson, an independent consultant, at the annual conference of the Institution of Municipal Engineers which had taken place the previous year. Gibson drew attention to “forgotten municipalities”, which he described as follows:

“These municipalities, which are normally new institutions with no historical organisation to grow from, are characterised by the lack of a major town, and no significant industrial or commercial activity in the area. (They) usually stretch over former homelands, may also

include large areas of tribal controlled land, with high levels of poverty” (Holtzhauzen, 2005, p.28).

One of the major problems faced by such municipalities, according to Gibson, was the lack of capacity (Holtzhauzen, 2005, p.28). ANDM fits this description in all respects, including its current staffing levels.

Following a cabinet “lekgotla” (workshop or meeting) in July 2005, President Mbeki made a public comment on government’s progress in implementing Project Consolidate. A report in *Business Day* (Brown and Mde, 2005) reported on his comments, saying he

“spoke candidly ... about the skills crisis that had in some instances led to a breakdown of service delivery. Mbeki admitted that SA did not have enough of the specialists needed to implement government’s programme of action.”

The President also referred to “shockingly low skills levels among highly paid municipal managers” (Brown and Mde, 2005).

In an article in *Creamer Media’s Engineering News* in October 2005 on an outbreak of typhoid in Delmas due to polluted drinking water, Alison Lawless, former president of the South African Institute of Civil Engineers, was quoted as stating that there are, on average, 40% to 45% vacancies at municipalities for technicians, engineers and technologists (Venter, 2005, p.8).

The capacity problems described in this chapter are faced by all poor rural municipalities, emphasising one aspect of the challenge they face in providing water in rural areas. As the next chapter shows, ANDM falls into the category of those with least resources countrywide.

4.4 Conclusion

This chapter highlighted the capacity problems facing municipalities, with service delivery often suffering as a result. It noted that ANDM is one of least well resourced in the country. A more detailed description of the municipality follows in the next chapter.

5. ALFRED NZO DISTRICT MUNICIPALITY

5.1 Introduction

This chapter describes the Alfred Nzo District Municipality, its residents, physical characteristics and the water service infrastructure. It then describes how the community management model in the municipality was developed. This background provides a context for the research and findings in later chapters.

5.2 Population

ANDM is one of the poorest municipalities in the country. It comprises the north eastern part of the old Transkei, and its largest towns are Maluti (population 19,389), Umzimkulu (8,169), Mount Frere (5,441) and Mount Ayliff (4,383) (Alfred Nzo District Municipality, 2005, p.11). None of these towns has any industry, only shops and small enterprises.

In 2003 the total population of the municipality, according to the Section 78 Report, was 652,435. Of this figure, an estimated 608,229 residents were rural (Alfred Nzo District Municipality, 2005, p.10).

Income levels are very low. From the Integrated Development Plan quoted in Alfred Nzo District Municipality (2005), income levels are as in the table below:

Table 1. Alfred Nzo District Municipality Annual Income

Annual household income (Rands)	Percentage of households
0 to 600	50%
600 to 1,800	28%
1,800 to 4,200	11%
4,200 and above	11%

(Alfred Nzo District Municipality, 2005, p.19)

These figures clearly indicate high levels of poverty in the district.

5.3 Existing services

The 2001 census indicated that only 28,305 out of a total of 123,101 households had acceptable water services (Alfred Nzo District Municipality, 2005, p.16). According to the

Manager of Technical services, the current April 2006 figure was approximately 70,600 households, 336,000 people – just over 50%.

5.4 Operational funding

The Section 78 report indicates that R16,000,000 was budgeted for use on water service operations during the 2003/2004 financial year. A further R3,400,000 was in the budget of the Department of Water Affairs, but this was only for the operation of larger water schemes serving towns in the District (Alfred Nzo District Municipality, 2005, p.33).

The area of the District is large – approximately 170 by 100 kilometres. Most rural dwellers live in isolated, relatively concentrated settlements. Roads in the district are notoriously bad.

The one positive characteristic of the District with regard to water services is the relative abundance of water, especially springs and streams high enough to be gravitated to households. The high number of gravity schemes means that a significant proportion of water schemes do not rely on pumping, whether using electric or diesel power. Although springs are plentiful, the area, like others in the country, experiences periodic droughts, and the yield from springs diminishes, often to below what is required to provide sufficient water to those depending on them for their water sources. The study is based on figures produced when the area was undergoing a severe drought (Republic of South Africa, 2004, p.15). The study findings indicate that many schemes did not have enough water to meet consumers' demands.

5.5 Development of Alfred Nzo District Municipality's Community Management Strategy

ANDM's community management strategy evolved from experience gained by the municipality, DWAF and the consortium implementing the Build, Operate, Train and Transfer (BOTT) contract in the Eastern Cape (Shoesmith, 2006). This consortium (together with others in KwaZulu-Natal, Limpopo and Mpumalanga) was contracted to DWAF to construct new water schemes, operate the schemes, train local operators and transfer the schemes to the relevant local authority. In the Eastern Cape, the consortium was led by WSSA, a South African company linked to the French owned Lyonnaise des Eaux private water utility (Shoesmith, 2006).

Under this contract, the consortium operated completed water schemes, initially before the Free Basic Water policy was announced, and a significant aspect of the operations focussed

on cost recovery through tariffs. This entailed a considerable amount of ISD (institutional and social development) work with local communities, setting up systems, communicating with customers, training committees etc (Shoesmith, 2006).

In October 2001 DWAF, with the participation of the Municipality, contracted Maluti Water in a pilot programme to manage rural water supply services in the Maluti or Umzimvubu North area (Gibson, 2006). In August 2002, after a competitive tendering process, the Municipality also entered into contracts with Water, Aids, Sanitation and Health (W.A.S.H.) Consultants in the Umzimkhulu District and Mvula Trust in association Makhaotse, Narasimulu & Associates in Umzimvubu South. There were over 120 individual reticulated water schemes managed by the three consultants, some of which had multiple water sources. There were also about 5 schemes using handpumps (Shoesmith, 2006).

A key figure in the decision to adopt a community management model was Ernst Zellhulber, who at the time held the post of Deputy Director, Water and Sanitation in the Municipality. He championed the idea of community management at scale, and without his influence the programme would not have been implemented. The experience of key individuals who had participated in the BOTT consortium was also critical (Gibson, 2006 and Shoesmith, 2006).

The initial task of each of the SSAs was to gather information on the existing water scheme, carrying out technical assessments and producing budgets for getting the schemes working properly. The SSAs also had to oversee the establishment of water committees or boards for each water scheme, with individuals drawn from the local communities. In addition, an administrator and one or more operators were selected for each scheme. This took place with close consultation with the local communities, and with the oversight of representatives from the municipality (Shoesmith, 2006).

During the BOTT contract and in the initial phases of the SSA contracts, the common objective was to train the water committees to the point when they could assume the role of Water Service Providers. Throughout most of the contracts, the community committees were viewed as acting Water Services Providers – acting, since no contracts were signed between them and the WSA. Their status in the programme was never formalised, and their contracts were terminated in August 2006 (Gibson, 2006).

5.6 Role of SSAs

The role of the SSAs was set out in a "Village Level Action Plan" (VLAP) document, as well as in the contracts between them and the municipality.

These roles and responsibilities were (referring to water committees as WSPs):

- "Mentoring of the WSPs.
- Administration and management.
- Link between the WSPs and the WSA.
- Assist the WSA in monitoring the WSPs.
- Facilitate flow of funds from the WSA to the WSP.
- Assist WSPs with the procurement of material and services.
- Capacitate and monitor the sanitation initiative at WSP level.

Additional services that can be included in the SSA contracts are:

- Setting up of WSP structures.
- Training and capacity building of WSPs.
- Assisting the WSA with policy development and implementation.
- Other specialised services.
- Fulfilling certain WSP functions.
- Auditing WSP books and operations.
- Setting up project specific systems and manuals.
- Medium and Major maintenance and Repairs."

(Alfred Nzo District Municipality, 2002, p.14)

This document underwent a series of revisions early the life of the SSA contracts, and when the contracts were ended in August 2005, version 6 of the VLAP was in the process of being drafted.

5.7 Conclusion

The statistics for ANDM quoted above indicate that it is an extremely poor region, with considerable service delivery and logistical challenges. The municipality's strategy for

managing water service delivery was to contract Support Service Agents to facilitate local operation of water schemes by community committees and operators. This chapter completes the background information, including the literature survey, preparing the way for the chapters on the research that has been carried out.

6. RESEARCH METHODOLOGY

6.1 Introduction

This chapter outlines what this research aims to achieve, outlining the research objectives, and describing how the researcher set out to achieve these objectives. The approach described is one of a case study, where data and management arrangements for the ANDM were gathered and compared to available data for other municipalities.

The sample design and method of data collection are noted and the interview schedules for Support Service Agents and Water Services Authorities are described. The data analysis for continuity of supply, water quality and cost of services is then outlined. The chapter concludes by describing how the ANDM figures were compared to those from other municipalities.

6.2 Research objectives

The research objectives were to answer the questions:

- How effective and efficient is ANDM in the provision of water supplies?
- Is the ANDM approach one that other local authorities could adopt?
- What are the risks in community management?
- Based on the findings of this study, what lessons can other municipalities embarking on similar programmes learn from the ANDM experience?

6.3 How effectiveness and efficiency of community management can be assessed

The question addressed was how to assess the effectiveness and efficiency of community management in the operation of rural water schemes. The approach taken was one of a case study, looking at the record of a municipality that has implemented a form of community management. In order to arrive at a conclusion, it was necessary to get data on delivery outputs or key indicators, and on cost of water provision. This data was then compared either to objective benchmarks or comparative data from other municipalities.

The study set out to assess the effectiveness of rural water management in the municipality in terms of:

- Continuity of water supplies, noting reasons for problems and failures

- Quality of water supplied

The figures obtained were compared against the norms and standards in DWAF's Strategic Framework (Department of Water Affairs and Forestry, 2003) and against the comparable figures from other rural municipalities.

The costs of the municipality's water services were determined, and these were compared with costs incurred by other rural municipalities obtained from a review of available literature.

6.4 Community Management as implemented by Alfred Nzo District Municipality

Since the term "community management" has many different interpretations, the actual form it has taken in the case study had be analysed. This was done by recording how different tasks in the operation and maintenance of the water schemes were allocated between the various parties involved.

The experience of Alfred Nzo District Municipality was compared to that of other rural municipalities – noting how they developed their water service operations, their experiences with community management and noting factor's that were taken into account in deciding on a service delivery mechanism.

6.5 Sample Design

6.5.1 Effectiveness of service provision

ANDM had contracted three Support Service Agents (SSAs) to facilitate and support the work of the community committees and operators who participated in the operation of the water schemes. These SSAs had provided comprehensive monthly reports to ANDM, and these reports were used to collect data on effectiveness of water service provision.

The SSAs had submitted reports for every rural water scheme in the municipality, making a 100% sample of schemes feasible. The municipality did not have a complete set of data to the end of the SSA contracts (August 2005). The most recent data spanning 12 months (July 2003 to June 2004) was therefore chosen as representative (covering all schemes), and with a long enough timeframe to get representative figures for the various parameters. Figures for schemes supported by Maluti Water for the following 12 months were also analysed.

6.6 Data collection

The monthly SSA reports containing this data was provided by the ANDM Technical Manager, Rassie Smith during an interview on 3 March 2006.

6.6.1 Efficiency of water service provision

Figures for the cost of water service provision for the whole municipality were obtained directly from Rassie Smith (Smith, 2006).

6.7 Interview design

6.7.1 SSA Interviews (see Appendix 1 interview schedule)

The objective of these interviews was to obtain the qualitative data about roles and responsibilities in the delivery of water services, successes, failures and problems. The schedule was based on two documents. The first was a training manual by Brikké (2000) published by the World Health Organisation. This manual described the elements of rural water schemes, and noted all the tasks involved with the various aspects of operation and maintenance of the schemes. The second document was the WRC report by Gibson and Illing (2004), both of whom played important roles in one of the three SSAs employed by ANDM. This report also contained a list of various operations involved in community managed water schemes.

Most of the questions in the schedule were to determine who carried out various tasks, how often, and what checks were in the system to ensure compliance, in short, to determine the management structure of the operations. The tasks listed in the schedule were divided according to the various physical components of water schemes plus administrative tasks. There were also questions on water wastage and vandalism which can be inferred as indications that there is a lack of “ownership” or responsibility by residents with regard to the water infrastructure.

6.7.2 Interviews with other municipalities (see Appendix 2 for interview schedule)

The interviews were designed to get information on other district municipalities’ approach to water service delivery and their experiences with community management. They were based on brief schedules aimed at getting qualitative and, if possible, quantitative data about the municipalities’ experience in water service delivery. The intention was to identify reasons

why community management was not adopted, and also to ascertain whether wastage and vandalism were perceived as significant problems.

6.8 SSA interviews

Representatives of all three SSAs were interviewed in face to face interviews. The persons interviewed were:

Organisation	Individual	Position held	Date interviewed
Maluti Water	Jim Gibson	Manager	20 April 2006, 28 April 2006
The Mvula Trust	John Samg	Programme Manager	15 September 2005
W.A.S.H. Consultants	Robin Shoesmith	Manager	20 April 2006

6.9 WSA interviews

A representative of ANDM was interviewed. In addition, four WSAs were interviewed in an attempt to obtain comparative data to that from ANDM. The four were chosen on the basis that they represented a range of Water Services Provider arrangements, and also that they had varying organisational and human resource capacities. All interviews were face to face, with the exception of that with Johan Coetsee who was interviewed telephonically.

The WSA representatives interviewed were:

District Municipality	Individual	Position held	Date interviewed
Alfred Nzo	Rassie Smith	Technical Director	3 March 2006
uMgungungdlovu	Mike Wells	Manager, Operations	15 August 2005
Ugu	Danny Govender	Manager, Water Reticulation (formerly WSA Manager)	6 April 2006
Ilembe	Sandile Mbanjwa	Former WSA Manager	19 April 2006
Umkhanyakude	Johan Coetsee	Technical Director	21 April 2006

6.10 Data Analysis

6.10.1 Continuity of supply

Three sets of data from the reports of the Support Services Agents were analysed. The first set was the figures for continuity of supply of water – which can be interpreted as the ability of the infrastructure to provide water, so long as the water source was able to meet the demand. For Maluti Water, this data was analysed for two years – July 2003 to June 2004 and July 2004 to June 2005. For the Mvula Trust, the data available was from August 2003 to July 2004, and for W.A.S.H. it was from October 2003 to July 2004. The data was in the form of the percentage of tap days operating each month. For each SSA, this data was averaged to arrive at annual figures. Communities with no communal taps, or where no data was available were also noted.

For each SSA, the percentage of the total population served across all water schemes that received above certain continuity levels. The highest level was from 96% to 100% continuity, 96% being equivalent to the norm in the Strategic Framework of a service operating 150 days of the year. The other levels were 90 to 95%, 75 to 90% and less than 75%.

The service levels were then analysed according to the type of scheme, using the categories of gravity fed schemes, pumped schemes, and schemes relying on a combination of gravity and pumping. Gravity schemes require considerably less maintenance than pumped schemes, and this breakdown was made to test the links between scheme type and scheme reliability.

6.10.2 Water availability

SSAs provided monthly assessments of the availability of water serving each scheme, classifying it as

- adequate or good
- intermittent or acceptable
- poor

The period under review coincided with a severe drought in the area (Republic of South Africa, 2003), and many schemes, especially those relying on springs or weirs for the water source, experienced shortages.

The availability of water is therefore related to the design of the scheme and geohydrological conditions, not to the effectiveness of operation, and these figures are not used directly in this report.

6.10.3 Water quality

SSAs carried out monthly tests of water samples from public standpipes. The only test reported on by all three SSAs was E-coli per 100 ml. The test results were classified into three categories – ideal (zero E-coli per 100 ml), acceptable (1 to 10) and bad (over 10). The number of tests falling into each category each month was counted, and is recorded on a chart.

6.10.4 Cost of providing water

These costs were obtained from the Technical Director for ANDM (Smith, 2006).

6.10.5 Comparison with data from other municipalities

The continuity of supply figures are compared with data from a survey of people's attitudes of towards water service provision (Hemson, 2005) in which they estimated the reliability of water services over the previous year.

The cost figures are compared with a study into costs of providing Free Basic Water in several municipalities in KwaZulu-Natal and the Eastern Cape (Balfour *et al*, 2003).

No comparable figures were found relating to water quality.

6.11 Conclusions

This chapter described how the research was planned in order to achieve the stated objectives, using a case study approach. It outlined how effectiveness and efficiency of water provision were to be assessed, how community management was to be defined in the case studied, and how data gathered would be compared to comparable data from other municipalities.

7. FINDINGS

7.1 Introduction

This chapter begins with the findings on how management of the water schemes was organised – roles and responsibilities of the WSA, the SSAs, Community Committees, operators and other staff. The sample used was all three SSAs (100% sample). This section covers flow of money, reporting, monitoring and highlights problem areas identified by the SSA representatives interviewed.

The next section examines the data collected from the monthly SSA reports on continuity of supply as a major indicator of effectiveness of water supply services. It includes tables of average monthly figures for each SSA, and tables where the type of scheme (gravity or pumped) are differentiated. Significant variations between the results obtained from the three SSAs are highlighted. The figures obtained are compared with similar data reported in the most recent HSRC survey (Hemson, 2005).

The chapter then examines the data on water quality, another indication of effectiveness of services. Major variations between results from the three SSAs are highlighted.

After a brief discussion on the limitations imposed by lack of comparable data, the chapter concludes with information on rural water service provision provided by representatives of the four other WSAs.

7.2 Roles and responsibilities

During the interview with representatives from each of the SSAs, they were asked to clarify who undertook the tasks listed in the schedule, and the frequency with which they were carried out. What emerged from the interviews was that all three SSAs closely followed the approach outlined in the VLAP document (Alfred Nzo District Municipality, 2002).

The SSAs were expected to conduct at least two monthly visits to every water scheme – one visit to attend a meeting of the water committee, and another visit to carry out technical checks.

7.2.1 Findings on execution of technical tasks

Technical tasks were divided between the local operators, who carried out routine tasks and minor repairs, and the SSAs, who did monthly checks and carried out major repairs and the more complex technical work. These are outlined below:

Springs

The operators were responsible for cleaning the area around the spring intakes on a fortnightly basis. The springs were usually checked by the WSA during the monthly visit. After a bad water quality reading, and after heavy rains, the springs were flushed out. This was generally done by the operator with other community labour, under the supervision of the SSA.

Weirs

Operators visited weirs fortnightly to check that there were no blockages and water was flowing from the intake freely.

Boreholes

Operators had to check water levels in the boreholes daily. Keeping the area around boreholes clean was a routine task carried out by the operators when required.

Diesel pumps

Operators had to check oil and diesel levels, the tightness of bolts and nuts and the tension of drive belts daily before switching the pumps on. They maintained daily log books, and switched pumps off. Pumping was seldom, if ever, automated.

SSA technicians serviced pumps monthly, changing engine oil, checking air filters, nuts and bolts, drive belts, gland packings, and replacing worn parts if necessary.

Electric pumps

Operators switched pumps on and off, and kept log books. SSA technicians checked monthly, checking bushes and bearings, and repaired any damage to the electric panels.

Chlorination

Here there were significant differences in the practises of the 3 SSAs. Maluti Water used floating chlorinators in the reservoirs (similar to swimming pool chlorinators), while W.A.S.H. used in line chlorinators, which were reported to work well. Mvula Trust and

Makhaotse, Narasimulu & Associates generally did not use chlorination routinely. All three SSAs dosed the system with chlorine after bad water quality readings.

Reservoirs

Operators checked for leaks and overflows fortnightly.

Pipelines

Operators had standing instructions to patrol the pipelines actively looking for leaks and problems on a routine basis. They carried out repairs to minor leaks, while the SSA technicians carried out repairs to major leaks, generally with the assistance of the operators.

Standpipes

Operators checked standpipes daily to see if water was flowing. As with the pipelines, they did minor repairs, leaving major repairs to the SSA technicians.

Bulk meters and standpipe meters

Bulk meters on pipelines and standpipe meters were the exception rather than the rule. Operators had to read meters twice a month.

Administration

Spares were generally controlled by SSAs, although operators were responsible for their tools and minor spares. Maluti Water required operators or committee members to travel to their offices to collect spares, since this was less expensive than a Maluti Water technician making an extra visit to the scheme to deliver them.

Apart from the daily pump logbooks and fortnightly meter readings, operators submitted monthly timesheets listing work done. They also made out an incident and fault reports for all bursts, leaks and other problems.

Water committees had to submit a standard monthly report to the SSAs. This report, written by the scheme administrator, had information on:

- Water quality
- Water shortages and interruptions, including new and disconnected unauthorised connections
- Faults and repairs done

- Health and sanitation
- Communication with customers/community
- Health and safety
- Stock and tools required

Customer care / communication with consumers

The water committee members were regarded as the essential communication link between consumers on the one hand and the SSAs and municipality on the other. Water committees were expected to hold regular community meetings during which they reported on developments regarding the water scheme. One of the SSAs reported that towards the end of the contract some committees indicated that the schemes were running sufficiently well to make these community report back meetings unnecessary – there being nothing or very little to report.

Payment of committee members, administrators and operators

Payment of administrators and operators was done on the basis of an estimated number of hours to be worked in a month, and an hourly rate, which was taken from figures from the South African Federation of Civil Engineering Contractors (SAFCEC) (Shoesmith, 2006). The basis for payment of committee members was less clear, since they were being paid partly for exercising responsibility for the scheme.

Since these allowances constituted a significant proportion of the total SSA costs, the municipality had to approve the rates paid.

Flow of money

All initial costs were borne by the SSAs, who submitted invoices to the municipality for payment. Two SSAs paid allowances for local staff (committee members, administrators and operators) into an account controlled by the committee, which then paid out to individuals. The third SSA (Maluti Water) paid directly into individuals' own accounts.

7.2.2 Findings on Role of Support Services Agents

The findings of this research, based on the interviews with the SSA representatives, are that the role and functions of SSAs as specified in the VLAP document (Alfred Nzo District Municipality, 2002) correspond closely to what happened in practice.

Training

Training for committee members, operators and administrators was provided by the SSAs. Maluti Water conducted mainly on the job training, while the Mvula Trust and Makhaotse, Narasimulu and Associates had some formal training sessions. W.A.S.H. used a combination of the two approaches.

7.2.3 Findings on Reporting

A crucial aspect of the relationship was the standard monthly reports that SSAs had to submit. These reports focussed on seven Key Performance Areas which were documented for each water scheme. The SSAs got the information for the reports primarily through the monthly reports prepared by the committee for each scheme, which focussed on exactly the same Key Performance Areas. They compiled scheme or village reports, which were then consolidated into a summary report that went to the municipality. Maluti Water insisted that committees submit their report before getting paid, and although this policy was unpopular to begin with, it was successful in ensuring regular and timeous reports being received thereafter.

An example of the summary reports, with information on continuity of service, water quality and a summary page is included in this report as Appendix 3.

The municipality held monthly meetings with all three SSAs, during which the SSAs presented their reports.

7.3 Problem areas

By far the major problem area reported by all three SSAs was that of unauthorised house and yard connections to the scheme. Many of the schemes had water sources with a relatively low yield compared with the required amount of water to meet normal demand. In these schemes, unauthorised connections had the effect of exhausting the water in the reservoirs, leading to taps running dry. An additional consequence of unauthorised connections is that they often were not expertly installed, and caused leaks. All three SSAs reported that the existing governance structures, using the water committees, were not strong enough to prevent unauthorised connections. Indeed, in some schemes, members of the water committee were reportedly involved in unauthorised connections themselves. The SSAs said that a decisive intervention from the municipality was required. W.A.S.H. and Mvula Trust focussed on the need for the municipality to adopt and enforce by-laws governing the installation of private

connections. Maluti Water, however, pointed out that tampering with a municipal water supply was a criminal offence, and submitted that the main cause of inaction by the municipality was the lack of will to take decisive actions against offenders.

Water wastage through leaving taps running was not seen as a significant problem. The use of scarce water for irrigation, block making and car washing, sometimes by connecting hoses to public standpipes was more of an issue. Prevention of these practises was also seen as something requiring intervention by the municipality.

There were differing opinions on the problem of vandalism. Shoesmith (2006) reported that vandalism was widespread, whereas Gibson's opinion (2006) was that the problem was highly exaggerated. Both mentioned instances where drivers of vehicles from outside the scheme area used water from the scheme to wash their cars. The water committee arranged to have the taps used by the vehicles locked, and in retaliation or frustration, the vehicle drivers vandalised the standpipes. When this happened in one of Maluti Water's schemes, the water committee, with the support of Maluti Water, was able to negotiate an agreement with the vehicle drivers that was acceptable to all parties.

7.4 Termination of SSA contracts

The three SSA contracts were terminated at the end of August 2005. The municipality gave no formal reasons for the terminations. The SSA representatives, in speculating on the reasons, mentioned that fact that ANDM did not like to see its finances being spent on organisations based outside the municipal boundary, and also that the three SSA organisations were not sufficiently compliant with black economic empowerment (BEE) requirements (Sarng, 2005, Shoesmith, 2006 and Gibson, 2006).

The change from the SSA contracts to in-house service provision was sudden, and in the 6 months following the change no reports on continuity of supply, water quality or water availability were received (Smith, 2006).

7.5 Findings on continuity of supply

The only source of data with which to measure the effectiveness of the operation and maintenance of ANDM's water services is the monthly reports submitted by the SSAs (Smith, 2006). In comparing ANDM's results against the norms and standards in the Strategic

Framework (Department of Water Affairs and Forestry, 2003), one must examine the sections of the monthly reports on water availability, continuity of supply and water quality.

There are two distinct aspects to consider when assessing how well a municipality meets the required norms and standards. These are:

- The adequacy of the physical infrastructure, and the associated issue of the quantity of the source of water, and
- The effective operation and maintenance of the infrastructure.

As discussed in the introductory chapter, this report focuses on operation and maintenance, rather than the adequacy of the constructed schemes and the question of backlogs – those people not served by an acceptable basic water service. The data which provide information on effective operation and maintenance are those related to quantity of water, and continuity of service, or the reliability of the infrastructure.

The period during which data analysed in this report was gathered is one during which the area experienced a severe drought (Republic of South Africa, 2003). As a consequence of the drought, many water schemes did not have a sufficient supply of water, which was recorded in the SSAs' monthly reports. This report, however, attempts to ignore the interruptions to water services due to drought or inadequate water sources, focusing on those aspects related to operation and maintenance.

7.5.1 Continuity of supply

For each scheme, the SSAs reported on the continuity of supply, measured in percentage of standpipe-days during which standpipes were operational (See Appendix 6 for an example). For each scheme, a mean figure was calculated for a year (or the period for which information was available). These were then grouped in categories:

- 96 to 100 %
- 90 to 95%
- 75 to 90%
- Below 75%

The first category, 96 to 100%, corresponds to the figure of water being available for at least 350 days per year – one of the Strategic Framework's benchmarks (Department of Water Affairs and Forestry, 2003, p.46).

The total population which had the continuity of service in each category was calculated from the SSAs' population figures. Populations in schemes with only handpumps, where only bulk water was available or for which no figures were available were also calculated. These are shown in Tables 2 to 5.

Table 2: Maluti Water, overall continuity figures, July 2003 to June 2004

Continuity (%)	No. of people	% of population	% of population with piped water
96 to 100	93,593	46.3%	51.1%
90 to 95	66,818	33.0%	36.5%
75 to 90	15,163	7.5%	8.3%
< 75	7,692	3.8%	4.2%
Handumps	8,520	4.2%	-
Bulk only	4,644	2.3%	-
No data	5,766	2.9%	-
TOTAL	202,196	100.0%	100.0%

Table 3: Maluti Water, overall continuity figures, July 2004 to June 2005

Continuity (%)	No. of people	% of population	% of population with piped water
96 to 100	102,959	51.4%	56.2%
90 to 95	57,615	28.8%	31.4%
75 to 90	19,002	9.5%	10.4%
< 75	3,690	1.8%	2.0%
Handumps	8,520	4.3%	-
Bulk only	4,818	2.4%	-
No data	3,672	1.8%	-
TOTAL	200,276	100.0%	100.0%

Table 4: Mvula Trust, overall continuity figures, July 2003 to June 2004

Continuity (%)	No. of people	% of population	% of population with piped water
96 to 100	64,910	72.2%	72.2%
90 to 95	19,934	22.2%	22.2%
75 to 90	5,079	5.6%	5.6%
< 75	0.0%	0.0%	0.0%
TOTAL	89,923	100.0%	100.0%

Table 5: W.A.S.H, overall continuity figures, October 2003 to July 2004

Continuity (%)	No. of people	% of population	% of population with piped water
96 to 100	13,987	22.5%	23.6%
90 to 95	11,028	17.8%	18.6%
75 to 90	25,784	41.5%	43.4%
< 75	8,552	13.8%	14.4%
Handumps	2,757	4.4%	-
TOTAL	62,108	100.0%	100.0%

Figures were then broken down according to the type of scheme – gravity schemes, pumped schemes, and those relying on a combination of gravity and pumping. These are shown in Tables 6 to 9:

Table 6: Maluti Water, reticulated schemes by type, July 2003 to June 2004

Continuity (%)	Gravity schemes		Combined gravity/pumping		Pumped schemes	
	No. of people	% of population	No. of people	% of population	No. of people	% of population
96 to 100	71,206	56.7%	11,191	42.5%	11,196	68.0%
90 to 95	42,452	33.8%	4,098	15.6%	5,268	32.0%
75 to 90	5,647	4.5%	9,516	36.2%	0	0.0%
< 75	6,180	4.9%	1,512	5.7%	0	0.0%
TOTALS	125,485	100.0%	26,317	100.0%	16,464	100.0%

Table 7: Maluti Water, reticulated schemes by type, July 2004 to June 2005

Continuity (%)	Gravity schemes		Combined gravity/pumping		Pumped schemes	
	No. of people	% of population	No. of people	% of population	No. of people	% of population
96 to 100	71,206	56.7%	15,289	58.1%	16,464	100.0%
90 to 95	48,099	38.3%	9,516	36.2%	0	0.0%
75 to 90	2,490	2.0%	1,512	5.7%	0	0.0%
< 75	3,690	2.9%	0	0.0%	0	0.0%
TOTALS	125,485	100.0%	26,317	100.0%	16,464	100.0%

Table 8: Mvula Trust, reticulated schemes by type, July 2003 to June 2004

Continuity (%)	Gravity schemes		Combined gravity/pumping		Pumped schemes	
	No. of people	% of population	No. of people	% of population	No. of people	% of population
96 to 100	56,386	75.3%	3,750	45.8%	4,774	69.4%
90 to 95	14,474	19.3%	4,445	54.2%	1,015	14.8%
75 to 90	3,990	5.3%	0	0.0%	1,089	15.8%
< 75	0	0.0%	0	0.0%	0	0.0%
TOTALS	74,850	100.0%	8,195	100.0%	6,878	100.0%

Table 9: W.A.S.H, reticulated schemes by type, October 2003 to June 2004

Continuity (%)	Gravity schemes		Pumped schemes	
	No. of people	% of population	No. of people	% of population
96 to 100	13,987	23.6%	5,741	18.4%
90 to 95	11,028	18.6%	9,619	30.9%
75 to 90	25,784	43.4%	10,197	32.7%
< 75	8,552	14.4%	5,584	17.9%
TOTALS	59,351	100.0%	31,141	100.0%

7.5.2 Water availability

SSAs reported on water availability (see Appendix 5 for an example report). Intermittent availability or a water shortage indicated that the water resource (spring, borehole, stream) was insufficient, due either to inadequate design or, more probably in these cases, drought.

7.6 Findings on Water Quality

7.6.1 Inconsistency in reporting

Water quality data reporting was not consistent between the three SSAs. All SSAs reported on E-coli counts. W.A.S.H. and Mvula Trust also reported on faecal coliforms, pH and turbidity. Maluti Water and W.A.S.H. took samples for each water source – e.g. if the water scheme relied on three springs for its sources, there would be three samples. (See Appendix 4 for an example of a Maluti Water report.) Mvula Trust reported on quality for one sample for each scheme. Maluti Water and Mvula generally had monthly readings, while W.A.S.H.'s data was less consistent over time, although they probably conducted more tests than either of the other two SSAs.

7.6.2 Water quality figures

For comparative purposes, only E coli tests are shown in the following charts, which reflect the total number of samples taken, irrespective of how many samples were taken from different schemes.

Readings are classified as follows:

- Good: 0 E-coli per 100 ml
- Acceptable: 1 to 10 E-coli per 100 ml
- Bad: Over 10 E-coli per 100 ml

Figure 1: Maluti Water Water Quality Data, July 2003 to June 2005

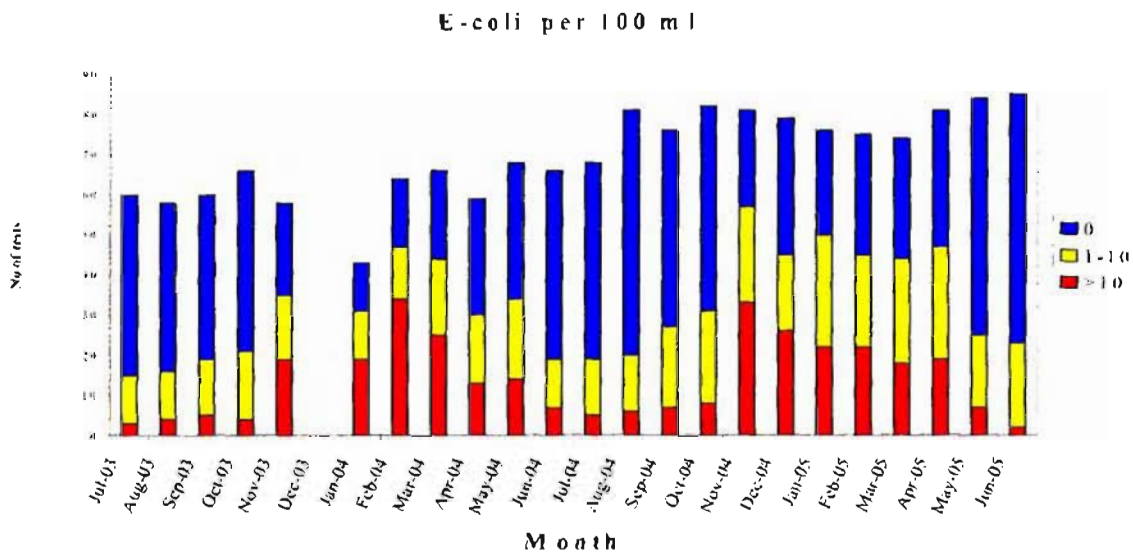


Figure 2: W.A.S.H. Quality Data, July 2003 to July 2004

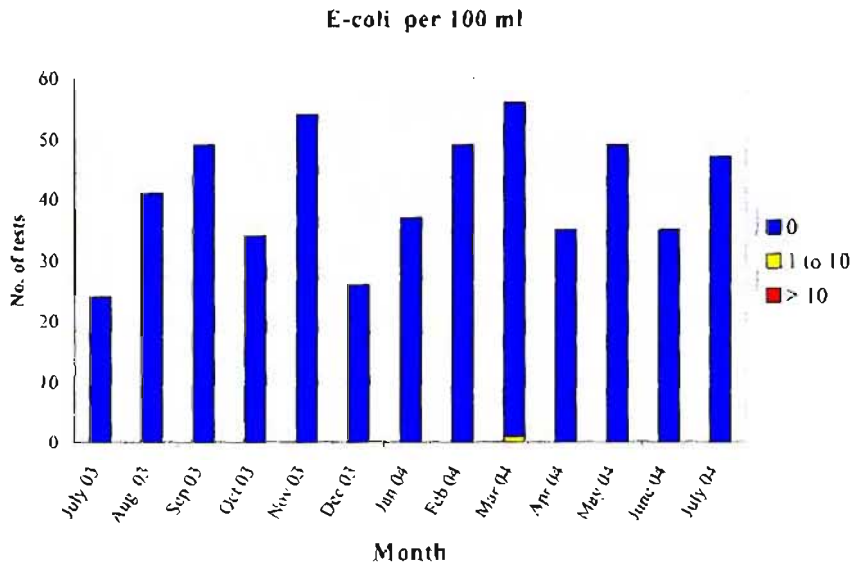
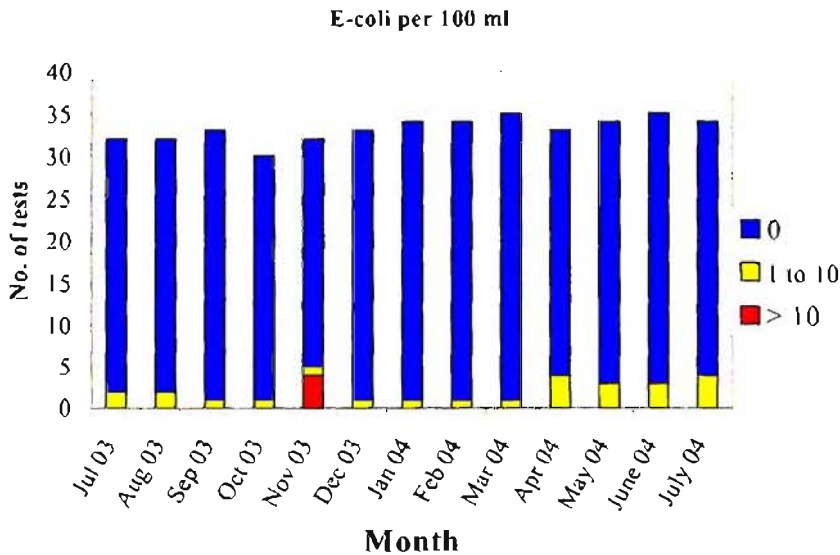


Figure 3: Mvula Trust Quality Data, July 2003 to July 2004



7.7 Accuracy of data

SSAs were asked whether:

- they had ever been questioned by the Municipality on the accuracy of their reports, or
- they ever had cause to question the accuracy of figures supplied by community committees.

SSAs all responded that in neither case were figures questioned. A likely explanation is that figures were provided in good faith by community committees and SSAs. However, the Municipality did not engage with the figures, and there was never a discussion on reasons for variation between SSAs. The most discussed aspect of the SSA contracts appeared to be the costs of the SSA contracts, rather than the level of service being provided. Gibson said that in his opinion the Municipality could have benefited greatly from the amount of management information provided by the SSAs, but never did so. Had the Municipality interrogated the figures provided, it is likely that the SSAs in turn would have ensured a higher quality of data from community committees.

7.8 Comparison with other data on continuity of supply

The HSRC's SASAS reports appear to provide the only recent information on effectiveness of water services (Hemson, 2005 and Hemson and Owusu-Ampomah, 2004). In the 2005 report, the only figure that applies only to "tribal" rural areas is the figure of 38.1% of respondents who reported frequent (monthly or more) interruptions to their water during the previous year. Some comparison with the ANDM figures may be drawn from Table 9, although it is not possible to make direct comparisons since the duration of the interruptions is not given.

Table 10: Summary of continuity of supply figures

Continuity	Maluti Water 2003/2004	Maluti Water 2004/2005	Mvula Trust 2003/2004	W.A.S.H. 2003/2004
Less than 96%	48.9%	43.8%	27.8%	76.4%
Less than 90%	12.5%	12.4%	5.6%	57.9%

The figures for the Mvula Trust appear to be significantly better than those in the HSRC report, while those for W.A.S.H. appear to be significantly worse. The large differences between the figures of the three SSAs will be discussed in the following chapter.

7.9 Cost of water provision

The municipality's total annual cost of providing water for the last year of the SSA contracts was R16.9 million. Of this, R3.4 million was the municipality's internal overhead costs, with R13.4 million being paid to the SSAs. This included SSAs' support costs, materials, energy, local administrative costs and payments to community committee members, administrators and operators (R Smith, 2006). Dividing this by the approximate number of people served (336,000) gives a cost per person of R50.30 per annum, or R4.19 per month. (This figure

excludes all capital expenditure, and the capital replacement costs of existing infrastructure.) These costs have to be met virtually entirely from the Municipality's Equitable Share (R Smith, 2006). As mentioned above, ANDM's recommended water allocation from its 2004/2005 Equitable Share was R40,779,709 (Hazelton, 2004, p.8).

7.10 Comparison with other data on cost of supply

The most useful comparative cost data is from the WRC report on Free Basic Water by Balfour et al (2004), which tabulated the costs of water provision. The table is shown below:

Table 11: O&M costs for various WSPs

	No. of People Served	Cost of Operations & Support/hh/month	Cost of Operations & Support/capita/month
uTWP Marginal Scenario	1 787 655	R113.00	R20.00
AquAmanzi (uTWP region)	98 912	R18.36	R2.30
Nquthu rural (historical)	30 444	R33.59	R4.80
Nquthu rural (uTWP proposed budget)	30 444	R26.50	R3.31
Nhlungwane	1 500	R7.00	R1.00
Alfred Nzo DM (Umzimvubu North)	142 007	R17.08	R2.44
Vulindlela	122 088	R18.45	R3.07
Ngqushwa LM	120 841	R9.75	R2.17
Amanz'Abantu (Peddie in Ngqushwa)	2 815	R27.41	R6.09
Estimated Ngqushwa (From Table 24. Avg taken) (includes WSA costs)	94 155	R28.00	R6.19

Balfour, *et al* (2004)

7.11 Availability of data

As has been pointed out above, questions exist about the accuracy of the ANDM data. There is, however, little or no systematic data on the level of service being provided by other District Municipalities.

DWAF is in the process of implementing a monitoring regime for municipalities, in line with its regulatory function. Water Services Authorities will have to complete a WSA checklist, to indicate whether they are complying with legislative and regulatory requirements. Although

this checklist includes questions on infrastructural access and continuity of supply, these questions are about the WSA's capacity to comply with the legislation and whether they have complied. Given that these are just two questions in a list of approximately 70, it is doubtful that the checklist will ensure WSAs provide detailed water service availability and continuity figures in the near future.

7.12 Experiences in other Water Services Authorities

7.12.1 Sample design

Four WSAs were chosen to provide information on their approach to rural water service provision. The four were selected on the basis that they represented a range of WSP arrangements, and also that they had varying organisational and human resource capacities.

7.12.2 uMgungundlovu District Municipality

As in most rural districts, before municipalities had been set up to exercise their powers as Water Services Authorities, most rural schemes in the uMgungundlovu District were operated by local water committees. The District Municipality decided to appoint the Local Municipalities as Water Services Providers. This arrangement has not been a success. Local Municipalities had existing staff, infrastructure and experience to operate small urban water schemes, but have proved unable to provide an acceptable service to rural areas. The Section 78 Assessment Report paints a picture of Local Municipalities struggling to fulfil their responsibilities, and having to rely on other institutions such as Umgeni Water, the District Municipality and the implementing agents who were responsible for the initial construction of the scheme.

The District Municipality has taken a decision to take over the role of Water Services Provider from the Local Municipalities, and is currently planning a staff structure in which all tasks related to operation and maintenance will be carried out internally.

The reason why local community management was not considered was that the municipality had negative experiences with local committees. No consideration appears to have been given to the possibility of analysing the problems experienced and examining how to overcome these. By the time that the Section 78 Report was written, it is clear that the option of including community organisations in the operation and maintenance was not considered.

(Wells, 2005)

When interviewed again in April 2006, Wells indicated that the planned taking over of the WSP role by the District Municipality had not happened, and that the local municipalities were still the WSPs (Wells, 2006).

7.12.3 Ugu District Municipality

The Ugu District Municipality began implementing rural water services in 1996. The initial overall strategy was for the municipality to operate bulk infrastructure (water abstraction, treatment and pumping) and give local community structures the responsibility for reticulation and tariff collection. The local Project Steering Committees were changed to water committees and were given appropriate training. Committees employed operators to undertake minor repairs, but their main function was the management of prepaid community standpipes, usually with a system of tokens. Consumers paid a price of R10 per kilolitre (10 cents per litre), and the committees were billed R4.50 per kilolitre by the municipality. The difference was to cover the costs of maintaining the reticulation and collecting tariffs.

A few schemes, notably the scheme serving Izingolweni, worked well. However most schemes were not able to pay the bulk water charge to the municipality. Research conducted for the WRC by Lima suggested that the reason for this was that water vendors typically under-reported water sales to the water committees to supplement their small incomes (Lima Rural Development Foundation, 2001). In any event, with the advent of Free Basic Water, the tariff collection function of committees fell away, and all water from standpipes was made free. Consumption of water increased dramatically, high levels of water wastage being experienced. This placed too high a demand on most schemes, which were generally designed to provide 25 litres per person per day, and shortages were experienced. As a result of these problems, the Municipality decided to take on the full Water Services Provider role, and no longer made use of water committees.

The municipality does experience the familiar problems of unauthorised connections and vandalism, with repeated repairs being required in some areas. There is also the problem of burst pipes not being reported timeously. With no community pump operators, the Municipality relies on telemetry for some of its pumping schemes, and this also gives rise to some operational problems when the electrical equipment suffers faults.

In the absence of systematic data, it is difficult to assess the extent to which the above problems affect water service delivery. However, the Ugu District Municipality is one of the

best, if not the best, organised WSP in the country responsible for a large rural population, and probably provides a level of service higher than most other District Municipalities with significant numbers of rural consumers.

(Govender, 2006)

7.12.4 Ilembe District Municipality

The Ilembe District Municipality inherited infrastructure assets and staff from a variety of other institutions, including a large number of DWAF funded rural schemes. The Section 78 report recommended the consideration of outsourcing the WSP function, but in 2003 the municipality decided to go the internal route, becoming a fully fledged WSP itself. Part of the reason for this decision was the need to deploy staff inherited from the other institutions. The philosophy was to extend the well functioning urban operations to the district's rural schemes.

The existing community management capacity was not done away with entirely, however. In many schemes, administrators and operators/plumbers were employed on a contract basis by the Municipality.

Ilembe experiences problems of widespread vandalism and water losses. One of the Municipality's strategies to overcome problems is to move towards more automated systems, replacing diesel pumps with electric, and using telemetry, possibly with cell phone technology.

(Mbanjwa, 2006)

7.12.5 Umkhanyakude District Municipality

Unlike the other three KwaZulu-Natal District Municipalities reviewed above, the Umkhanyakude District Municipality did not inherit a staff infrastructure from a previous institution, and was an entirely new entity. In this respect it is similar to ANDM, and shares its status as one of the poorest District Municipalities in the country.

From 2000 to 2005, most rural water schemes were managed by community water committees. The Municipalities assessment of the success of this arrangement is that some of them worked well, and this was mainly due to some key individuals involved. Most schemes, however, failed. The Section 78 Assessment which was completed in June 2005

recommended that water services be run as a partnership between the Municipality and Mhlathuze Water, the water board based in Richards Bay.

At the time of writing this new arrangement is still being put into place. The main elements of it are that maintenance teams are managed by Mhlathuze Water, with the intention to establish a maintenance team based in every local municipality in the district.

Faults and breakdowns are reported to the municipality by members of the public. The Municipality intends to set up a call centre for all fault reports. Water schemes suffer from the usual problems of unauthorised connections, vandalism (including theft of pipes and taps), and use of scarce water for irrigation. Performance of water schemes is variable.

(Coetsee, 2006)

According to Dave Still, Manager of Partners in Development, a company that has been working in the Umkhanyakude area for many years, the annual amount given by the District Municipality to Mhathuze Water for providing water services in the District is only about R20 million, which is insufficient to cover the regional adequately. As a result, several schemes in the District are effectively left to their own devices (Still, 2006b).

7.13 Conclusion

The chapter started with an examination of the roles and responsibilities of the various parties involved in operation and maintenance of water services. The findings were that these roles accorded closely with those outlined in the VLAP document (Alfred Nzo District Municipality, 2005). Most day to day work was carried out by community operators or committees, with SSAs making two visits per month, and carrying out the major repairs and pump servicing.

The figures on continuity of water were calculated on an annual basis and tabulated, showing the percentage of consumers receiving water for 96% of the time or more. This figure corresponds to the norm provided in DWAF's Strategic Framework (Department of Water Affairs and Forestry, 2003). These figures showed that schemes supported by Maluti provided this level of service to 51.1% and 56.2% of consumers in the first and second year respectively, Mvula Trust provided this level to 72.2% of consumers, while the W.A.S.H. figure was 23.6%. The figures for consumers receiving water for less than 75% of the time varied from 0% (Mvula Trust) to 14.2% (W.A.S.H.). A comparative figure from the 2005

HSRC report (Hemson, 2005) was 38.1% of residents in tribal areas reporting interruptions at least monthly over the previous year.

When figures for gravity and pumped schemes were disaggregated, the performance for gravity schemes was slightly better than for pumped schemes.

The figures for water quality varied considerably, with W.A.S.H. recording no unacceptable counts of E. coli (i.e. more than 10 E-coli per 100 ml), Mvula Trust recording a maximum of 4% of samples with unacceptable counts and Maluti Water recording unacceptable levels for between 2% and 23% of samples.

ANDM's costs in providing water services were found to be R4.19 per person per month, comparable to figures for other municipalities reported in the study by Balfour, *et al* (2004).

Other municipalities interviewed indicated that they had decided to manage rural water centrally, mostly after negative experiences with community management. None of them had systematic data on effectiveness of rural water provision, and their management decisions taken appeared to be more political than rational.

8. DISCUSSIONS AND CONCLUSIONS

8.1 Introduction

This chapter discusses the findings outlined in the previous chapter in the light of the objectives of the report. These objectives were:

- How effective and efficient is ANDM in the provision of water supplies?
- Is the ANDM approach one that other local authorities could adopt?
- What are the risks in community management?
- Based on the findings of this study, what lessons can other municipalities embarking on similar programmes learn from the ANDM experience?

Conclusions are drawn for each of the objectives, and also with regard to the difficulties imposed by the lack of data.

8.2 Effectiveness of water service provision

8.2.1 Variations and/or anomalies in findings on continuity of supply

A notable feature of these results is the wide variation on continuity of supply between the three SSAs. Comparing the figures for 96% to 100% continuity for piped schemes, Maluti Water figures are 51.1% and 56.2% for the two years, the Mvula Trust figure is 72.2% and the W.A.S.H. figure is 23.6%. When asked about the low figure reported by W.A.S.H, Shoesmith indicated that W.A.S.H.'s continuity figures incorporate the effects of water shortages, meaning that the figures do not only reflect the operability of the infrastructure (Shoesmith, 2006). Comparing continuity figures with availability of water shows correspondence on some schemes that bear out Shoesmith's interpretation, but not on all schemes.

Since schemes using gravity for the water supply are inherently more reliable, there being no pumps that can break down, the continuity figures were analysed by type of scheme – gravity, a combination of gravity and pumping, and pumping alone. For W.A.S.H. and the Mvula Trust, there was some correlation between reliability and gravity based schemes. There was a negative correlation for Maluti Water. A possible explanation is that Maluti Water managed only two pumped schemes which were both large, and would have been expected to pay special attention to keeping them running.

8.2.2 Variations and/or anomalies in findings on water quality

The variation in water quality figures is even more stark than in the continuity figures, with W.A.S.H. reporting on only one reading over 13 months in which E-coli were detected. Maluti Water, on the other hand, reported 57 positive E-coli tests in one month alone. This raises serious doubts about the accuracy of the tests, although all three SSAs had their samples tested by Umgeni Water. The variations were not due to the timing of testing, which was done every month. No efforts were made to interrogate the sampling methods. The differences between the Maluti Water and W.A.S.H. results could be explained by the different methods of chlorination (floating as against in-line chlorinators). However, Mvula Trust / Makhaotse, Narasimulu and Associates did not chlorinate routinely, yet reported better results than Maluti Water. This issue is clearly worthy of further investigation.

8.2.3 Effectiveness of ANDM's water supply services

The figures on continuity of water supply from the monthly SSA reports are the main indicators of the degree of effectiveness of the municipality's water supply services. The figures indicate that Mvula Trust / Makhaotse, Narasimulu and Associates and Maluti Water provided moderately effective services, with a significant proportion of consumers receiving continuity of 96% or above. The figures from W.A.S.H. indicate a significantly lower level of continuity, but with the possibility that this is partly due to a shortage of water from the schemes' water sources. The wide variation in figures and inconsistencies in the meaning of the data necessitate caution in interpreting these figures. Comparison with the figures from the Hemson report (2005) is also difficult, given the differences in the data being collected. Nevertheless, it can be concluded that Mvula Trust and Maluti Water provided a service comparable with or better than that in many other rural areas.

With regard to water quality, Jim Gibson of Maluti Water highlighted the difficulties in meeting the requirements of the water quality standard, SABS 241, which requires samples to be tested within 6 hours of being taken (Gibson, 2006). For remote areas, each more than 3 hours drive from a laboratory, and several hours drive from each other, this becomes either a hopeless or enormously expensive task.

In Gibson's opinion, the water quality testing was useful as a surveillance measure, indicating problems that needed to be addressed, rather than providing very accurate figures. He said that Maluti Water, as an additional measure, contacted clinics serving the people served by

their schemes every Monday to check whether any patients reporting to the clinic were diagnosed with a waterborne disease. He pointed out that to the best of his knowledge, no instances of cholera were reported anywhere in the Municipality for the duration of the SSA contracts (Gibson, 2006).

It must be noted, however, that having a system that records any systematic data is an achievement that few other municipalities have accomplished. Reliable data is an essential management tool, and is the basis for identifying problems and formulating strategies to implement solutions. Had the municipality interrogated the figures provided by the SSAs more vigorously, the data provided would have improved in quality, and the municipality would have had a tool to demand improvements in the services rendered by the SSAs.

8.3 Efficiency of ANDM's water supply services

The cost to ANDM of providing water through the system of SSAs and community committees was approximately R4.19 per person per month. When the ANDM costs were compared to those of other municipalities in the report by Balfour *et al* (2004), they fell in the lower end of the range.

The ANDM Technical Director has estimated costs of providing water through direct provision, with municipal staff replacing the services of the SSAs. His estimate puts the costs of direct provision at about 10% to 20% greater than the costs under the SSA contracts (Smith, 2006). The basic approach of using community managers has been retained, however, and part of the increased costs is related to DWAF staff taken over by the municipality.

8.4 Is the ANDM approach one that other local authorities could adopt?

8.4.1 International experience

The provision of reliable water services to remote rural communities is not an easy task. There are many separate individual systems to manage, distances are large and communications often tenuous. Added to these obstacles is the fact that those institutions responsible for providing rural water services are often the least resourced government institutions or utilities, financially and in terms of human resources (Carter *et al*, 1993, p.647).

The international experience from the Water Decade and after pointed to the widespread failure of centrally managed rural water programmes (Black, 1998, p.19). Much literature advocated community ownership and management of water schemes as a solution, and successful case studies of community managed water projects were written. Much of the focus of these studies was on cost recovery, an aspect that is of little relevance to rural South Africa after the advent of the Free Basic Water Policy. More cautious advocates of community management saw a role for government authorities or water utilities (Carter *et al*, 1993, p.648). There is little information, however, on successful implementation of community management on a large scale, programmatic basis (Black, 1998, p.36).

8.4.2 South African experience

Community management in South Africa was practised with some success in the years before and after the 1994 transition (Blaxall *et al*, 1996, p.15). The approach was promoted by donors and NGOs, with some initial support from DWAF. Partly due to legislation that made municipalities responsible for water services, the community approach was not embraced by government officials. Although the legislation leaves ample room for community participation in managing water services (Department of Water Affairs and Forestry, 2003, p.19), the majority of municipalities have opted for a centralised approach (Davids, 2006). One of the main reasons for this provided by the WSA interviewees appears to be experiences of failed community managed schemes during a time when they had to sustain themselves with little or no external support.

From 2000, when the new local government system was established, many municipalities have struggled to provide basic services (Brown and Mde, 2005). Although there has been much public criticism of municipalities relating to backlogs, President Mbeki's remarks about under-qualified municipal managers was a telling comment on one of the perceived reasons for poor service delivery (Ndlangisa, 2005).

The experiences of the uMgungundlovu and Umkhanyakude District Municipalities in KwaZulu-Natal are examples of Water Services Authorities struggling to fulfil their obligations under the Water Services Act and DWAF's Strategic Framework.

8.4.3 Achievements of Alfred Nzo District Municipality

In the national context of many municipalities, urban and rural, failing to provide adequate services, the record of ANDM is one of a coherent and functioning management system in

place from about 2002 to 2005. This is all the more noteworthy due to the municipality's status as one of the country's poorest. There is little doubt that an important element in the management system was the role played by the Support Services Agents who provided technical and management skills not present in the municipality. But a crucial part of the system was the role of the community water committees, supervising operators, providing reports and acting as a crucial communication link between the municipality and the SSAs on the one hand and remote consumers on the other.

The institutional relationships in this management system were contractual. However, they can also be seen as a network consisting of the municipality, the SSAs and several hundred water committees. By using this arrangement, the municipality was able to enhance its effectiveness.

8.5 What are the risks in community management?

In all the four KwaZulu-Natal WSA interviewed, the main reason given for not considering community management options in operation and maintenance of rural water supplies was a negative experience with community managed schemes inherited from other institutions. In the case of Ugu District Municipality, the experience was one in which the local operators did not pay the tariffs received from consumers back to the municipality. This was before the introduction of the Free Basic Water policy, but the municipality had already decided upon centrally organised management by the time the policy was introduced. In the other municipalities, where local communities had a greater responsibility for operating and maintaining services, many local committees proved unable to perform their duties and schemes frequently broke down. In all municipalities, vandalism and water wastage was reported, although this was a problem irrespective of how management was organised.

An area of concern felt by ANDM throughout the SSA and community management programme was the prospect that if the municipality paid funds directly to community members, they would negotiate to become normal municipal employees, paid in accordance with municipal salary scales. Given the number of schemes, with approximately four to seven community members per scheme, this would have made the whole system unaffordable (Smith, 2006). This was one of the reasons why the municipality contracted the Support Service Agents, and paid all costs through them.

The major risk as perceived by the four other municipalities, and possibly most district municipalities in the country, is the concern that community structures are unreliable, and more often than not lack the capacity to carry out effective operation and maintenance of schemes (Wells, 2005, Govender, 2006, Mbanjwa, 2006 and Coetsee, 2006).

8.6 What lessons can other municipalities embarking on similar programmes learn from the ANDM experience?

8.6.1 External support for communities

The interviews with the three SSA representatives and the difficulties experienced by ANDM after the termination of the SSA contracts point decisively to the importance of external support to community committees carrying out operation and maintenance tasks. This experience supports the views of Carter *et al*, (1993, p.650) that community management needs to be supported by government institutions. In the ANDM model, the government institution enhanced its capacity by outsourcing support to communities through the SSA contracts.

8.6.2 Community ownership

A common reason cited for community management of water services is the sense of ownership that it encourages among the community representatives themselves and the community or consumers (Rall, 1999, p.2). Despite the legal framework that vests ownership of water infrastructure in local government, the experience of the SSAs was that the water committees helped to overcome or ameliorate many of the common problems that beset remote rural water schemes. They provided an effective communication channel with consumers and assisted in combating vandalism, although they proved relatively ineffective in overcoming the problem of unauthorised connections. All three SSAs agreed that in this regard, strong action from the municipality was necessary to take action against offenders (Sarng, 2005, Shoesmith, 2006 and Gibson, 2006).

When asked whether he agreed with the proposition that ANDM's management system promoted a sense of ownership and responsibility among communities, the reply of Jim Gibson of Maluti Water was "Yes, without hesitation" (Gibson, 2006). The other two SSA held similar views.

8.6.3 Costs of community management

The total cost of community allowances and wages paid by ANDM was R3.3 million per annum, which was approximately 20% of the total cost of water provision (Smith, 2006). This amount is slightly less than that of municipal staff currently employed by the municipality. While R3.3 million may seem like a significant additional cost to the municipality, it must be considered in the light of the value added by community involvement. This includes:

- Savings in transport and staff costs by reducing the work done by mobile teams
- Savings in avoiding the need to rely on remote switching on of pumps – when pumps are switched on manually they can be switched off again immediately if there are obvious problems (noisy bearings, no water at the inlet etc)
- Earlier detection of leaks and bursts through active patrolling of pipeline routes
- The value of reports compiled
- Solving vandalism problems

The comparative figures for overall costs of operating and maintaining rural water schemes indicate that the ANDM model compared favourably with other management arrangements (Balfour *et al*, 2004, p.95).

8.6.4 Necessity for some level of community involvement

Although the four WSAs interviewed have implemented or are embarking on a centralised option with teams employed by the WSP responsible for operation and maintenance, most do rely on some degree of community involvement, whether by employing local community members or changing existing community committees into purely liaison structures.

In the opinion of Jim Gibson of Maluti Water, when managing a large number of remote rural water schemes, some community participation is essential – it is a matter of degree (Gibson, 2006).

8.6.5 Need for data on water service provision

A problem encountered with assessing the performance of ANDM's community management model was the lack of comparable data from other municipalities. This problem points to a deeper issue relating to effective management of water services. Reliable data is essential for

good management, and is also important for issues of governance – there must be a yardstick by which municipalities are measured. The HSRC SASAS surveys provide the only national figures on levels of water service delivery (Hemson, 2005 and Hemson and Owusu-Ampomah, 2004). However, these are based on consumers’ perceptions, and do not disaggregate data to the level of municipalities, possibly because samples are too small.

DWAF’s strategic framework provides a basis for regulation of water services. Currently DWAF is implementing a Water Services Authority Checklist (Department of Water Affairs and Forestry, 2005). The checklist aims to ascertain that WSAs have policies and procedures in place that are required by legislation and regulations. It does not require any data as such. For example, the WSA must answer “yes” or “no” to the question whether it maintains a water quality sampling programme within its WSP (Department of Water Affairs and Forestry, 2005, p.10) No matter how comprehensive or superficial the quality testing may be, the WSA must answer either yes or no, indicating whether it has the resources necessary to carry out the programme or not. The frequency with which the checklist is to be completed is left open, and whether it will have the effect of encouraging WSAs to conduct comprehensive monitoring activities must be doubtful.

While the checklist is of interest to DWAF as the national regulatory authority, what would be far more meaningful to consumers would be actual data on backlogs, continuity of supply and water quality.

In a paper titled “The use of key performance indicators in the benchmarking of rural water schemes”, the authors note that critical questions relating to the cost, reliability and quality of water delivered to consumers is seldom captured (Balfour and Still, 2006). They advocate that Water Services Managers report against a restricted number of key performance indicators (KPIs). After reviewing current KPI initiatives in the country, they recommend a reporting system similar to the one used by the ANDM Support Service Agents to report to the municipality. An additional proposal is that for each scheme samples are collected from a different tap every day. The water should look, smell and taste good, and should be kept for inspection at the end of the month.

8.7 Regulatory independence

The Strategic Framework emphasises the principle of separation of regulatory and operational responsibilities (Department of Water Affairs and Forestry, 2003). In the case of

municipalities that decide to assume the role of Water Services Provider directly, this separation between the Water Services Authority and Water Services Provider needs to be effected within the municipal function. The Framework does not spell out any safeguards to ensure this separation in the case where there is an internal Water Services Provider. The Framework states “The accountability of the water services authority to the local electorate is an effective regulating mechanism for the provision of water services in this context.” (Department of Water Affairs and Forestry, 2003). Several municipal officials interviewed in the course of the research for this report mentioned problems in the relationship between the WSA and the WSP, generally referring to overlapping functions or lack of space for the WSP to operate.

There can be little doubt that one of the reasons why the relative abundance of data is available from ANDM for the SSA contracts is because of the separation (contractually, in this case) between the operational institutions and the municipality. In the light of the paucity of data on the basic benchmarks relating to delivery of water services, the faith placed by the Strategic Framework on electoral accountability appears naïve, and some nationally framed guideline or regulation spelling out how this separation is to be achieved is necessary.

8.8 Conclusions

This chapter has discussed the findings of the research in relation to the original research objectives. Despite some apparent anomalies in the figures relating to effectiveness of the community management model, the conclusion is reached that ANDM has managed its water services effectively through a community management model when compared with data from the country as a whole as reflected in the HSRC SASAS survey (Hemson, 2005).

With regard to efficiency of service, the conclusion is reached that the model has indeed been efficient relative to costs incurred by other District Municipalities when making an overall comparison of costs of service provision.

The main risk in community management of remote water supplies is the limited capacity of communities. However, the experience of the SSAs that managed ANDM’s water provision was that with appropriate support the community structures were able to fulfil their obligations. The problem of illegal connections was present in all WSAs interviewed, regardless of the degree of involvement of local communities in the management.

An important lesson for any municipality employing a community management model is the need for significant external support for communities, whether directly by the municipality or through external agencies. Another lesson is the ability of local communities, with external support if necessary, to overcome problems of vandalism and water wastage.

A shortcoming encountered with all municipalities, excepting when ANDM were operating through the SSAs, was the dearth of data with which to assess the performance of municipal rural water service provision. In the light of this, the need for improved reporting and improved monitoring is highlighted, and the insufficient separation between implementation and regulation is noted. None of the WSAs appeared to check or monitor service delivery consistently.

9. RECOMMENDATIONS

9.1 Introduction

The chapter notes the advantages gained by delegating certain responsibilities to local community members. It then points out that this has to be done within a well defined framework, with appropriate external support to community members. It notes that communities need the support of municipalities to enforce regulations against illegal or informal connections.

The chapter then refers to the problems outlined above in obtaining data from municipalities, and makes recommendations on the collection of data by municipalities, monitoring by DWAF and separating implementation and regulation of water services.

9.2 General

When managing remote rural water schemes on a programmatic basis, some level of full time expert staff external to the communities being served will be necessary (Carter, 1993, p.648 and Van Schalkwyk, 2001, p.38). However, a certain level of local community involvement is needed as well. This can take several forms:

- Local operators being contracted directly by the WSP
- A communication channel for trouble-shooting community related issues such as vandalism, water wastage etc.
- Local committees providing information and /or reports
- Local committees employing local operators and administrators.

Where management of water services relies on community involvement in any way, this should be acknowledged and documented in the WSP's policies and procedures.

The large majority of rural water schemes in South Africa have communal standpipes. Some type of local supervision of the standpipes can significantly diminish the occurrence of abuse of the system through water wastage or vandalism (Gibson, 2006). This relates to there being a "sense of ownership" of the scheme, often cited as a reason for adopting some type of community management (Black, 1998, p.14 and Gichuri, and Kariuki, 1997, p.4). In such schemes, it is recommended that WSPs formalise some type of local supervision, whether through individuals or community committees.

9.3 Community management

Where a certain level of management of schemes is devolved to local community committees, this needs to be systematically managed. In order to be done effectively, relatively high management inputs are required for technical support, support to community committees and overall co-ordination (Shoesmith, 2006). The cost of this support needs to be weighed against the value added by community participation (Gibson, 2006).

If the WSP does not have sufficient skills in-house, these management functions should be outsourced, possibly with staff capacity building programme and a phased transfer of responsibilities from the service provider to the WSP if required.

In ANDM's case, the lack of monitoring and reporting after the termination of the SSA contracts suggested that the in-house capacity is not sufficient to provide the level of service afforded through the SSA contracts. If this is the case, it is recommended that ANDM reinstate the SSA contracts, possibly with some level of capacity building of ANDM staff included in the contracts.

Many rural schemes experience problems of unauthorised or illegal connections. Experience in ANDM shows that enforcing rules that prohibit unauthorised connections cannot be left to local community structures. The municipality must itself assume responsibility and take action, whether through by-laws or the criminal justice system (Sarng, 2005, Shoesmith, 2006 and Gibson, 2006).

9.4 Collection of data by WSAs

Nationally very little systematic data on water service provision is available. It is strongly recommended that all WSAs develop a system for regular collection of data relating to the norms and standards in DWAF's Strategic Framework. Annual data on availability of services, continuity of supply and water quality should be available for each water system.

9.5 Monitoring by DWAF

DWAF has embarked on a data gathering exercise to check the extent to which WSAs are carrying out their legislative mandate (Department of Water Affairs and Forestry, 2005). It is recommended that in addition to the data required in the current Water Services Authority Checklist, DWAF should require WSAs to submit annual figures on water availability,

continuity and quality. In addition, DWAF should institute a system of verification, by random sampling, observing how WSAs collect their data or some other means.

9.6 Separation between implementation and regulation

The Strategic Framework for Water Services has as a key principle the separation between implementation and regulation of water services. At the municipal level, this is institutionalised as the separation between the Water Services Provider and the Water Services Authority (Department of Water Affairs and Forestry, 2003). Since both institutions report ultimately to the Municipal Manager, a complete separation is not possible. It is therefore recommended that DWAF issue guidelines or regulations that will enforce the required separation between the WSA and the WSP, in particular when the WSP function is carried out internally. It is also recommended that part of this arrangement should be a requirement that the WSP provide regular data to the WSA on the extent to which the norms and standards in the Strategic Framework are being met.

DWAF is currently in the process of drafting a new or revised Water Services Act (Still, 2006), partly to give itself enhanced powers to ensure that WSAs comply with water services regulations. It is recommended that the new Act include the above recommendations on separation between implementation and regulation.

9.7 Conclusion

The chapter recommends that certain tasks in operation and maintenance of water services be delegated to community members, but with external support. It then recommends that the strengthening of requirements for reporting, monitoring and regulating water service provision.

10. LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

10.1 Introduction

This chapter notes the uncertainties with regard to the figures in the SSA reports, and the relative lack of data from other sources. It recommends further in-depth research into rural water provision in the Chris Hani District Municipality, research into compliance by District Municipalities with the norms and standards of DWAF's Strategic Framework, and targeted attitudinal surveys.

10.2 Data from the Support Services Agents

The figures for continuity of supply and water quality vary considerably between the three SSAs. Comments made by individuals managing the SSA programmes imply that there may well have been differing interpretations of the figures reported on for continuity of supply, and possible sampling differences for the water quality tests. These differences were never interrogated by the municipality or the SSAs, and with the termination of the SSA contracts, it is not possible to arrive at definite conclusions as to the reason for the differences.

10.3 Data on water supply costs

The costs of water provision for ANDM cannot be verified, but are likely to be accurate, sourced as they are from actual costs in the municipality's records.

10.4 Data from other sources

The data from the HSRC study into attitudes to water service provision is based on systematic sampling across the country. Samples were small, however, with only approximately 3 samples from ANDM (Hemson, 2005). The variable being measured (perceptions of frequency of interruptions to water supplies) is not the same as the variable from the SSAs' continuity figures (Monthly percentage of standpipe operational days). Direct comparisons are therefore not possible.

The information collected from other Water Services Authorities is qualitative, and none of them were able to provide systematic data of service delivery.

10.5 Recommendations for Future Research

10.5.1 Research into community management of water schemes in South Africa

The termination of the SSA contracts with ANDM make further intensive research almost impossible, especially since that the reporting of the kind done by the SSAs is no longer taking place (Smith, 2006). According to Gibson (2006), the Chris Hani District Municipality, also in the Eastern Cape, is running a similar programme, the only one in the country, to the knowledge of the author. In the light of the uncertainty around the meaning and accuracy of the data in the SSAs' reports to ANDM, further interrogation into the reporting would be extremely useful. This would require extensive field work, since the origin of the reports, being the data collected by community members in each water scheme, would have to be verified, a time consuming and expensive process.

10.5.2 Research into effectiveness of water provision in other municipalities

As indicated in previous chapters, very little data on rural water service provision in South Africa is available. While the collection of this data is essentially the responsibility of the Water Services Authorities, independent research is possible, although it would require the agreement of the municipalities to close scrutiny of their internal records.

One approach would be to investigate the degree to which District Municipalities are complying with the norms and standards in the Strategic Framework, although the indications from the research leading to this report suggest that compliance levels will be very low.

The research conducted by the HSRC (Hemson, 2005 and Hemson and Owusu-Ampomah, 2004) into consumers' attitudes is the only national research attempting to interrogate levels of service. The objectives of these two surveys were to determine attitudes to service delivery on a national basis. This necessitated many scattered data samples across the country, making differentiation between municipalities impossible. Similar attitudinal surveys, but carefully targeted at specific municipalities, could provide useful comparative data relating to management arrangements and effectiveness of service.

10.5.3 Research into chlorination and quality testing of water in remote water schemes

The variation in water quality data reported by Maluti Water as against data reported by W.A.S.H. was striking. There is a need to test the efficacy of the chlorination methods

employed, and also to determine a feasible and meaningful testing regime for remote water schemes.

10.6 Conclusion

The chapter noted the uncertainties with regard to the data obtained in the research, and made recommendations for future research that could provide more reliable comparative information.

11. FINAL CONCLUSION

The community management model followed by ANDM from 2001 to 2005 provided an effective mechanism for the severely under-resourced municipality to provide water to its residents. This model relied on significant support from Support Service Agents, who provided technical and administrative skills that the municipality lacked. An important element in the effectiveness of the community management programme was the involvement of local community members in the running of the water schemes. A feature of the programme was the comprehensive monitoring of the operation of the water schemes.

ANDM's decision to terminate the SSA contracts should be reviewed. Unless the Municipality has managed to acquire in-house skills matching those of the SSAs, the SSA contracts should be reinstated.

This level of reporting was not matched in other Water Services Authorities interviewed, and closer regulation of the Water Services Authorities by the Department of Water Affairs will be required to improve reporting to a level that will enable compliance with required norms and standards to be measured.

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APPENDIX 1 SSA INTERVIEW SCHEDULE

Task / activity responsibilities

Scheme component/area of work	Task	Responsibility
Spring	Clean around spring box	
	Ensure protection/repair fence	
	Wash / disinfect spring	
Borehole	Clean site / drain	
	Repair fence	
	Repair apron	
Diesel engine	Check oil / fuel levels	
	Start / stop engine	
	Keep log book	
	Check air filter, clean, replace	
	Tighten nuts, bolts	
	Change engine oil	
	Clean / replace filters	
	Service engine – nozzles, valves etc.	
	Replace worn engine parts	
	Repair mounting / housing	
Electric motor	Start / stop engine	
	Keep log book	
	Replace worn engine parts	
	Repair mounting / housing	
Chlorination	Refill tank	
	Adjust / clean chlorinator	
	Replace hose / chlorinator	
	Paint steel tank	
	Check, adjust doses	
Reservoirs	Check for leaks	
	Check valves	
	Read bulk meters	
	Scour reservoir	

Scheme component/area of work	Task	Responsibility
Pipelines, reticulation	Patrol pipeline routes	
	Repair minor leaks	
	Repair major leaks	
	Flush / chlorinate pipeline	
Standpipes	Check water flowing	
	Clean site	
	Inspect, clean drain	
	Repair / replace valve / tap	
	Repair fence	
	Repair tapstand / apron / drain	
	Repair pipework	
Administration	Manage stores	
	Manage staff	
	WSP meetings	
	Monthly reports	
	Book-keeping	
	Pay wages / allowances	
	Customer relations	

Other questions

12.1.1 Describe flow of money from municipality to community, SSAs and other suppliers

Comment on other issues

- Water wastage
- Vandalism
- Capital replacement
- Other

Recommendations

APPENDIX 2 WSA INTERVIEW SCHEDULE

- Describe arrangements for water services provision since 2000.
- What experience of community management of water supplies has the municipality had?
- Did the municipality consider continuing to use community management with strategies to overcome previous problems?
- How effective are current water service provider arrangements in meeting the requirements of the Strategic Framework?
 - 25 litres per person per day
 - Standpipe within 200 metres
 - Flow from public standpipe at least 10 litres per minute
 - Availability of water for 350 days of the year
 - No interruptions more than 48 hours

APPENDIX 3 Example of summary report

Executive Summary Table – Month 2005

Scheme	Pop (est)	Quality	Supply	I/structure performance	ISD	% of budget
Phalani		Good	Adequate	100	Good	82
Epiphany		Good	Adequate	100	Good	79
Lukholweni		Acceptable	Adequate	100	Good	67
Sidakeni		Acceptable	Adequate	100	Good	85
Emyamameni		Good	Adequate	100	Good	90
Bamanzi/Fiva		Good	Adequate	100	Good	82
Nyaniso		Good	Adequate	100	Good	75
Bubesi		Acceptable	Adequate	100	Good	83
Gxaku A		Acceptable	Intermittent	95	Good	87
Mvuzi		Acceptable	Adequate	100	Good	69
U/Mnyamana		Good	Intermittent	75	Good	76
Embezeni		Acceptable	Adequate	100	Good	72
Bethesda		Good	Adequate	100	Good	81
Polile		Good	Adequate	100	Good	82
Luxeni		Good	Shortage	67	Good	79
Sigoga		Acceptable	Intermittent	Pvt conn.	Good	67
Mgubo		Good	Adequate	100	Good	85
Caba/Mdeni		Good	Intermittent	95	Good	92
Magogqolweni		Good	Intermittent	Pvt conn.	Good	82
Diketlane		Good	Adequate	100	Good	75
Thaba Chitja		Acceptable	Adequate	100	Acceptable	83
G/Moshesh		Poor	Intermittent	65	Good	86
Nkaus		Good	Adequate	100	Good	69
Tsita		Good	Adequate	100	Good	76
Mad Mak		Good	Adequate	100	Good	72
Mad Ext		Good	Adequate	100	Good	81
Isilindini		Acceptable	Adequate	100	Good	80

APPENDIX 4 Example of water quality report

Water Quality (bacteriological)

<u>(E-coli counts per 100ml)</u>					
Scheme	Source	Mar-05	Apr-05	May-05	Jun-05
Phalani	spring 1	0	1	0	0
Epiphany	spring 1	0	0	0	0
	spring 2	0	0	0	0
Lukholweni	b/hole 1	1	0	2	0
	spring 1	0	0	0	2
	spring 2	5	0	0	3
	spring 3	1	5	0	0
Sidakeni	spring 1	53	2	5	9
	spring 2	1	120	3	9
	spring 3	2	27	1	0
Emyamameni	spring 1	0	1	0	0
Rolweni	spring 2	109	0	0	1
Mjikelweni	spring 3	1	3	0	0
Qili	spring 4	0	0	0	0
Bamanzi/Fiva	spring 1	0	0	0	0
	spring 2	1	0	0	0
	spring 3	0	5	0	0
Moyeni	spring 1	0	14	0	0
	spring 2	59	27	3	9
	spring 3	4	0	0	0
Mrwatyeni	spring 5	12	74	43	0
Hillside	spring 7	0	62	0	0
Ezitapile	spring 1	1	0	0	0
Bubesi	b/hole 1	0	1	0	0
	spring 1	ns	0	0	0
	spring 2	5	2	0	0
	spring 3	0	1	0	2
	spring 4	9	1	8	2
Gxaku	spring 1				
	spring 2				
	spring 3				
	spring 4				

APPENDIX 5 Example of water availability report

Water Availability (sufficiency of source)

Scheme	ward	Mar 05	Apr 05	May 05	June 05
Phalani	32	adequate	adequate	adequate	adequate
Epiphany	32	adequate	adequate	adequate	adequate
Lukholweni	32	adequate	adequate	adequate	adequate
Sidakeni	32	adequate	adequate	adequate	adequate
Emyamameni	32	adequate	adequate	intermittent	adequate
Bamanzi/Fiva	32	adequate	adequate	adequate	adequate
Nyaniso	32	adequate	adequate	adequate	adequate
Bubesi	32	adequate	adequate	adequate	adequate
Gxaku A	31	adequate	intermittent	intermittent	intermittent
Mvuzi	31	adequate	adequate	adequate	adequate
U/Mnyamana	31	adequate	adequate	intermittent	intermittent
Embezeni	27	adequate	adequate	adequate	adequate
Bethesda	27	adequate	adequate	adequate	adequate
Polile	27	adequate	adequate	adequate	adequate
Luxeni	27	adequate	adequate	shortage	shortage
Sigoga	27	adequate	adequate	intermittent	intermittent
Good Hope	27	intermittent	shortage	shortage	shortage
Mgubo	27	adequate	adequate	adequate	adequate
Pontseng	29	shortage	shortage	shortage	shortage
Sijoka	29	shortage	shortage	shortage	shortage
Lunda	29	shortage	shortage	shortage	shortage
Qhobosheaneng	29	adequate	intermittent	intermittent	intermittent

APPENDIX 6 Example of infrastructure reliability report

Reliability of Infrastructure (% tap days operational)

Project	ward	Mar 05	Apr 05	May 05	Jun-05
Phalani	32	100	100	100	100
Epiphany	32	100	100	100	100
Lukholweni	32	100	100	100	100
Sidakeni	32	100	100	100	100
Emyamameni	32	100	100	100	100
Bamanzi/Fiva	32	100	100	100	100
Nyaniso	32	100	100	100	100
Bubesi	32	100	100	100	100
Gxaku A	31	100	100	95	95
Mvuzi	31	97	100	100	100
U/Mnyamana	31	100	100	75	75
Embezeni	27	100	100	100	100
Bethesda	27	100	100	100	100
Polile	27	100	100	100	100
Luxeni	27	100	100	67	67
Sigoga	27	priv con	priv con	priv con	priv con
Good Hope	27	h/pumps	h/pumps	h/pumps	h/pumps
Mgubo	27	100	100	100	100
Pontseng	29	h/pumps	h/pumps	h/pumps	h/pumps
Sijoka	29	h/pumps	h/pumps	h/pumps	h/pumps
Lunda	29	h/pumps	h/pumps	h/pumps	h/pumps
Qhobosheaneng	29	h/pumps	h/pumps	h/pumps	h/pumps
Caba/Mdeni	29	93	100	95	95
Magogqolweni	29	priv con	priv con	priv con	priv con
Diketlane	29	92	100	100	100
Thaba Chitja	30	100	100	100	100
Semongkong	30	Bulk only	Bulk only	Bulk only	Bulk only
Paballong	30	Bulk only	Bulk only	Bulk only	Bulk only